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**Determinants of the Internationalization-Performance
Relationship:**

An Empirical Examination of the Influence of
Organizational and Contextual Variables

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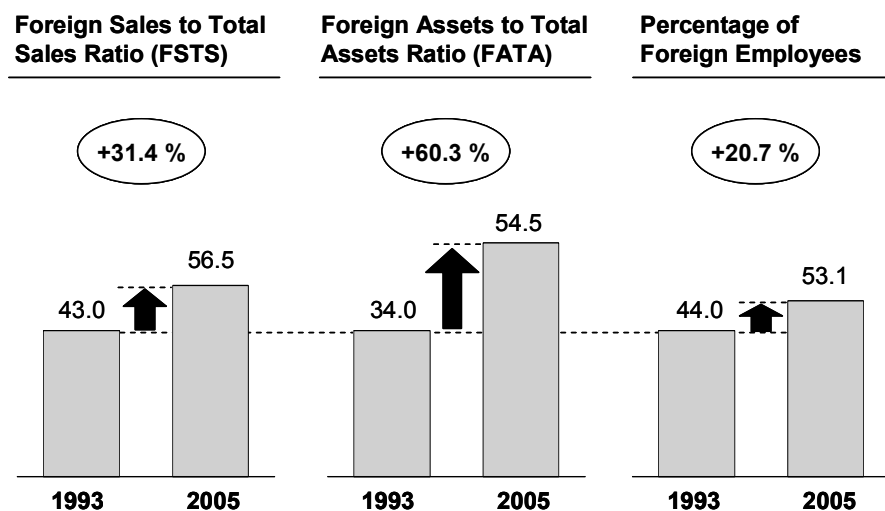
LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness-of-Fit Index
AMOS	Analysis of moment structures
ASLACK	Available slack
AUTO	Subsidiary autonomy
AVE	Average variance extracted
Cf.	Confer
CFA	Confirmatory factor analysis
CONFIG	Value chain configuration
CTA	Confirmatory tetrad analysis
Df.	Degrees of freedom
DOI	Degree of internationalization
EBIT	Earnings before interest and tax
EFA	Exploratory factor analysis
E.g.	For example
FATA	Foreign assets to total assets
FDI	Foreign direct investment
FSTS	Foreign sales to total sales
GFI	Goodness-of-Fit Index
ICC	Intraclass correlation coefficient
I.e.	That is
INTOR	International orientation
KNOW	Intra-company knowledge flows
KMO	Kaiser-Meyer-Olkin
LISREL	Linear structural relationships
Ln	Natural logarithm
ML	Maximum likelihood
MNC	Multinational corporation
MNE	Multinational enterprise
M&S	Marketing and sales
N/A	Not applicable

OSTS	Overseas subsidiaries to total subsidiaries
PDIO	Psychic dispersion of international operations
PSLACK	Potential slack
RESET	Regression specification error test
ROA	Return on assets
R&D	Research and development
ROE	Return on equity
ROS	Return on sales
RSLACK	Recoverable slack
SG&A	Selling, general, and administrative
SOCON	Social control mechanisms
SPSS	Statistical package for the social sciences
TNI	Transnationality index
TSLACK	Total organizational slack
ULS	Unweighted least squares
UNCTAD	United Nations Conference on Trade and Development
VIF	Variance inflation factor
Viz.	Videlicet, namely

1 INTRODUCTION

The international business environment has witnessed unprecedented changes over the past decades. Increasing globalization and the opening up of national markets have created an almost borderless business environment. As a consequence, companies worldwide have continuously expanded their international operations. For example, a study by the United Nations shows that during the 20-year period between 1970 and 1990 the number of multinational corporations (MNCs) grew from 7.000 to 35.000. The volume of overseas investment simultaneously increased from \$5 billion to roughly \$200 billion during the period indicating dramatic growth in both the incidence of foreign business activity as well as the volume of such activities.¹ Moreover, Figure 1 shows that the degree of corporate internationalization further increased during the time period between 1993 and 2005.



Note: Calculations based on the world's 100 largest multinational corporations in 1993 and 2005, respectively.

Figure 1: Development of Foreign Business Activities between 1993 and 2005

(Source: UNCTAD (1997), pp. 28-34; UNCTAD (2007), p. 25)

As can be seen, the world's 100 largest multinational corporations in 2005 had more than 50% of their sales, assets, and employees located in foreign countries. Even more important, however, all three ratios increased significantly since 1993, which underscores the growing importance of corporate internationalization. In particular, the disproportionately high increase in the ratio of foreign assets to total assets confirms that companies are not becoming more international by only increasing their export sales, but

¹ Cf. UNCTAD (1993), pp. 1-37.

actually by expanding their operations internationally through foreign direct investments (FDI).

Because the prevalent theoretical perspectives in the field associate international expansion with a large variety of benefits, one would expect that increasing corporate internationalization would also lead to higher firm performance. However, an examination of the existing empirical literature reveals an ambiguous picture. Some researchers report a positive relationship between multinationality and corporate performance; others conclude that the relationship is negative. Therefore, the question arises as to which variables determine the success of corporate international expansion.

This dissertation seeks to provide answers to this question. First, it derives organizational and contextual variables that have the potential to influence the performance outcomes from corporate internationalization. In doing so, it builds on the existing literature on international business and management, particularly on the concept of the transnational organization developed by Bartlett and Ghoshal.² Moreover, the potential moderating effects of these variables on the relationship between corporate internationalization and performance are empirically tested in a sample of multinational corporations. An MNC is defined as a firm with subsidiaries in six or more nations, one with income generating activities in more than one nation, or one with a ratio of foreign operations to total operations above some arbitrary percentage. All of these definitions emphasize the essential characteristic of a multinational corporation: namely that the corporation engages in foreign production and is thereby active in the goods and factor markets of many nations.³ Thus, the focus of this research project is not on how to "become international" as it used to be the case in the 1960s and 1970s,⁴ but on how to successfully manage increasing degrees of internationalization in a multinational network of operations.

The remainder of this dissertation is organized as follows:

Chapter 2 provides the theoretical foundations for this research project by reviewing the existing theories on the benefits and costs associated with corporate internationalization.

² Bartlett and Ghoshal (2002).

³ Cf. Rugman (1980), p. 24.

⁴ Cf. Welge and Holtbrügge (2001), p. 47.

Chapter 3 outlines the results of previous empirical studies on the internationalization-performance relationship and illustrates the need to account for potentially moderating variables in a multivariate model of the relationship.

Chapter 4 derives a set of specific organizational and contextual variables that may impact the performance outcomes from corporate internationalization and develops the hypotheses.

Chapter 5 presents the design of the empirical study. It defines the constructs used to measure the study variables. Moreover, it describes in detail the data collection procedure including the sampling process and the questionnaire survey among leading multinational corporations.

Chapter 6 validates and operationalizes these constructs before they are used to empirically test the developed hypotheses.

Chapter 7 reports the study's empirical results on the relationship between corporate internationalization and performance and investigates whether they support the developed hypotheses. It concludes with an overview of the study's empirical findings.

Chapter 8 summarizes the findings of this dissertation and relates them to the literature. It then explains their implications for theory and practice and provides suggestions for future research.

Chapter 9 concludes this dissertation.

2 THEORETICAL FOUNDATIONS

The potential benefits and costs associated with corporate internationalization build the foundation for analyzing the internationalization-performance relationship. Therefore, this chapter provides a brief review of the major theories and concepts of internationalization thereby outlining the major types and sources of advantages as well as disadvantages that may accrue to multinational corporations (MNCs). The focus is on the relevance and applicability of these theories in answering the central questions of this dissertation.

2.1 Theories on the Benefits of Corporate Internationalization

Corporate internationalization has been examined by scholars from different schools of thought and disciplines for a long time. The resulting theories and concepts therefore can be distinguished based upon the perspectives employed by the researcher. While scholars of industrial and financial economics approached the phenomenon of international business activity from an economic perspective, others apply an organizational perspective on corporate internationalization. Both streams of research will be reviewed below.

2.1.1 Economic Theories of Internationalization

Economic theories of internationalization encompass foreign trade theories as well as theories of foreign direct investment (FDI). While theories of foreign direct investment aim at explaining overseas investments of local companies, the primary concern of foreign trade theory is to explain the emergence of exports and imports between two countries. Among the various theories of foreign trade, the theory of comparative costs is the most relevant theory in the context of this dissertation and therefore will be discussed next.

2.1.1.1 Theory of Comparative Costs

The theory of comparative costs is mostly based on the Heckscher-Ohlin theorem, which suggests that firms will shift their resources in a way to minimized overall costs. The Heckscher-Ohlin model maps relationships between factor endowments of various countries and the nature of international activity pursued by firms that operate in these countries. Basically, it states that a country's exports use intensively the country's relatively abundant factors⁵. The two factors of production distinguished by Heckscher and Ohlin are capital and labor and they further suggest that countries are differently endowed with these

⁵ Cf. Heckscher (1949) and Ohlin (1933).

two factors. In some countries (e.g. the U.S.) capital is abundant and therefore a rather inexpensive factor of production while labor is relatively scarce and thus a more expensive factor of production. In other countries, the situation is quite the opposite. Capital is relatively scarce and therefore expensive while labor is a comparably inexpensive factor of production due to lower labor costs or relatively easy access to large labor pools. The factor-proportions model along Heckscher-Ohlin lines therefore suggests that countries with relatively high levels of capital availability will tend to be dominant in the capital goods markets, primarily exporting capital goods. In contrast, countries with lower labor costs or relatively easy access to a large labor pool will tend to be dominant in exporting those products that require substantial labor input. Welge and Holtbrügge note that under these conditions foreign trade is economically sound because each country is able to save on the relatively more expensive factor of production by importing either capital- or labor-intensive products⁶.

However, empirical examinations in the United States did not lend support to this model. Specifically, Leontief found that "the United States exports commodities which, on the average, absorb in their production less capital and more domestic labor than would be required for the production, in this country, of those goods which it apparently finds comparatively cheaper to import"⁷. His results lead to much discussion about the validity of the Heckscher-Ohlin theorem because capital in the United States in 1947 and 1951 was an abundant factor of production compared to labor. The fact that U.S. exports had a higher labor content and a lower capital content than U.S imports was henceforth referred to as the "Leontief paradox". In order to resolve this paradox, several explanations were provided. According to Baldwin six major groups of explanations can be distinguished⁸: the relative abundance of skilled labor in the United States, an efficiency advantage in favor of the United States in Research and Development oriented industries, the scarcity of natural resources in the United States, factor-intensity reversals sufficiently extensive to upset the Heckscher-Ohlin proposition, a strong U.S. demand bias in favor of capital-intensive goods so that these are imported although the United States is capital-abundant, high tariffs and other trade distorting measures that favor the domestic production of labor-intensive products.

Especially the skill-level of labor as it relates to the formation of human capital has

⁶ Cf. Welge and Holtbrügge (2001), p.61.

⁷ Cf. Leontief (1956), p. 398.

⁸ Cf. Baldwin (1971), p. 127.

received much attention in the literature. Kravis finds that "export industries tend to pay higher wages than import-competing industries" and explains these wage differences by different productivity levels and degrees of skill⁹. Similarly, Leontief finds that the lowest, i.e., unskilled category of employment shows percentagewise a quite large surplus on the import side¹⁰. Thus, the relatively abundant supply of engineers and scientists is an important source of the United States' comparative advantage position, especially as far as trade in manufactures is concerned¹¹. This abundance of highly trained labor gives the U.S. an export advantage in products requiring relatively large amounts of such labor.

Based on the above discussion Baldwin suggests using multi-factor trade models instead of single-factor trade theories. Particularly, the labor force should be divided into various skill groups thereby taking account of the relative differences in human capital. He further concludes that under such a more general approach the relative abundance among countries of the factors of production will still occupy an important place in trade theory¹². The theory of comparative costs is closely related to the location theory of multinational corporations. Location theory suggests that the spatial allocation of plants and subsidiaries is determined by the costs of factor inputs in various regions, together with the transport costs and tariffs involved in linking the production process with the firm's marketing strategy.¹³ Therefore, the theory of comparative costs as described above becomes also relevant in explaining the international business activity of MNCs. One good example is given by Kogut. In his point of view, differences in factor costs between countries (e.g., wages, materials, capital charges) have powerful implications for where a firm should locate the links of its value-added chain internationally¹⁴. In general, it should be expected that firms locate their activities in those countries that possess a comparative advantage in terms of the relevant intensive factor. Therefore, multinational corporations will be able to optimize their overall cost position by locating labor-intensive activities such as food processing or assembly where unskilled labor is inexpensive, and moving capital-intensive¹⁵ activities such as research and development or advanced electronics manufacturing to countries in which capital is inexpensive. As countries differ in factor

⁹ Cf. Kravis (1956a), p. 14; Kravis (1956b), p. 143-146.

¹⁰ Cf. Leontief (1956), p. 398-399.

¹¹ Cf. Baldwin (1971), p. 142.

¹² Cf. Baldwin (1971), p. 143.

¹³ Cf. Rugman (1980), p. 25

¹⁴ Cf. Kogut (1985a), p. 18.

¹⁵ In this context, capital also includes human capital.

costs and the intensity of factor use varies along the value chain, the distribution of value-added activities between countries will tend to differ. Kogut confesses that the clean and tidy ordering of value activities along the chain of comparative advantage as described above may be distorted by transportation costs and tariffs. Specifically, these two factors may create strong barriers between nations and permit domestically located firms to survive despite a disadvantage in factor prices. However, "the general tendency of trade to reflect the comparative advantages of nations is certain to influence the allocation of world resources".¹⁶

The theory of comparative costs contains important explanatory variables regarding the benefits of corporate internationalization and may therefore significantly influence a firm's international strategy. Specifically, multinational corporations may choose the locations of their value-added activities in a way that allows for the exploitation of differences in productivity levels and factor endowments between countries thereby improving the sourcing and cost structure of the company. However, the explanatory power of the theory of comparative costs is also limited. Differences in factor costs are externalities and therefore part of a firm's environment. Thus, they should be available to the same degree to all companies (at least within one industry). Consequently, one would not expect to observe any differences in the nature and variety of overseas activities pursued by individual companies. However, there appear to be many such differences even between firms in the same industry. These differences cannot be reconciled with the theoretical predictions that follow from the comparative cost approach¹⁷. Accordingly, Ramaswamy notes that "while comparative cost theories could provide several plausible factors that motivate a corporation to go overseas, they do not explain why different international firms exhibit differences in multinationality profiles"¹⁸. Kogut suggests that there is an interplay between the comparative advantage of countries and the competitive advantages of firms. "When firms achieve a competitive advantage in terms of scale, scope, or learning, firms can be disadvantaged in terms of their location but still compete successfully. In other words, the competitive advantage of a firm can overcome the comparative disadvantage of country location"¹⁹. Thus, company-specific factors and motivations may also play a

¹⁶ Kogut (1985a), p. 20

¹⁷ In addition, several authors have criticized the restrictive assumptions of the theory of comparative costs, especially the assumption of complete international immobility of productive factors, Welge and Holtbrügge (2001), p. 62.

¹⁸ Ramaswamy (1990), p. 26.

¹⁹ Kogut (1985a), p. 22.

crucial role in explaining the benefits of international business activity. It is therefore necessary to turn to further theories of internationalization in order to get a more complete understanding of multinational corporations.

2.1.1.2 Theories of Foreign Direct Investment

Trade theories such as the theory of comparative costs generally employ a macroeconomic perspective and are primarily concerned with explaining exports and imports between national economies. In contrast, theories of foreign direct investment (FDI) also take individual companies as their unit of analysis thereby providing insights into the motivations and advantages of firms investing directly overseas. According to the United Nations Conference on Trade and Development (UNCTAD), foreign direct investment refers to an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. Further, the investor's purpose is to gain an effective voice on the management of the enterprise. The foreign entity or group of associated entities that makes the investment is termed the "direct investor". The unincorporated or incorporated enterprise – a branch or subsidiary, respectively, in which direct investment is made is referred to as "direct investment enterprise".²⁰ Equity ownership is almost always considered to be associated with an effective say in the management of the enterprise involved. Threshold values for foreign equity ownership above which an investor qualifies as a "foreign direct investor" range from 10 to 50 percent, however, 10 percent is usually applied.²¹ FDI theories are useful for understanding the presence of multinational corporations and further complement the findings of trade theory. Their key concepts will be discussed in the following sections.

2.1.1.2.1 The International Product Life Cycle Theory

The international product life cycle theory builds on the seminal work by Vernon²². His theory not only attempts to explain the emergence of exports but also relates the product life cycle to the international investment decisions made by corporations. The basic assumption of this theory is that all products go through certain distinct stages of

²⁰ Cf. online: UNCTAD (2007): Foreign Direct Investment (FDI), URL: <http://www.unctad.org/Templates/Page.asp?intItemID=3146&lang=1>

²¹ Cf. online: UNCTAD (2007): Definitions of FDI, URL: <http://www.unctad.org/Templates/Page.asp?intItemID=3147&lang=1>

²² Vernon (1966), p. 190-207.

development, growth and decay. The cycle starts with the development of new products that subsequently are introduced to the market. Vernon suggests that in this first stage, the production facilities for these new products are located in the home country of the producer for reasons that go beyond the traditional considerations of relative factor-cost and transportation. Three reasons are particularly put forward to support his hypothesis²³. First, producers in this early stage of the product life cycle are particularly concerned with the degree of freedom they have in changing their inputs. This is due to the quite unstandardized nature of the product at this time. However, the ability of changing inputs for the new product requires high levels of flexibility, which in turn has to be taken into account in any locational choice or cost calculation. In his point of view, flexibility in the production process can be better achieved in the home country of the innovator than in any overseas location. Second, due to the high degree of product differentiation, the price elasticity of demand for the new product is comparatively low. Thus, small cost differences count less in the early stage of the product life cycle than they are likely to count later on. Third, the considerable amount of uncertainty²⁴ at this stage also leads to a high need for swift and effective communications between the producer and his customers, suppliers, and even competitors. Communication is most effective when the producer is operating close to his customers, i.e., in the case of new products, the innovator company should operate in its home country.

In the second stage of the product life cycle demand for the new product grows and the product starts to mature. According to Vernon, some degree of standardization takes place which has important implications for locational choice. While the need for flexibility declines, technical possibilities open up to achieve economies of scale through mass production. It is this switch to mass production that is predicated to motivate a firm to move into international markets. Rapid market expansion is necessitated by increasing production volumes, which in turn are required to achieve economies of scale. Thus, the company begins to export its product to foreign markets because "some demand for the product begins almost at once to appear elsewhere"²⁵. However, this stage of the product life cycle is also associated with a growing concern about production costs. Vernon suggests that "even if increased price competition is not yet present, the reduction of the

²³ Cf. Vernon (1966), p. 195.

²⁴ Uncertainty in the development stage of the product life cycle arises around the ultimate dimension of the market, the efforts of rivals to preempt the market, the specifications of the inputs needed for production, and the specifications of the products likely to be most successful in the effort.

²⁵ Cf. Vernon (1966), p. 197.

uncertainties surrounding the operations enhances the usefulness of cost projections and increases the attention devoted to cost".²⁶ Thus, management starts to contemplate whether setting up local production facilities is more advantageous than exports. According to Vernon, the key decision criterion in this respect is the marginal production cost plus the transport cost. As long as the marginal production cost plus the transport cost of the goods exported is lower than the average cost of prospective production in the market if import, producers will prefer to avoid an investment. However, once the average cost of overseas production is lower than the marginal production and transport cost of the goods exported, companies will start to engage in foreign direct investment by setting up local production facilities in overseas markets.

The international product life cycle theory thus provides some plausible explanations for corporate internationalization. First, it builds on technological differences through product development that trigger foreign trade and exports. Companies that possess differentiated products create demand for these products beyond the boundaries of their home market. Thus they are able to expand the market for their products internationally thereby facilitating the realization of economies of scale. Moreover, multinational corporations are able to improve their cost position as compared to export companies. By setting up local production facilities in the markets of import, MNCs may achieve average costs of production that are lower than the marginal costs of the goods exported.

However, the literature suggests that the international product life cycle theory is also associated with certain critical drawbacks. While empirical studies have largely confirmed the validity of the product life cycle concept for U.S. based companies in the 1960s and 1970s, its predictive power may decrease due to the increasing globalization of the world economy²⁷. Specifically, the sequence of the stages suggested by the international product life cycle theory may not be carved out of stone. Some of these stages may be accelerated, taken in parallel, or even be skipped. For example, Welge and Holtbrügge suggest that the introduction of products in the home market, exports, and foreign production largely take place simultaneously in multinational corporations²⁸. Thus, the product life cycle concept is primarily applicable to smaller companies with comparatively low degrees of

²⁶ Cf. Vernon (1966), p. 196.

²⁷ Cf. Vernon (1979), p. 265.

²⁸ Cf. Perlitz (2004), p. 95; Welge and Holtbrügge (2001), p. 66.

internationalization²⁹. In addition, it is difficult to generalize the concept to include all products. Many different levels of aggregation (e.g. product classes, product forms, and brands) may be used, which in turn affects the pattern of the product life cycle.³⁰ Also, it is almost impossible to a priori identify the beginning and end of each of the constituent stages of the cycle. Dhalla and Yuseph note that the length of different stages tends to vary from product and product so that it is difficult to predict when the next stage will appear, how long it will last, and to what levels the sales will reach. Consequently, the major phases do not divide themselves into clear-cut compartments.³¹ Based on this weak predictive power of the concept, Perlitz concludes that the international product life cycle theory is mainly suitable for ex-post analyses.³²

2.1.1.2.2 Theory of Monopolistic Advantages

The theory of monopolistic advantages was first propounded by Hymer and later by Kindleberger³³. They suggest that multinational corporations have some unique competitive advantages over local companies that they can exploit through foreign direct investment. According to Kindleberger, two conditions must be met in order to justify foreign direct investment.³⁴ First, the investing company can earn a higher rate of return abroad than at home. Second, the investing firm must be able to earn a higher return in the market where it is investing than local firms earn. However, especially the latter appears to be difficult because the foreign investor inherently is at a disadvantage compared to local firms. There are costs associated with operating at a distance that arise from travel, communication, time lost in communicating information and decisions, and misunderstandings that lead to errors. Also, the international corporation is bearing the risk of operating in different political and legal environments. Therefore, companies engaging in foreign direct investment must possess some advantage that they can transfer from one country to another but which cannot be acquired by local firms. Otherwise, domestic (local) firms would have an advantage over foreign firms due to their better knowledge of

²⁹ Cf. Vernon (1979), p. 265.

³⁰ Cf. Polli and Cook (1969), p. 385-400; Dhalla and Yuseph (1976), p. 102-112.

³¹ Cf. Dhalla and Yuseph (1976), p. 103-104.

³² Cf. Perlitz (2004), p. 75.

³³ Kindleberger (1969), p. 11 ff.

³⁴ Cf. Kindleberger (1969), p. 11-12

the local environment and the proximity of their operations to the decision-making center³⁵, so that no firm could survive in foreign operation.

Unlike the theory of comparative cost or the product life cycle concept, Kindleberger does not trace the advantages that multinational corporations possess back to the existence of factor-cost differences. "In the present view, cheaper costs abroad than at home are not enough. What must be explained is why the production abroad is not undertaken by local entrepreneurs, who have an inherent advantage over outside investors"³⁶. Rather, he regards imperfections in the markets for goods and factors (including technology), or some interference in competition by governments or by firms as the sources of monopolistic advantages that accrue to international corporations. The nature of these advantages will be briefly discussed below³⁷.

Departures from perfect competition in goods markets, among other things, may be caused by product differentiation, special marketing skills, retail price maintenance, and administered pricing. Thus, the multinational corporation may benefit from its branded products that allow for differentiation in the sales market and from its high reputation and image that is achieved through global marketing. In addition, corporate internationalization may result in greater market power that in turn enables the multinational corporation to realize better prices.

Imperfections in factor markets include the existence of patented or unavailable technology, of discrimination in access to capital, of differences in skills of managers organized into firms rather than hired in competitive markets. Patents and restricted technology are major advantages that multinational corporations can bring to the local market. They limit entry and can hardly be imitated. Therefore, depending on the type of technology brought to the local market, MNCs may benefit from increased differentiation or higher degrees of efficiency. Superior management skills are another important aspect. For example, large international companies may gain an advantage over local competitors by centralizing the decision-making, performing scientific cost-benefit analysis, raising the concern for marketing or raising the standards on performance, tolerances, delivery dates etc. The key role of management skills in foreign direct investment is also emphasized by Kindleberger who notes that "there is little advantage to the foreign investor in access to

³⁵ The proximity of operations to the decision-making center allows domestic companies to operate more cheaply due to reduced costs of communication and coordination.

³⁶ Kindleberger (1969), p. 13

³⁷ Cf. Kindleberger (1969), p. 14-27

labor other than management and technical staff."³⁸ Finally, a foreign company may have an advantage over a domestic firm in raising capital due to its superior credit rating.

The existence of external and internal economies of scale is also a source of monopolistic advantage. In general, multinational corporations are larger in size than their domestic counterparts and therefore are better able to switch to large-scale production and to reach the optimal scale of operations. As a result, they can realize internal economies of scale that lower their average production cost. In addition, international corporations may benefit from external economies of scale through vertical integration. Kindleberger suggests that there are substantial economies in coordinating decisions at various stages of the value chain. Thus, by integrating the separate stages of the value chain performed in different countries into the same company, multinational corporations may improve their efficiency and profitability³⁹.

The final source of monopolistic advantages proposed by Kindleberger is government interference in competition. Tariffs and non-tariff barriers to trade originally intended to protect domestic firms from foreign competition, frequently stimulate foreign direct investments. One example is the formation of the European Economic Community, which originally favored firms inside the common tariff over those outside. However, foreign firms that were discriminated against by the customs union set up subsidiaries within the customs area if they had an advantage that enabled them to compete successfully with local firms.

The theory of monopolistic advantages provides a multitude of sources of benefits that put multinational corporations at an advantage over local (domestic) firms. However, this theory also has some weaknesses. Specifically, it concentrates on existing advantages that MNCs can transfer to the foreign market. Yet, companies also make foreign direct investments in order to gain access to new sources of competitive advantage, e.g. technology, know-how, raw materials, and other resources. Moreover, the transfer of monopolistic advantages is likely to be associated with costs that are not reflected in this theory.⁴⁰

³⁸ Kindleberger (1969), p. 16

³⁹ E.g., through the reduction of expensive inventories

⁴⁰ Cf. Welge and Holtrügge (2001), p. 75

2.1.1.2.3 Internalization Theory

The fundamental proposition of the internalization theory is that multinational corporations use hierarchical organizational structures as a substitute for inoperable (and inefficient) market systems. Thus, internalization is one means to overcome natural market imperfections or the costs imposed by governments to international trade through tariff and non-tariff barriers.⁴¹ The theory is based on the transaction cost approach, which is rooted in the seminal work by Coase. Coase was among the first to recognize that "the operation of a market costs something and by forming an organization and allowing some authority (an entrepreneur) to direct the resources, certain marketing costs are saved".⁴² The term "marketing costs" refers to what economists now call transaction costs. According to the literature, transaction costs are the negotiating, monitoring, and enforcement costs that have to be borne to allow an exchange between two parties to take place. These costs may be especially high in situations where it is difficult to discover the relevant price, uncertainty and complexity prevail, or it is desired to close long-term contracts.⁴³ Consequently, firms will evaluate whether a given transaction can be undertaken at a lower cost via a market or within a hierarchy (firm). Internalization theory suggests that if the costs of undertaking transactions via the market are high, then firms can gain economic benefits by "internalizing" the transaction within its own organization.⁴⁴

Several authors have applied this approach to multinational corporations with special emphasis on imperfections in markets for intangible assets and intermediate products.⁴⁵ According to Morck and Yeung, intangible assets for which it is beneficial to organize transactions within the organization include superior production skills, patents, marketing abilities, managerial skill, or consumer goodwill⁴⁶. The underlying rationale is that such intangible assets possess the characteristics of public goods, i.e. their consumption by one party does not reduce the consumption of others.⁴⁷ When trying to exchange assets with public goods properties on the market, firms face two fundamental difficulties. First, a public good cannot be priced by the market, indeed its price is zero. Such a case of market

⁴¹ Cf. Rugman (1986), p. 101-102

⁴² Coase (1937), p. 392

⁴³ Furthermore, Williamson (1975) provides a comprehensive overview of transaction difficulties that are sources of transaction costs. These transaction difficulties stem from bounded rationality, opportunism, uncertainty, small numbers trading relationships, asymmetric distribution of information, and asset specificity.

⁴⁴ Cf. Jones and Hill (1988), p. 160

⁴⁵ Cf. Buckley and Casson (1976); Teece (1986); Rugman (1980); Magee (1981)

⁴⁶ Cf. Morck and Yeung (1991), p. 165

⁴⁷ Cf. Rugman (1980), p. 26

failure can only be overcome through the assignment of property rights or the introduction of some interventions in the market. Second, and even more important, the firm runs the risk of misappropriation. Public goods are non-excludable and non-rival in their consumption. Thus, the consumption and use of special (intangible) assets cannot be limited to the corporation that is currently in possession of them. Rivals and outside parties can equally benefit from these assets as soon as they can get hold of them. Magee emphasizes this difficulty in trying to exchange intangible goods via the market mechanism in his appropriability theory of the MNC. He states that "technology is also a public good in that once it is created, its use by second parties does not preclude its continued use by the party who discovers it. However, use by second parties does reduce the private return on information created by the first party."⁴⁸ Magee calls this last feature "appropriability problem".

By internalizing the markets for their intangible assets through foreign direct investment, MNCs are able to reduce transaction costs and to better protect their profits from these unique assets. Moreover, they may also realize economies of scale. Due to the public good characteristics of the described intangible assets, their value increases in direct proportion to the scale they are applied to. If advantages in information, knowledge or technique have proven to yield positive returns over direct costs in the first market, they can potentially do the same in other markets. However, there is no need to incur again the sunk costs that were associated with their development and discovery.⁴⁹ As a result, MNCs can benefit from economies of scale when applying their intangible assets in foreign markets through direct investments. Eun et al. summarize this paragraph by stating that "firms that have intangible assets with a public good property, such as technical and managerial know-how, tend to invest directly in foreign countries in order to utilize these assets on a larger scale and, at the same time, avoid the misappropriations that may occur while transacting in foreign markets through a market mechanism".⁵⁰

The literature also suggests further benefits that arise to the MNC due to its ability to internalize economic activity. These benefits include the ability to employ discriminant pricing, economies of integration, economies of scope, and economies of internal capital markets. For example, Rugman finds that charging different prices for a product to

⁴⁸ Magee (1981), p. 125

⁴⁹ Cf. Caves (1971), p. 4

⁵⁰ Eun et al. (1996), p. 1563

different users is facilitated by the establishment of overseas subsidiaries. The process of FDI enables the MNC to segment national markets and provides additional information on the local demand curves for the products of the MNC.⁵¹ Jones and Hill notice that economies of scope are difficult to realize using the market mechanism because of transaction difficulties. Economies of scope are generally defined as stemming from inputs that are shared, or utilized jointly with complete congestion. However, due to the joint utilization or sharing of inputs, it is very difficult to draft contingent claims contracts aimed at realizing economies of scope because the real world can be characterized by bounded rationality, asymmetric distribution of information and the risk of opportunism.⁵² Consequently, in order to realize economies of scope, the MNC may use internalization through foreign direct investment to overcome these transaction difficulties.

The main line of argument of the internalization theory aims at providing a rationale for firms to engage in foreign direct investment instead of using market transactions, specifically licensing. However, the theory itself does not provide a convincing argument for the decision of corporations to use foreign direct investment instead of exports in order to expand internationally. Although it is argued that local production through subsidiaries enables MNCs to better adapt the product to the local market or to provide superior quality (or lower cost) ancillary services, the real justification of using FDI instead of exports is often seen in locational factors. According to Caves, two conditions must be satisfied so that the possession of some special assets leads the firm to invest abroad. First, the assets must possess the character of a public good. Second, the return on a firm's special asset in a foreign market must depend at least somewhat on local production.⁵³ Similarly Teece confirms that "the multinational enterprise and foreign direct investment represent a response to high transaction costs by firms with unique assets/capabilities which have value when utilized in production facilities located in foreign markets".⁵⁴ Thus, locational factors such as factor costs, transportation costs, and tariffs still play an important role in the decision to engage in FDI instead of trying to supply the foreign market via exports.⁵⁵

⁵¹ Cf. Rugman (1980), p. 27

⁵² Cf. Jones and Hill (1988), p. 162

⁵³ Cf. Caves (1971), p. 5-6

⁵⁴ Teece (1986), p. 27

⁵⁵ Rugman argues that in a world of free trade (i.e. without barriers and tariffs) all foreign markets would be serviced by exports. Only if the theoretical reasons for free trade do not hold, is it necessary to have a model of the MNC. Thus, free trade is seen to be the converse of FDI. Rugman (1980), p. 25.

Yet despite this weakness, the internalization theory can be regarded as one of the most well established theories of the MNC that has been verified in several empirical studies.

2.1.1.3 The Eclectic Theory of International Production

Dissatisfaction with the partial explanations of international production offered by trade theory and the theories of foreign direct investment has lead economist to develop a more eclectic approach to the subject. In his eclectic paradigm Dunning draws upon and integrates three strands of economic theory in order to explain the ability and willingness of firms to serve markets, and the reason why they choose to exploit this advantage through foreign production rather than by exports. Specifically, he combines the propositions of the theory of monopolistic advantages, internalization theory, and location theory. The principal proposition of Dunning's eclectic paradigm is that firms will engage in foreign direct investment if the conditions are satisfied.⁵⁶

First, a company needs to possess net ownership advantages compared to firms of other nationalities in serving particular markets. These ownership advantages mostly stem from intangible assets, which are exclusive or specific to the company at least for some period of time. It is possible to distinguish three types of ownership advantages. General ownership advantages do not necessarily arise from multinationality. Amongst others, they encompass advantages due to proprietary technology, trade marks, or management know-how. In addition, there are ownership advantages that established subsidiaries enjoy over new firms. These advantages include for example the access to capacity (administrative, managerial, R&D, marketing etc.) of the parent company at favored prices or economies due to joint supply. The last type of ownership advantage arises specifically from multinationality and stems from international differences in factor endowments and markets as well as the ability to diversify risks. Second, to justify foreign direct investment, it must also be beneficial to the company to internalize the ownership advantages through an extension of its own activities rather than externalize them through licensing and similar contracts with independent firms. Thus, there must be some internalization advantages, which include the avoidance of transaction and negotiating costs as well as the costs of enforcing property rights. As shown in the previous section, internalization provides ones means to protect private returns from misappropriation. Finally, if the first two conditions are satisfied, it must still be profitable to use the

⁵⁶ Cf. Dunning (1979), pp. 275-276.

ownership advantages in conjunction with at least some local factor inputs. Otherwise foreign markets would be served entirely by exports and no foreign direct investment would take place.

Due to the three types of advantages (ownership advantages, location-specific advantages, and internalization advantages) necessary for firms in order to engage in foreign direct investment, Dunning's eclectic paradigm is frequently referred to as OLI-concept.

Figure 2 summarizes the relation between the OLI-advantages and different modes of internationalization.

Advantages Mode of Internationalization	Ownership	Internalization	Location
Foreign Direct Investment (FDI)	✓	✓	✓
Export	✓	✓	✗
Licensing (contracting)	✓	✗	✗

Figure 2: Relation between OLI-Advantages and Mode of Internationalization
(Source: Perlitz (2004), p. 110)

By combining the three strands of economic theory Dunning creates a more complete picture of the MNC while alleviating the shortcomings of the individual theories. Industrial organization theory mainly explains the nature of ownership advantages while internalization theory explains the conditions under which it is beneficial to exploit these advantages within the organization. Theory of location and trade complement the picture by providing the factors that determine the location of production. Dunning has found support for his eclectic paradigm in various empirical studies.⁵⁷ Yet, due to some criticism Dunning adapted and extended his paradigm with the "core" of the paradigm still relying on the earlier OLI-concept. The extended version includes four new components⁵⁸. First, the motives underlying the decisions on international production locations are now taken account of. Second, Dunning introduces contextual variables and recognizes that asset advantages of international firms are expected to vary according to the factor endowments of the countries from which they originate. Moreover, factor endowments have been

⁵⁷ See Dunning (1980), pp. 9-31; Dunning and Kundu (1995), pp. 101-133.

⁵⁸ See Dunning (1988), pp. 1-31.

extended to embrace intermediate products and the mobility of some products across national borders. In an earlier work Dunning already noted that OLI characteristics may vary according to country, industry and firm-specific considerations.⁵⁹ One important implication of this finding is given by Welge and Holtbrügge. Companies residing in countries with a relatively large home market size may also have a large potential to realize economies of mass production and diversification. This puts them at a comparative advantage over firms from countries with relatively small home markets during the process of internationalization.⁶⁰ Third, structural variables of the strategic decision-making process have been introduced to the theory. Fourth, the range of applications of the paradigm has been expanded to include not only the determinants and types of international production but also intrafirm trade and divestment.

However, despite Dunning's attempt to respond to the critics and extend the paradigm, some concerns still remain. For example, Perlitz states that the eclectic paradigm only constitutes a conglomeration of different variables without causal connections⁶¹. Similarly, Macharzina and Engelhard conclude that "while the conceptual and analytical structure of the [original] paradigm remains largely unimpaired its operational usefulness decreases as the complexity of the variables making up the OLI configuration increases"⁶². They further elaborate that the traditional version of the OLI-concept provides a plausible and in empirical terms partly proven foundation for explanatory purposes. However, the extended version has diluted the concise basis. Yet, Welge and Holtbrügge still conclude that Dunning's eclectic paradigm presents the currently most well received theory of FDI whose main propositions have been confirmed in various empirical studies⁶³.

2.1.1.4 Portfolio Diversification Theory

From a financial perspective, multinational corporations should enjoy the benefits of risk reduction due to their international diversification. This proposition is based on the portfolio diversification argument for the inclusion of foreign firms in an investor's well diversified portfolio. Applied to the MNC, diversification theory posits that the MNC has a

⁵⁹ Cf. Dunning (1981), pp. 34-35.

⁶⁰ Cf. Welge and Holtbrügge (2001), pp. 78-79.

⁶¹ Cf. Perlitz (2004), p. 111.

⁶² Macharzina and Engelhard (1991), p. 28.

⁶³ Cf. Welge and Holtbrügge (2001), p. 79.

lower systematic risk relative to similar domestic firms, which benefits the residual claimant. This implies that the multinational corporation would face lower expected bankruptcy costs, and therefore has a higher capacity to carry debt.⁶⁴ Moreover, the diversification benefit should also be reflected in the valuation of the shares of MNCs. Rugman predicts that a multinational firms will provide greater benefit to its shareholders than will a comparable firm which has few foreign operations because individual investors are concerned about the risk of their earnings as well as the expected rate of return. The multinational corporation is able to reduce the risk of its expected earnings because it has sales of goods to, or within, foreign countries whose economic fluctuations are less than perfectly correlated with the fluctuations in the home country.⁶⁵ Consequently, MNC sales are expected to be more stable than sales of non-multinational firms which also results in more stable earnings of the MNC. Thus, Rugman concludes that "foreign operations afford the multinational firm the advantage of international diversification in the goods and factor markets and this risk reduction in expected earnings should be reflected in the valuation of its shares".⁶⁶ He also finds support for the lack of perfect positive correlations in the international goods and factor markets. By calculating international correlation coefficients he finds low correlations for GNP, wages, and other indicators of product and factor markets but high correlations for financial market indicators such as interest rates.

However, there is one important caveat to the discussed theory. In general, individual investors can achieve international portfolio diversification themselves by buying shares in the stocks of firms domiciled in various nations. Only if there are institutional or other barriers to the free flow of financial capital, the MNC is performing a valuable function for investors by providing a way to indirectly diversify their portfolios internationally.⁶⁷ Indeed, Hughes, Logue and Sweeney state that "in a world where capital markets are perfect, the multinational firm does nothing for investors that they could not otherwise do for themselves".⁶⁸ Thus, the extent to which multinational corporations provide benefits to their shareholders largely depends on the existence of barriers to the flow of funds between various countries. However, there appear to be a variety of barriers, that may keep investors from achieving international diversification through direct investments in foreign

⁶⁴ Cf. Reeb, Kwok and Baek (1998), pp. 263-264.

⁶⁵ Cf. Rugman (1975a), p. 233.

⁶⁶ Rugman (1975b), p. 652.

⁶⁷ The logic behind this last proposition is that MNCs are equivalent to international mutual funds and therefore provide international diversification.

⁶⁸ Hughes, Logue and Sweeney (1975), p. 627.

financial instruments. The principal barriers are the lack of fully integrated capital markets, exchange risk diversification, transaction costs, access to information, and host country regulations. Consequently, Mathur and Hanagan conclude that "these barriers to direct international diversification by investors indicate that MNCs may possess unique advantages and may in fact be superior vehicles for achieving international diversification".⁶⁹ These unique advantages of MNCs can stem from market imperfections in product and factor markets as previously described, but also from financial economies. Financial economies arise from the lower financing costs of multinational corporations because they are able to fund direct investments internally, can identify and choose the external financing source with the lowest cost of debt in any of the countries in which they operate, and they can benefit from international differences in corporate income taxes. In addition, MNCs can usually hedge more cheaply against exchange rate risk.

Empirical evidence on the predictions of the diversification theory is somewhat mixed. For example, in a regression analysis Rugman finds that the degree of foreign operations is negatively related to the variance of profits which indicates more stable earnings of MNCs and hence a reduction in risk.⁷⁰ Hughes, Logue and Sweeney examine the security returns of MNCs relative to domestic companies and find multinational corporations have lower systematic risk, lower unsystematic risk, thus lower total risk. Furthermore, MNCs have higher risk-adjusted returns using a domestic index, but they have a similar performance when a world index is used. The authors conclude from these results that investors correctly perceive the diversification benefits of shares of multinational firms and that such firms do indeed something for the investor.⁷¹ Using a sample of 217 U.S. multinational corporations, Agmon and Lessard find that MNC's non-domestic sales are negatively related to the domestic systematic risk in an international market model. They interpret this result as an indication of a reduction in systematic risk from international diversification. In their point of view, barriers to capital flows exist and the resulting financial advantage complements the advantages of MNCs derived from imperfections in goods and factor markets thereby providing an additional motive for multinational expansion.⁷² Errunza and Senbet demonstrate the existence of a systematic positive relationship between the (current) degree of international involvement and excess market value. Moreover, this

⁶⁹ Cf. Mathur and Hanagan (1983), p. 143.

⁷⁰ Cf. Rugman (1975a), p. 233.

⁷¹ Hughes, Logue and Sweeney (1975), p. 636.

⁷² Cf. Agmon and Lessard (1977), pp. 1049- 1055.

relationship is especially strong during periods characterized by barriers to capital flows. These results support the notion that the diversification benefit is reflected in the valuation of the shares of MNCs as well as the existence of barriers to the free flow of financial capital.⁷³ Contrary to the above findings, Brewer observes no statistical difference in the risk-adjusted performance of the stocks of multinational and domestic corporations. From his perspective, lower risk does not provide a benefit when it is accompanied by lower return. Thus, in order to be a superior investment, MNCs would need to display significantly higher returns than domestic companies over a variety of risk levels. However, he finds no such evidence because in his analyses MNCs and domestic companies basically lie on the same security market line.⁷⁴ Michel and Shaked find that, on average, multinational corporations have a lower systematic risk, lower total risk, higher capitalization ratio, and lower risk-adjusted market-based performance than domestic corporations.⁷⁵

However, based on both theoretical and empirical research, it seems to be well accepted that multinational corporations possess the ability to reduce their systematic risk due to their international operations. The resulting financial advantages (e.g. lower financing costs due to lower cost of debt) complement the advantages they derive from imperfections in goods and factor markets and are most likely reflected in the valuation of their stocks.

2.1.2. Organizational Perspectives of Corporate Internalization

The reviewed economic theories of corporate internationalization and foreign direct investment mostly deal with factors that are either common to all firms within an industry (e.g., technology, labor costs, transportation costs etc.), or common to firms across industries (e.g., tariff barriers, comparative costs of inputs etc.). They may thus provide valuable insights into the factors that trigger corporate internationalization, yet fail to explain why firms operating within the same industry may exhibit differences in their multinational business activities. Welge and Holtbrügge note that economic theories of corporate internationalization do not account for interdependencies and competitive advantages that result from the integration of all domestic and international activities of

⁷³ Cf. Errunza and Senbet (1981), pp. 401-417.

⁷⁴ Cf. Brewer (1981), pp. 120-121.

⁷⁵ Cf. Michel and Shaked (1986), pp. 89-100.

corporations.⁷⁶ Thus, in order to gain more insights into the benefits from corporate internationalization, it is necessary to include firm-level factors that may be a source of MNCs' competitive advantage over domestic firms. "Any attempt to explain international activity at the level of the individual firm must necessarily transcend industry specific factors to delve deeper into individual firm competences."⁷⁷ Therefore, the following discussion focuses on theories that provide a more holistic perspective on the activities of MNCs and are more concerned with organizational factors, firm resources, and processes.

2.1.2.1 Resource Transmission Theory

Fayerweather's point of departure is that multinational corporations may benefit from their capability to transfer resources from one country to the other. However, the extent to which the process of international resource transmission yields a competitive advantage for MNCs over uninational corporations, which solely compete on the basis of their domestic resources, depends on three factors: (1) differences in the resource endowments between the parent country and the host country, (2) the extent of restrictions imposed on the transmission of resources through government regulations, (3) the ability of MNCs to reasonably bundle resources and to transfer them in an efficient and effective manner.⁷⁸ The latter condition is based on the presumption that for different resource differentials, different transmission structures will be most efficient. Thus, Fayerweather's efficiency criterion suggests structuring the system in a way so that transmission is precisely limited to resources of particular MNC capability.⁷⁹ According to the author, the majority of resource transmission processes within multinational corporations focuses on capabilities (e.g., managerial skills and technological competence) rather than on raw materials and labor. Moreover, he finds that an integrated organization (i.e. a multinational corporation with foreign subsidiaries) will be most successful in transferring these skills and capabilities.⁸⁰

The aspects of the theory discussed so far relate to its bi-national dimension which emphasizes optimizing the flow of resources. However, there is also a multinational dimension of the theory that focuses on optimizing the benefits of unification versus

⁷⁶ Cf. Welge and Holtbrügge (2001), p. 81.

⁷⁷ Ramaswamy (1990), p. 28.

⁷⁸ Cf. Fayerweather (1975), pp. 38-81.

⁷⁹ Cf. Fayerweather (1978), p. 257.

⁸⁰ Cf. Fayerweather (1975), p. 65 and p. 79.

fragmentation fostered by the diversity of national environments. It is this latter part of the theory that provides a more holistic picture of MNC activity.

Fragmenting influences may encourage the management of multinational corporations to tailor operations to the unique local requirements of individual host countries. Amongst others, these fragmenting influences encompass local culture, economic forces (e.g. differences in market structures, customer tastes, factor costs, skills of employees), and nationalism. If these influences were given full play, the ultimate result would be a family of foreign units, with substantial diversity in a number of phases of operations. In contrast, unifying influences call for the substantial standardization and rationalization of MNCs' activities. Unifying influences arise from several sources. In the first instance, there is considerable value in unifying the capabilities embodied in the parent company, especially its technological competence and managerial know-how. They can be most effectively drawn upon to strengthen the operations of foreign subsidiaries when the activities of these subsidiaries fall in the same pattern. Moreover, the ability of MNCs to realize economies and efficiency gains due to their global span arises largely from the capabilities for specialization of activities in individual units with substantial interchange among them. Thus, the possibility for economies and greater efficiency depends upon a high degree of uniformity in the activities of the units composing the structure. Finally, it is reasonable to assume that all nations will have similar characteristics once they have reached advanced stages of industrial development. This assumption provides a sound basis for striving towards greater uniformity in activities across many countries.⁸¹

The main conclusion from the resource transmission theory is that multinational corporations may benefit from transferring resources between countries. However, their competitive advantage over domestic firms largely lies in their ability to standardize activities across countries. As Fayerweather notes: "The unifying influences represent a substantial portion of the basic rationale for the existence of the MNC and the source of a considerable part of its competitive advantage".⁸²

⁸¹ Cf. Fayerweather (1978), pp. 215-216.

⁸² Fayerweather (1978), p. 215.

2.1.2.2 The Resource-Based View of the Firm and Organizational Learning

A related strand of theory is the resource-based view of the firm, which employs an internal perspective to identify the types of resources that may provide a sustainable competitive advantage. Its principal approach is to see the firm not through its activities in the product market but as a unique bundle of resources and capabilities.⁸³ In this context, resources can broadly be defined as stocks of available factors that are owned or controlled by the firm and, thus, include both tangible and intangible assets. They consist, *inter alia*, of know-how that can be traded (e.g., patents and licenses), financial or physical assets (e.g., property, plant, and equipment), and human capital. Capabilities, however, refer to a firm's capacity to deploy resources using organizational processes, to effect a desired end. They are information-based, tangible or intangible processes that are firm-specific and are developed over time through complex interactions among the firm's resources.⁸⁴ Unlike resources, capabilities are based on developing, carrying, and exchanging information through the firm's human capital.⁸⁵

In order to generate a sustainable competitive advantage, the described resources and capabilities must be difficult to trade, rent-yielding, non-imitable, and non-substitutable.⁸⁶ Especially the issue of imperfectly imitable resources has received much attention in the literature. Several authors posit that an isolating mechanism that protects firm profits from erosion can be found in the limited ability of managers to influence and control all the attributes and characteristics of their companies. This limitation makes some firm resources (especially organizational knowledge) imperfectly imitable, and thus potential sources of sustained competitive advantage. Tallman agrees to this notion by stating that "managerial limitations are critical to sustained competitive advantage because the isolating mechanisms protecting any firm are the result of uncertain information and limited rationality".⁸⁷ In addition, Barney identifies three reasons as to why firm resources may be imperfectly imitable: (1) the ability of a firm to obtain a resource is dependent upon unique historical conditions, (2) the link between resources possessed by a firm and a firm's sustained competitive advantage is causally ambiguous, or (3) the resource generating a firm's advantage is socially complex. Any one or a combination of the three

⁸³ Cf. Wernerfelt (1984), pp. 171-180.

⁸⁴ Cf. Amit and Schoemaker (1993), p. 35.

⁸⁵ Itami (1987) refers to information-based capabilities as "invisible assets".

⁸⁶ See Tallman (1992), p. 460.

⁸⁷ Tallman (1992), p. 460.

reasons makes firm resources and capabilities difficult to imitate.⁸⁸ Socially complex resources and capabilities can be found, for example, in the interpersonal relationships among managers in a firm, a firm's culture, or a firm's reputation among suppliers and customers. Competitors' recognition that such socially complex resources (e.g. quality relations among managers) can improve a firm's efficiency and effectiveness does not necessarily imply that they can engage in a systematic effort to also create them. As Collis points out, firms are idiosyncratic in the resource-based view because they accumulate different physical and, even more importantly, different intangible organizational assets throughout their history.⁸⁹ Thus, competing firms trying to imitate these assets have to go through the same time-consuming process of irreversible investment or learning as the originating firm.⁹⁰ The important role of organizational assets (capabilities) in building a firm's sustained competitive advantage has also been highlighted in the concept of core competencies. Prahalad and Hamel propose that, in the long run, competitiveness will derive from management's ability to build core competencies at a faster pace and at lower costs than competitors. They define core competencies as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies".⁹¹ Therefore, core competencies rely on communication and the involvement of many levels of people in all (functional) areas.

Barney summarizes the discussion of the resource-based view of the firm in the following statement: "What becomes clear is that firms cannot expect to "purchase" sustained competitive advantage on open markets. Rather, such advantages must be found in the rare, imperfectly imitable, and non-substitutable resources already controlled by a firm".⁹²

Although the resource-based view relates to firms in general, it can also be successfully applied to the multinational corporation. Tallman posits that a perspective truly differentiating firm-specific characteristics needs to be applied in order to explain MNC activities. According to the resource-based view, he locates competitive advantage with the firm-specific resources that include tangible as well as intangible assets. Firm-specific resources are the bases for any economic rent that may accrue to the multinational corporation and approximately represent what Dunning means by ownership advantages of

⁸⁸ Cf. Barney (1991), p. 107.

⁸⁹ Cf. Collis (1991), p. 50.

⁹⁰ Cf. Dierickx and Cool (1989), p. 1509.

⁹¹ Cf. Prahalad and Hamel (1990), pp. 81-82.

⁹² Barney (1991), p. 117.

the MNC.⁹³ Based on these unique skills and assets, each MNC will devise a specific strategy which is best suited for a particular host market environment. Thus, strategies and firm-specific resources interact to generate competitive advantages for the firm. Consequently, only those firm-specific resources that are compatible with the characteristics of a given market are likely to generate economic rents, and to be influential in the decision to invest overseas. Tallman proposes that MNCs employ an internalized structure in the form of foreign direct investment in order to better control the execution of strategy and the application of these critical resources⁹⁴. Thus, compared to their domestic rivals, MNCs may be better able to extract rents from their unique resources and capabilities in foreign markets.

Moreover, after a period of operation in any market, new firm-specific resources may develop in the host market, which were not among the original set of parent resources, and which may not be available outside of that market.⁹⁵ Thus, the MNC may benefit from its international presence due to its ability to access new valuable resources and capabilities that were developed in foreign markets. These market-specific resources add to the MNC's stock of strategic assets, thereby contributing to its competitive advantage over purely domestic companies. Similarly, Collis applies the resource-based view to the multinational corporation and notes that "successful firms possess a tacit collective capability to both innovate and accommodate external change in a way that enables them to continually improve". Such a capability represents dynamic routines that facilitate innovation, foster collective learning, and transfer information and skills within the organization. Further, it can be a source of sustainable competitive advantage in its own right.⁹⁶ Welge and Holtbrügge confirm this notion. In their point of view, the competitive advantage of MNCs lies in the ability to develop strategic resources and capabilities locally in the diverse host country environments and to subsequently recombine those valuable assets. The latter, in turn, triggers global learning processes.⁹⁷

In summary, three important implications can be drawn from the application of the resource-based view to the multinational corporation: (1) MNCs must possess unique resources and capabilities in order to extract rents from their international presence; (2)

⁹³ Cf. Tallman (1992), pp. 459-460.

⁹⁴ Cf. Tallman (1992), p. 461; Tallman (1991), p. 71.

⁹⁵ Cf. Tallman (1991), p. 71.

⁹⁶ Cf. Collis (1991), p. 52.

⁹⁷ Cf. Welge and Holtbrügge (2001), p. 87.

MNCs are better able to control the execution of strategy and the application of critical resources in foreign markets through foreign direct investments; (3) Due to their international presence, MNCs may gain access to new valuable resources and capabilities that are developed in host markets and are not available elsewhere.

Several authors have also emphasized the crucial role that foreign subsidiaries may play in the generation of MNCs' competitive advantages. While most existing theories assume that the key competencies to be exploited in foreign markets reside at the center of the MNC, authors such as Ghoshal propose that the key asset of the MNC is the diversity of environments in which it operates. The multinational corporation is exposed to multiple stimuli that trigger the development of diverse capabilities. Furthermore, environmental diversity also provides the MNC with a broader learning opportunity than is available to purely domestic firms. The resulting diversity of resources and competencies may enhance the firm's ability to create joint innovations, and to exploit them in multiple locations. It also increases the probability of firm survival by enhancing the chances that the MNC will be in possession of the capabilities required to cope with future challenges.⁹⁸ Birkinshaw et al. provide support for the emerging view that MNC subsidiaries significantly contribute to the creation of firm-specific advantage. They also regard foreign subsidiaries as heterogeneous bundles of resources. While some of these resources are "location bound" (e.g., the sales force), others are not and can therefore be leveraged by the corporation in other countries. Thus, when combined with other resources available in the MNC, these non-location-bound resources become part of the firm-specific advantage of the multinational corporation.⁹⁹ However, they must still satisfy the condition of being valuable, rare, and imperfectly imitable as postulated by the resource-based view of the firm. As MNCs may benefit from the reciprocal transfer of resources and capabilities between the parent company and its foreign subsidiaries, it becomes clear that "international subsidiaries shouldn't just be pipelines to move products". In fact, "their own special strength can help build competitive advantage".¹⁰⁰

A neglected aspect so far has been the question whether multinational corporations are able to efficiently and effectively transfer resources and skills across their diverse organizational units. This ability represents a prerequisite in order to realize the benefits

⁹⁸ Cf. Ghoshal (1987), p. 431.

⁹⁹ Cf. Birkinshaw et al. (1998), p. 224.

¹⁰⁰ Bartlett and Ghoshal (1986), p. 89.

arising from the application of unique assets in foreign markets, collective learning, and joint innovation. In their study of multinational corporations Kogut and Zander find that firms specialize in the transfer of knowledge that is difficult to understand and codify. Moreover, "firms are able to transfer these technologies at a lower cost to wholly owned subsidiaries than to third parties".¹⁰¹ Applying internalization and transaction cost theory, Teece confirms this contention. Firms are offered an incentive to engage in foreign direct investment due to the public good characteristics of proprietary information including technological, managerial and organizational know-how. The intra-firm transfer of these types of know-how to a foreign subsidiary is advantageous over autonomous trading because it avoids the need for continuous negotiations and alleviates the hazards of opportunism. Thus, one of the most important efficiency properties of the MNC is that it provides an organizational mode capable of transferring knowledge and skills in an efficient manner.¹⁰² Similarly, Gupta and Govindarajan state that "the primary reason why MNCs exist is because of their ability to transfer and exploit knowledge more effectively and efficiently in the intra-corporate context than through external market mechanisms".¹⁰³

2.1.2.3 Theory of Operational Flexibility

Kogut applies an integrated perspective that views the MNC as a multinational network providing the operational flexibility to effectively exploit changes in the international environment. The distinctiveness of the international environment in which MNCs operate derives not only from larger market size but, more importantly, from the variance in country environments.¹⁰⁴ Sources of environmental volatility in the international context are, for example, new product entries, new government policies, or new international competitors. By developing the appropriate operational flexibility, MNCs are able to exploit these environmental changes and coordinate an international response. In principle, operating flexibility derives from the coordination of flows within the multinational network and its value rests on exploiting differential factor, product, and capital markets as well as the enhanced leverage to respond to competitors' and governments' threats. Thus,

¹⁰¹ Cf. Kogut and Zander (1993), p. 636.

¹⁰² Cf. Teece (1981), pp. 7-10.

¹⁰³ Cf. Gupta and Govindarajan (2000), p. 473.

¹⁰⁴ Cf. Kogut (1989), pp. 383-389.

compared to their purely domestic counterparts, MNCs may benefit from arbitrage and leverage opportunities, which Kogut describes as two distinct kinds of flexibility.¹⁰⁵

Arbitrage opportunities may assume four different forms. First, the MNC may arbitrage differences in factor markets by shifting production. This way, it can capitalize on differences in variable costs between plants located in separate countries, especially labor. Further, the MNC is able to exploit differences in productivity levels, factor endowments, and changes in exchange rates. Second, when operating in two countries with different rates of taxation on corporate income, a multinational corporation can (unlike the entirely domestic corporation) adjust its mark-up on intra-company sales of goods and services in order to realize profits in the low tax jurisdiction. Thus, the MNC is able to minimize its tax bill through adjustments of transfer prices and choice of remittance channels. Third, arbitrage opportunities also arise to the MNC from imperfections in financial markets. Specifically, it may benefit from interest rate differentials between countries, government subsidies (e.g., export credits, guaranteed loans, tax holidays, etc.), and the avoidance of barriers to international capital flows. Fourth, multinational corporations may conduct information arbitrage as a result of their global learning processes. Scanning innovations in various foreign markets, the MNC may benefit from transferring new products and processes from one location to the next.

Arbitrage opportunities reflect the exploitation of price differentials in assets, products, or factors of production between markets. In contrast, leverage opportunities refer to the creation of market or bargaining power because of the global position of the MNC. This power results from the ability of multinational firms to aggressively cut prices in one region or market while relying on profits earned in other regions of the world. This ability clearly puts them at an advantage over domestic firms as exemplified by Kogut. He notes that "in response to Michelin's entry into North America, Goodyear dropped its prices in Europe, forcing the family-held French company to slow its investment program and, eventually, to issue outside equity".¹⁰⁶ This option would not have been available to a purely domestic company. In addition, MNCs can exercise greater power towards governments or rival firms by forming coalitions between suppliers or between a group of competitors. They are also able to better enforce equity claims or contracts in national markets due to their dispersed operations.

¹⁰⁵ Cf. Kogut (1985b), pp. 27-38.

¹⁰⁶ Kogut (1985b), p. 34.

The multinational network hypothesis as postulated by Kogut describes the benefits of multinationality as the ownership of dispersed international operations that provide valuable operating flexibility through multinational coordination. Due to this flexibility, MNCs are frequently regarded as consisting of a valuable set of (real) options that derives its value from the uncertainty in the international environment. For example, Kogut and Kulatilaka note that "the option application to multinationality is especially apt, because the high variance of international markets increases the value of operating flexibility and global competition".¹⁰⁷ The theory of operational flexibility therefore conveys a positive view of the risks involved in international markets. As opposed to purely domestic firms, uncertainty increases the opportunities available to MNCs in their investments and operations. From an international management perspective, the challenge is then not to simply implement headquarters' wishes in a local market, but rather to create organizational structures and systems that will allow capture of opportunities in different national environments.

2.2 Theories on the Costs of Corporate Internationalization

While the theories discussed so far concentrate on the benefits arising from corporate internationalization, researchers in international business (e.g., Kindleberger) have long theorized that there may also be additional costs of operating at a distance. These costs are commonly referred to as "liability of foreignness" and arise from the unfamiliarity of the environment, from cultural, political, and economic differences, and from the need for coordination across geographic distance and time zones.¹⁰⁸ Generally speaking, the liability of foreignness either arises from the external business or intra-company environment. Both of these major sources will be briefly discussed in the next sections.

2.2.1 Costs of Internationalization Arising from the External Business Environment

In principle, additional costs may accrue to the MNC from the external business environment due to political risk, financial risk, and market-related hazards. Especially the political environment has become increasingly important to managerial decision-making and the achievement of corporate goals.¹⁰⁹ Consequently, political risk

¹⁰⁷ Kogut and Kulatilaka (1994), p. 135.

¹⁰⁸ Cf. Zaheer (1995), p. 341-343.

¹⁰⁹ Cf. Nigh (1986), p. 99.

has been of great interest to researchers in international business. Yet, despite the frequent mentioning of political risk in the literature, no consensus on the precise definition of the term has evolved. Accordingly, Fitzpatrick identifies several operational definitions in his literature review.¹¹⁰ The most common definition of political risk is in terms of (usually host) government interference with business operations. National governments undertake actions that either interfere with or prevent business transactions, or change the terms of agreement. Moreover they may cause the confiscation of wholly or partially owned business property.¹¹¹

A second major category of definitions identifies political risk in terms of political events or constraints imposed upon firms. Political events typically are changes in government or heads of state as well as direct violence. They represent environmental factors that cause political instability. According to Brewer and Rivoli, there are at least three types of political instability, which encompass the frequency of government regime changes, the political legitimacy of a country's political system, and armed conflicts.¹¹² Moreover, Nigh shows that both intra-nation political events (e.g., coup d'état in the host country) and inter-nation events (e.g., the host country breaking diplomatic relations with the home country) have an effect on foreign direct investment. The latter is due to the fact that many host-country officials and other citizens do not distinguish between, for example, the interests of the U.S. government and those of the U.S. foreign direct investor.¹¹³ Constraints on operations may be imposed on the specific industry or firm level. They typically include expropriation, restrictions on remittance of profits, discriminatory taxation, and public sector competition.

Robock's view of political risk is representative for the third category of definitions, which takes deeper consideration of the concept of political risk in terms of an environment rather than in isolation. In his perspective, political risk in business exists when discontinuities, which are difficult to anticipate, occur in the business environment as a result of political change. These changes in the business environment constitute a political risk, if they have the potential to significantly affect the profit or other goals of a particular company. In contrast, "political fluctuations [i.e. gradual changes that are not unexpected] which do not change the business environment significantly do not represent risk for international

¹¹⁰ Cf. Fitzpatrick (1983), pp. 249-251.

¹¹¹ Cf. Kobrin (1979), p. 67.

¹¹² Cf. Brewer and Rivoli (1990), pp. 358-360.

¹¹³ Cf. Nigh (1986), pp. 99-106.

business."¹¹⁴ While the above definitions emphasize the negative aspects of political risk, it should be noted that MNCs may as well benefit from the differences and volatility in their diverse political environments. For example, Kobrin notes that "instability is a property of the environment and risk of the firm." It represents the possible variation of firm-specific variables from their expected values due to environmental events. Risk, however, implies that there may be positive as well as negative variations so that "it can result in gains as well as losses."¹¹⁵ Moreover, it should be recognized that MNCs do not merely react to given conditions in their political environments but rather try to shape them to their advantage.¹¹⁶ However, it is the negative dimension of political risk (uncertainty) that is of interest when discussing the additional costs that may accrue to the MNC from the external business environment.

Besides political risk, multinational corporations may also suffer from increased financial risk and market-related hazards. Financial risk mainly refers to foreign exchange risk and inflation. While all firms may face foreign exchange exposure, this exposure may increase as firms go international. Especially when the foreign operations of a multinational corporation are financed by domestic funds, the value of the firm's foreign operations is significantly affected by changing expectations about the value of a given currency. If strict purchasing power parity does not hold, this results in an increase in the risk of the firm.¹¹⁷ Market-related hazards include, *inter alia*, consumer ethnocentricity, consumer taste divergence, and low purchasing power. While these costs may not be constant over time, they may still present "high fixed costs at the outset of foreign expansion."¹¹⁸

The effects of the above risks on the MNC are two-fold. On the one hand, they may negatively impact the (absolute) values of expected cash flows. On the other hand, they may lead to an increase in systematic risk and the required rate of return¹¹⁹. Kobrin confirms this view by stating that "the decision-maker must consider the impact of politics on both the expected value of cash flows and their distribution (or business risk)."¹²⁰

¹¹⁴ Cf. Robock (1971), p. 8.

¹¹⁵ Cf. Kobrin (1979), pp. 70-71.

¹¹⁶ Cf. Boddewyn (1988), pp. 341-363.

¹¹⁷ Cf. Reeb, Kwok, and Baek (1998), p. 266.

¹¹⁸ Cf. Ruigrok and Wagner (2003a), p. 5.

¹¹⁹ Cf. Butler and Joaquin (1998), pp. 599-607; Reeb, Kwok, and Baek (1998), pp. 263-279.

¹²⁰ Kobrin (1979), pp. 72-73.

Increases in political and financial risk may thus offset the advantages of lower earnings volatility proclaimed in portfolio diversification theory. As previously indicated, changes in systematic risk should be reflected in the valuation of MNCs' shares. Consequently, based on the greater exposure to political and financial risk as well as to market-related hazards, one may expect to observe lower valuations of MNC shares relative to those of purely domestic firms (*ceteris paribus*).

2.2.2 Costs of Internationalization Arising from the Intra-Company Environment

The literature also suggests that intra-company phenomena are a source of additional costs that accrue to multinational corporations. Rising degrees of internationalization hamper the company's management to effectively coordinate and control its activities and also pose difficulties to the administrative systems in managing dispersed and culturally distinct markets and human resources. As Hitt et al. point out, "international diversification creates considerable managerial complexity."¹²¹

Accordingly, Zaheer also identifies two major components of the liability of foreignness, that relate to intra-company costs. A multinational corporation may suffer from firm-specific costs that result from a particular company's unfamiliarity with and lack of roots in a local environment. Moreover, it may incur costs that are directly associated with spatial (geographical) distance. These latter costs include the costs of travel, transportation, coordination, and communication over distance and across time zones.¹²² Gomes and Ramaswamy support the view of additional intra-company costs that arise from increasing corporate internationalization.¹²³ They base their argument on the prior finding that organizations seeking to establish a presence overseas tend to first narrow their choices to locations that are geographically and culturally close to their home country¹²⁴. By doing so, organizations limit the costs that they would otherwise incur should they move into unfamiliar territory. The rationale behind this argument is that market familiarity presupposes similar administrative mechanisms, consumer tastes and distribution systems. Therefore, organizations can better employ their home-based skills and resources to

¹²¹ Cf. Hitt et al. (1994), p. 311.

¹²² Cf. Zaheer (1995), p. 343.

¹²³ Cf. Gomes and Ramaswamy (1999), 174-178.

¹²⁴ See, for example, Johanson and Vahlne (1977), pp. 23-32.

achieve economies of scale and/or scope without huge cost increases. However, as firms continue to internationalize, they have to move into geographically and culturally remote areas. Hence, the initial advantage of limiting the costs arising from international expansion is lost. For example, they have to build complex and costly organizational structures such as the product/country matrix. Furthermore, their subsidiaries are assigned differentiated roles based on their specific competencies and locations, which involves complex intra-organizational flows of products, capital, personnel, knowledge, and information. As Gomes and Ramaswamy conclude, "orchestrating the far-flung subsidiaries to adopt unified action to enable the MNC to realize economies of scale/scope can prove to be quite daunting a task with a high price tag attached."¹²⁵ Thus, due to their international diversification, multinational corporations may face substantial costs of complexity and coordination.

Numerous researchers consider the additional costs associated with corporate internationalization as the bureaucratic costs that arise from agency problems within the MNC. Principally, an agency relationship consists of "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent."¹²⁶ However, the agent will not always act in the best interest of the principal because both parties are assumed to be utility maximizers. This goal incongruence lies at the heart of the agency problem. The principal has to costly monitor the agent's activities and provide appropriate incentives in order to limit divergences from his interests. In addition, in some (simple) situations resources may be directly invested (bonding costs) to guarantee that the agent will not take certain actions that would harm the principal or to ensure that the principal will be appropriately compensated. In more complex situations, however, it may be difficult to monitor or verify agent behavior because of information asymmetries. In such situations, the agent has information that is not available to the principal due to his more specialized knowledge regarding task performance or a high level of managerial discretion.¹²⁷ Thus, in most agency relationships there will still be some divergence between the agent's decisions and those decisions that would maximize the principal's welfare, even though the principal incurs monitoring and bonding costs. This divergence results in a residual loss in welfare due to agency problems. Consequently, Jensen and

¹²⁵ Gomes and Ramaswamy (1999), p. 177.

¹²⁶ Cf. Jensen and Meckling (1976), p. 308.

¹²⁷ Cf. Roth and O'Donnell (1996), p. 679.

Meckling define agency costs as the sum of monitoring costs, bonding expenditures, and the residual loss¹²⁸.

Agency theory can be easily applied to the multinational corporation. The relationships between headquarters and foreign subsidiaries can be regarded as principal-agent relationships because headquarters delegate work and responsibilities to their subsidiaries. Nohria and Ghoshal further specify the attributes of the headquarters-subsidiary relationship that give rise to agency problems. "As the principal, the headquarters cannot effectively make all the decisions in the MNC since it does not possess and must, therefore, depend on the unique knowledge of the subsidiaries. At the same time, the headquarters cannot relinquish all decision-rights to the subsidiaries since local interests of subsidiaries may not always be aligned with those of the headquarters or the MNC as a whole."¹²⁹ The issue for the management of MNCs therefore becomes to develop a control structure that provides headquarters with the information necessary to detect agent (subsidiary) opportunism. Sources of such information include the application of bureaucratic or production controls, e.g., rules and budgets to monitor subsidiary performance.¹³⁰ However, the effective monitoring of subsidiaries imposes costs upon multinational corporations and may still not avoid residual losses in their welfare. Thus, due to their complex organizational structures, MNCs are especially prone to incur bureaucratic/agency costs.

A final source of the costs that may accrue to multinational corporations can be found in organizational constraints. As discussed earlier, MNCs may benefit from their ability to engage in collective learning processes. Yet, an important difference between such organizational learning and individual learning is that the former depends on information sharing between individuals. "Only through communication will individual insights become accessible to others, making cross-fertilization between ideas and knowledge possible."¹³¹ Thus, organizational learning in multinational corporations depends on the links between their various organizational units. However, the greater the number of subunits (i.e. foreign subsidiaries), the more difficult and costly it is to achieve coordination between them. Moreover, "if a firm is engaged in many businesses, interrelations between the various businesses fostering mutual learning and capability building are no longer feasible; the

¹²⁸ Cf. Jensen and Meckling (1976), p. 308.

¹²⁹ Nohria and Ghoshal (1994), p. 492.

¹³⁰ Cf. Jones and Hill (1988), p. 163.

¹³¹ Barkema and Vermeulen (1998), p. 8.

amount of information to be processed and assimilated exceeds the individuals' and organization's cognitive limits".¹³² As Barkema and Vermeulen point out, the same is true for firms that expand into many countries. Therefore, the MNC will face organizational limits on information sharing that may seriously hamper the process of collective learning and capability building suggested by other authors. Vermeulen and Barkema adapt a similar behavioral perspective. They state that "the extent to which organizations are able to realize the benefits [of international expansion] is constrained by their capacity to handle and absorb the complexities that accompany international expansion."¹³³ The complexities they refer to can be found in the need to learn how to operate in a variety of different settings as well as the need to adapt systems, processes and organizational structures to the international settings. For example, new subsidiaries have to be identified, built up, and integrated into the firm. Based on the theories of absorptive capacity and time compression diseconomies they argue that every organization can handle only a limited amount of complexity at a time. Thus, increasing and ongoing international expansion overstretches the organization and leads to negative effect on firm profitability.

2.3 Summary of the Benefits and Costs of Corporate Internationalization

Several economic theories provide potential sources of the benefits that arise to companies from corporate internationalization. For instance, companies may optimize their overall cost position by engaging in foreign direct investment. In this way, they are able to locate certain value chain activities in countries that possess a comparative advantage in the relevant factors of productions. Thus, MNCs can benefit from differences in both factor costs (e.g., wages, materials, capital charges) and the quality of inputs (e.g., human resources) between countries. Moreover, firms that expand overseas may benefit from advantages that they can transfer from one country to the other but which cannot be acquired by local firms. These specific advantages of MNCs include differentiated products, special marketing skills, patented or unavailable technology, as well as the skills of managers organized into firms. In addition, multinational corporations are better able to realize economies of scale. Due to their larger size, they can switch more easily to large-scale production thereby reaching optimal scale production. This results in internal

¹³² Barkema and Vermeulen (1998), p. 8.

¹³³ Vermeulen and Barkema (2002), p. 639.

economies of scale that lower the average production costs. Furthermore, international expansion allows to realize external economies of scale through vertical integration which implies enhanced coordination of the various stages of the value chain. All of the described advantages either contribute to increased differentiation or higher degrees of efficiency that finally result in enhanced profitability. An important advantage of multinational corporations over purely domestic firms can also be found in their ability to internalize the markets for some of their specific assets through foreign direct investment. In this way, they can overcome natural market imperfections or the costs imposed by governments to international trade through tariff and non-tariff barriers. Especially the internalization of the markets for intangible assets by MNCs (e.g., production skills, patents, managerial skills, or marketing abilities) has received much attention in the literature. By this means, multinational corporations are able to reduce transaction costs and to better protect the profits that arise from these unique assets. In addition, they are enabled to realize economies of scale from these intangible assets because their value increases in direct proportion to the scale they are applied to. Moreover, multinational corporations benefit from economies of scope that arise from inputs that are shared or utilized jointly. The realization of such economies depends largely on internalization through foreign direct investment because it is usually accompanied by transaction difficulties. Within the scope of economic theories, a final benefit of corporate internationalization is provided by portfolio diversification theory. Corporate international diversification is supposed to be associated with a reduction in the systematic risk of the firm. This implies that multinational corporations should face lower expected bankruptcy costs, and therefore have a higher capacity to carry debt and lower costs of capital. These advantages are also to be reflected in the valuation of MNCs' shares as compared to those of purely domestic companies.

The potential sources of internationalization benefits are complemented by authors adopting an organizational perspective. They emphasize the important role of MNCs' unique firm-specific resources and capabilities (e.g., managerial skills and technological competence) in the generation of sustained competitive advantage. Multinational corporations may gain an advantage over domestic firms by transferring these resources and capabilities between countries and unifying (i.e. standardizing) their application in foreign markets. In this connection, the internalized structure of MNCs in the form of foreign direct investment allows to better control the application of these critical resources thereby enabling the MNC to better extract. Of special value are those resources and

competences that result from complex social interactions within the multinational corporation. Such organizational assets encompass, for example, the interpersonal relationships among managers within the firm and the ability to engage in collective (global) learning processes. Especially the latter constitutes a crucial element of the competitive advantage MNCs may have over domestic firms. Their diversity of resources and capabilities provides them with broader learning opportunities and enhances their ability to create joint innovations and exploit them in multiple locations. Thus, multinational corporations benefit from their international presence because of their better access to new valuable resources and capabilities that were developed in foreign markets. Moreover, MNCs provide an organizational mode capable of transferring these skills and resources in an efficient manner. Foreign subsidiaries therefore contribute significantly to the competitive advantage of firms. Last but not least, multinational corporations may be viewed as a network providing the operational flexibility to effectively exploit changes in the international environment. This operating flexibility derives from the coordination of flows within the multinational network and its value rests on arbitraging differential factor, product, and capital markets as well as the enhanced leverage to respond to competitors' or governments' threats. For example, a multinational corporation may arbitrage differences in factor costs between countries (especially labor) by shifting production. Thus, by shifting resources and activities across borders once the conditions in certain markets change, the firm is able to find its optimal setup at any point in time.

Despite the multitude of potential benefits, corporate internationalization has also been associated with additional costs. These costs may stem from the external business environment as well the intra-company environment. In principle, external costs to the MNC encompass political risk, financial risk, and market-related hazards. While political risk mostly refers to political events (e.g., changes in governments or heads of state) or constraints imposed upon firms (e.g., expropriation, restrictions on remittance of profits, discriminatory taxation), financial risk mainly refers to foreign exchange risk and inflation. Market-related hazards include for example consumer ethnocentricity or consumer taste divergence. The effect of all of these external risks on the MNC is twofold. First, they may negatively affect the (absolute) value of the expected cash flows. Second, they may lead to an increase in the systematic risk of the MNC, thereby offsetting the advantages of lower earnings volatility proclaimed in portfolio diversification theory. Because changes in the systematic risk of a company are supposed to be reflected in the valuation of its shares, the greater exposure of MNCs to the above risks may also lower the valuation of their shares.

Additional intra-company costs of MNCs can be directly associated with spatial distance. These costs include the costs of travel, transportation, coordination and communication over geographic distance and across time zones. Moreover, the headquarters-subsidary relationships within MNCs can be regarded as principal-agent relationships. Thus, additional costs may be incurred as a consequence of the potentially incongruent goals of headquarters and foreign subsidiaries. The management of multinational corporations has to develop costly control structures to detect agent (subsidiary) opportunism and to limit divergence from the interests of headquarters or the MNC as a whole. Such control structures may encompass bureaucratic or production controls, e.g., rules and budgets to monitor subsidiary performance. While the effective monitoring of subsidiaries imposes costs on the MNC, it may still not completely avoid residual losses in the company's welfare that are caused by diverging interests. Finally, companies that expand internationally may face organizational constraints. One such constraint can be found in organizational limits on information sharing that may seriously hamper the process of collective learning and capability building. In addition, organizations are constrained in their capacity to handle and absorb the complexities that accompany international expansion. In this context, complexities mainly refer to the need to adapt systems, processes, and organizational structures to the international settings. For example, new subsidiaries have to be identified, built up, and integrated into the firm. Because organizations can only handle a limited amount of complexity at a time, increasing and ongoing international expansion may overstretch the organization and lead to negative effects on corporate performance.

The net effect of the benefits and costs of corporate internationalization on firm performance has been subject to numerous research studies. These studies try to identify the internationalization-performance relationship and will be reviewed in the next chapter.

3 THE INTERNATIONALIZATION-PERFORMANCE RELATIONSHIP

The trade-off between the suggested benefits and costs of corporate internationalization has bothered scholars of international business and finance/economics for decades. They have tried to determine the net effect in numerous empirical studies that examine the so-called internationalization-performance relationship. A review of the literature on this strand of research is provided below.

3.1 Outline of Empirical Studies on the Internationalization-Performance Relationship

Empirical studies reach back until the 1970s and have employed different approaches to examine the topic. Earlier studies adopt a "comparative" approach by contrasting a group of multinational corporations with a sample of companies that are domestic in nature. In doing so, these studies attempt to isolate the unique performance benefits that multinational corporations might enjoy over purely domestic firms. In contrast, more recent empirical studies largely employ a "control" approach that focuses exclusively on MNCs and evaluates the relative performance outcomes associated with various levels of multinationality. Consequently, multinationality (internationality) is conceptualized as a continuous variable. Moreover, these studies frequently use multivariate analysis to control for the extraneous influences of firm size, research and advertising intensity, or industry membership. In this way, the relationship in question can be examined without confounding influences.¹³⁴ Typical measures of the degree of multinationality (internationalization) are the percent of foreign sales or foreign assets as well as the number of overseas subsidiaries.

In addition, empirical studies can be distinguished based upon the performance-measures they employ. Scholars of finance and economics explore the internationalization-performance relationship from the viewpoint of investors. Therefore, they assess corporate performance in terms of stock market-based measures such as Tobin's q or P/E ratios. In contrast, scholars of international business and management tend to use accounting-based measures of performance. Amongst others, these measures include the return on sales (ROS), the return on assets (ROA), and/or sales growth rates.¹³⁵

¹³⁴ Cf. Grant (1987), p. 79; Ramaswamy (1995), pp. 233-238.

¹³⁵ Cf. Osegowitsch and Zalan (2005), p. 6.

However, the most important distinction between the existing empirical studies on the internationalization-performance relationship is based upon the assumed form of the relationship. Ruigrok and Wagner conduct a meta-analytic review of the literature and identify three types of associations between corporate internationalization and performance that are discussed below.¹³⁶

In earlier studies, researchers assumed that either the benefits or costs of international expansion dominate throughout the internationalization continuum, i.e. from low to high degrees of internationalization. Consequently, they examined a linear association that resulted in either monotonically increasing or decreasing returns from continued foreign expansion. In contrast to this linear internationalization-performance nexus, many researchers began to more explicitly account for a possible trade-off between the benefits and costs of corporate internationalization by exploring curvilinear associations. Specifically, two types of non-linear relationships were hypothesized - quadratic and cubic curves.

Quadratic association between corporate internationalization and performance either describe a U-shaped or inverted U-shaped form of the relationship. The former suggests that performance starts to decline as firms expand internationally until it reaches a point of inflexion. Beyond this point, performance picks up and continues to improve. The underlying rationale for this type of association is that firms can learn to minimize the significant costs associated with foreign expansion over time, i.e. the costs of internationalization outweigh the benefits only until firms gain experience and learn how to deal with them. Thus, firms expanding internationally may have to go through a time of performance deterioration before experiential knowledge can lead to high performance levels. In contrast, an inverted U-shaped form of the internationalization-performance relationship suggests that performance rises monotonically with increasing multinationality until it reaches a threshold level beyond which performance monotonically declines. Researchers postulating such an association between corporate internationalization and performance argue that companies can "deploy their home-based skills and resources to achieve economies of scale and/or scope without huge cost increases" during their initial foreign market entries.¹³⁷ However, as firms continue to internationalize, they have to adapt their administrative systems to manage dispersed and culturally distinct markets. Consequently, they need to build more complex organizational structures that create

¹³⁶ Cf. Ruigrok and Wagner (2003a), pp. 6-8.

¹³⁷ Cf. Gomes and Ramaswamy (1999), p. 176.

additional costs of coordination and monitoring, which are difficult to address through organizational learning. Because these costs increase exponentially, they may well outweigh the value generated from international expansion. In sum, researchers advocating an inverted U-shaped relationship identify an "internationalization threshold" at which the "liability of foreignness" sets in and the incremental costs of foreign expansion start to outweigh the incremental benefits.

Studies exploring a cubic association between corporate internationalization and performance describe a horizontal-S shape of the relationship. In doing so, they try to reconcile the seemingly conflicting propositions of the two quadratic models. The cubic association is based on the differentiation between fixed and modest costs at low degrees of internationalization (DOI) and continuous and large costs at high DOIs. While the former costs stem from the liabilities of newness (e.g., unfamiliarity with trade laws, consumer ethnocentricity, new consumer tastes, and cross-cultural communication problems), the large costs associated with high DOIs result from the significant coordination and monitoring demands caused by increased complexity and uncertainty. Advocates of a cubic form of the internationalization-performance relationship argue that firms can learn how to minimize the initial (low) costs associated with foreign expansion so that the deterioration in firm performance is stopped and turned into an increase. However, learning how to manage the large costs associated with high degrees of internationalization is difficult to achieve and does not pay off. Consequently, at high DOIs, the marginal costs of internationalization start to outweigh the marginal benefits causing the performance increase to attenuate again and finally turn into a decrease. The result is a horizontal-S shape of the internationalization-performance relationship.

Figure 3 summarizes and visualizes the different forms of the internationalization-performance relationship described above.

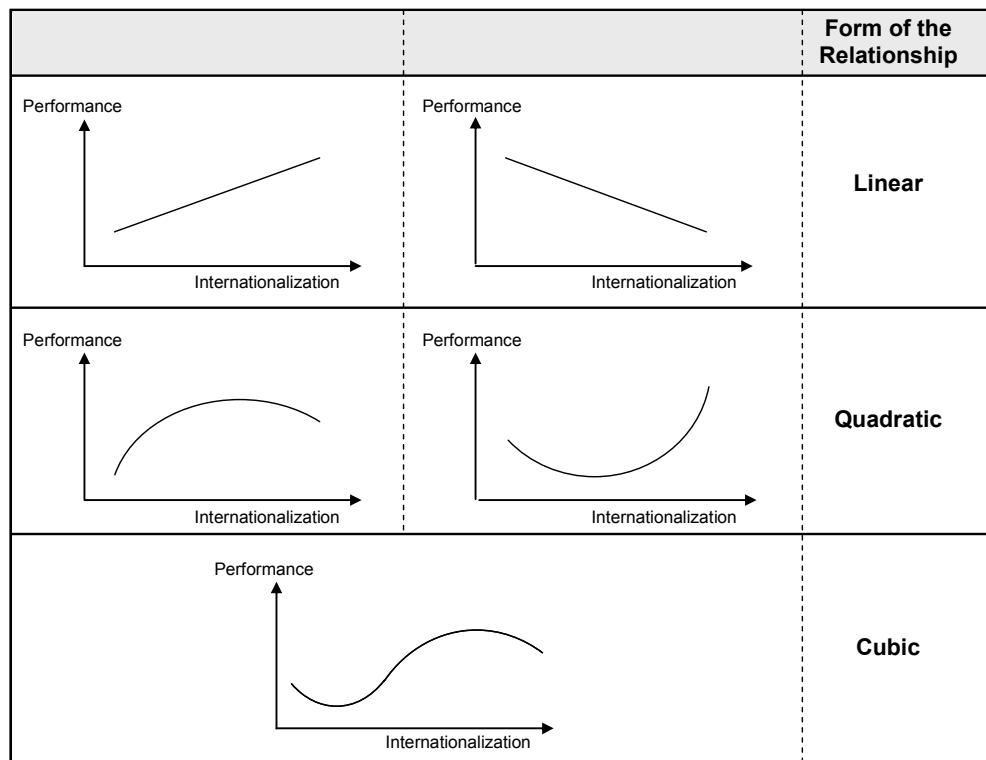


Figure 3: Different Forms of the Relationships between Internationalization and Corporate Performance found in Empirical Studies (Source: own illustration)

3.2 Survey of Past Empirical Results

After outlining the existing empirical studies in general terms, a brief survey of the individual pieces of empirical evidence on the internationalization-performance relationship is provided below.

A positive linear association between internationalization and performance is reported by Grant who examines a sample of 304 UK manufacturing firms for a 12-year period between 1972 and 1984.¹³⁸ He operationalizes multinationality as the percent of foreign sales to total firm sales and employs several accounting-based measures to assess corporate performance. These performance-measures include the return on net assets (ROA), return on equity (ROE) as well as the return on sales (ROS). Grant further employs multiple regression analysis to control for the influences of firm size and industry membership. The key finding of his study is that multinationality had a highly significant positive influence on all three profitability measures. Similarly, Delios and Beamish demonstrate that geographic scope is positively associated with firm profitability, even when the competing effect of proprietary assets (i.e. investments in R&D and advertising) on firm performance

¹³⁸ Cf. Grant (1987), pp. 79-89.

is accounted for.¹³⁹ They define geographic scope as the number of foreign direct investments a firm has made and the number of countries in which FDI has occurred. Their performance measures include the returns on assets, equity, and sales. Bühner also finds a positive linear relationship between multinationality as measured by a regional (sales-based) entropy index and both accounting-based and market-based firm performance.¹⁴⁰ In his study, stock market-based firm performance is assessed using Jensen's alpha.

In contrast, several authors find a (linear) negative association between corporate internationalization and performance. For example, Siddharthan and Lall report that their empirical analysis of 74 U.S. manufacturing firms for the time period between 1976 and 1979 indicated that multinationality exercised a uniform negative effect on sales growth. They measure multinationality as the ratio of foreign affiliate sales to total company sales and further control for the influence of firm size, industry membership, and intangibles assets (R&D and advertising).¹⁴¹ Moreover, Chang and Thomas find that changes in the geographic diversity of companies (measured in terms of foreign sales) negatively affect the growth in profitability.¹⁴² When following a "comparative" approach, Severn and Laurence find that foreign direct investors outperform domestically oriented manufacturing firms in term of their return on assets. However, when defining internationalization as a continuous variable (percent of foreign assets to total assets), they find a negative association between corporate internationality and firm performance.¹⁴³ Denis et al. examine the effect of global diversification on firms' excess market value and find that, overall, global diversification is associated with reduced value. Using univariate analysis they discover that globally diversified companies on average show negative excess values which differ significantly from those of firms that are not globally diversified. This negative association between corporate internationalization and performance is confirmed by a multivariate regression test that controls for intangibles assets (specifically, R&D and advertising). The dummy variable measuring the "multinational status" of a company based on foreign sales has a consistently negative impact on firm value. Consequently, Denis et al. conclude that their finding of reduced excess values due to global diversification is consistent with the view that the costs of global diversification outweigh

¹³⁹ Cf. Delios and Beamish (1999), pp. 711-727.

¹⁴⁰ Cf. Bühner (1987), pp. 25-37.

¹⁴¹ Cf. Siddharthan and Lall (1982), pp. 1-13.

¹⁴² Cf. Chang and Thomas (1989), p. 280.

¹⁴³ Cf. Severn and Laurence (1974), pp. 183-185.

the benefits.¹⁴⁴ Christophe and Lee also choose to use a market valuation perspective by exploring the effects of multinationality on Tobin's *q*. Their results show a negative linear relationship between a firm's ratio of foreign assets to total assets (FATA) and its market valuation in terms of Tobin's *q*. While the negative linear effect of internationalization remains highly significant, a curvilinear specification also reveals a small positive effect of the squared term of FATA that is only marginally significant. However, this finding suggests a slight upturn in market valuation at high degrees of internationalization.¹⁴⁵

Other researchers have also tested a curvilinear specification of the relationship by introducing quadratic associations between the degree of internationalization and firm performance. Capar and Kotabe find support for a U-shaped curvilinear relationship between multinationality and firm performance. Controlling for the effects of firm size and industry affiliation they demonstrate that return on sales first declines as the degree of internationalization (measured by the ratio of foreign sales to total sales) increases. However, after reaching a threshold level of international diversification, return on sales picks up and continuously improves. The authors interpret this result as supporting the view that the early stages of internationalization are associated with insufficient profit rewards due to low levels of foreign market knowledge and international business experience. However, companies may well reap the benefits of economies of scale and scope at higher degrees of internationalization.¹⁴⁶ The findings of Mathur et al. take the same line. Using a nonlinear specification of the internationalization-performance relationship, they identify a hurdle level for foreign assets deployment. Prior to this threshold level, financial performance (return on equity and operating margin) is negatively related to the degree of internationalization (foreign assets to total assets). However, beyond this level, the association is positive constituting a U-shaped form of the overall relationship.¹⁴⁷ Lu and Beamish agree with this perspective on the relationship between internationalization and performance by concluding that "when firms first begin FDI activity, profitability declines, but greater levels of FDI are associated with higher performance."¹⁴⁸

¹⁴⁴ Denis, Denis, and Yost (2002), pp. 1951-1979.

¹⁴⁵ Cf. Christophe and Lee (2005), pp. 636-643.

¹⁴⁶ Cf. Capar and Kotabe (2003), pp. 345-355.

¹⁴⁷ Cf. Mathur et al. (2001), pp. 561-578.

¹⁴⁸ Cf. Lu and Beamish (2001), p. 565.

Opposite results are reported by Geringer et al. They find an inverted U-shaped relationship between the degree of internationalization (percent of foreign sales) and MNC performance (measured as both ROS and ROA). While the study's results generally confirm that the degree of internationalization has an important role in understanding performance differences among MNCs, they also indicate the existence of a critical "internationalization threshold" for these companies' operations. As the degree of internationalization reached higher values, performance also exhibited increased values but then peaked and exhibited diminished levels. In their interpretation of the results, the authors argue that with increasing geographic market expansion, the costs associated with geographic dispersion began escalating, thus eroding profit margins. They further contend that this finding is consistent with the view on the limits of managerial capacity to cope with increased complexity. One important aspect of the study can be found in its sample composition. Geringer et al. chose to examine a sample of 200 MNCs consisting of the largest 100 firms from both the U.S. and Europe. Their calculations showed differences in performance due to continent-of-origin so that the reported relationship only reached statistical significance after standardizing the data to control for these effects.¹⁴⁹ Gomes and Ramaswamy use pooling and time-series techniques to test the stability of the internationalization-performance relationship over time. They define multinationality as a composite index consisting of the foreign sales to total sales ratio, the foreign assets to total assets ratio, and the number of countries in which a firm has subsidiaries. Company performance is assessed by the return on assets and the ratio of operating costs to sales. After controlling for the influences of firm size and industry membership, their analyses provide clear support for an inverted U-shaped form of the internationalization-performance relationship.¹⁵⁰ Indicative support is provided by Daniels and Bracker. In their study, multinationality was positively related to ROS and ROA, however, with certain upper limits. Consequently, the authors hypothesize that an optimal level of multinationality exists which would constitute the previously suggested inverted U-shaped form of the relationship. However, their study design is not constructed to provide evidence for diminishing returns. Further, by running separate regression analyses per industry, they find varying explanatory powers of the internationalization variable.¹⁵¹

¹⁴⁹ Cf. Geringer, Beamish, and daCosta (1989), pp. 109-119.

¹⁵⁰ Cf. Gomes and Ramaswamy (1999), pp. 173-188.

¹⁵¹ Cf. Daniels and Bracker (1989), pp. 46-56.

Moreover, some researchers have found evidence for a cubic association between multinationality and firm performance which results in a horizontal S-shaped relationship. For example, Lu and Beamish demonstrate that, at high and low levels of internationalization, the extent of geographic diversification is negatively associated with firm performance. In contrast, at moderate levels of internationalization, greater geographic diversity is accompanied by higher performance. They proclaim that this horizontal S-shaped relationship between geographic diversification and performance provides a basis for resolving the inconsistency of empirical results in the literature.¹⁵² Similarly, Thomas and Eden indicate that there is a three-stage, sigmoid internationalization-performance relationship. They suggest that the impact of multinationality on firm performance depends on the time dimension incorporated in the performance measure. Thus, the relationship between multinationality and short term performance (ROS, ROA, and ROE) takes the form of an inverted-U shape, whereas long term performance (excess market value and average market value) has a cubic association with multinationality describing a horizontal S-shape.¹⁵³ Sullivan also rejects the deterministic association found in studies supporting an inverted U-shape. He emphasizes the important roles of organizational learning, type of strategy, and proactive management in determining the impact of internationalization on firm performance. Consequently, he suggests a more complex relationship and finds empirical support for a horizontal S-shape.¹⁵⁴

In summary, the reviewed empirical studies¹⁵⁵ provide a rather inconsistent picture of the internationalization-performance relationship. Both linear and curvilinear relationships have been theorized and confirmed empirically, independent of the approach and performance measures employed. Accordingly, Osegowitsch and Zalan summarize the empirical findings in the following statement: "Inspection of the reported results is rather frustrating: there seems to be little difference across the two sets [studies using accounting and market-based performance measures], with inconsistent results on both sides. Overall, the results of curvilinear model testing are as inconsistent as the findings of studies testing a linear specification."¹⁵⁶ Similarly, Ramaswamy points out that "a clear understanding of

¹⁵² Cf. Lu and Beamish (2004), pp. 598-609.

¹⁵³ Cf. Thomas and Eden (2004), pp. 89-110.

¹⁵⁴ Cf. Sullivan (1994a), pp. 165-186.

¹⁵⁵ Further details of the discussed empirical studies are provided in Appendix A.

¹⁵⁶ Osegowitsch and Zalan (2005), p. 8.

the impact of international expansion on organizational performance remains elusive."¹⁵⁷ From a theoretical standpoint, however, the likely scenario appears to be that a curvilinear association exists between corporate internationalization and performance. In this case, both theoretically competing effects of the benefits and costs associated with corporate internationalization would be reflected. Yet, the exact form of the relationship still remains unclear.

3.3 Critique and Object of Investigation

The inconsistent empirical results led to a debate among scholars whether differences in measurement techniques could account for variations in the results. Authors such as Ramaswamy discuss the issue of variable operationalization and criticize the almost arbitrary usage of indicators that is largely driven by data availability¹⁵⁸. The reviewed studies confirm this view. Not only do the employed performance measures vary considerably, the degree of multinationality/internationalization is also defined in multiple ways (e.g., foreign sales/total sales, foreign assets/total assets, number of countries, number of foreign employees, etc.).

However, it is unlikely that measurement errors due to differential definitions can explain the mixed results on their own. More recent studies that tend to employ sophisticated, multi-item measures of multinationality report findings that are as inconsistent as those of prior studies. Thus, it appears to be unlikely that flawed measures are the main or exclusive reason for the inconsistent results. This does not imply that no further efforts should be made to advance construct measurement. Rather, additional attention should be paid to other widely neglected issues such as model specification.

The majority of empirical studies aim at developing a "grand theory" by focusing on inspecting the direct performance consequences of multinationality. Thus, these large-scale cross-sectional studies stop short of exploring several other factors that could significantly alter the ability of international expansion to generate superior returns. Consequently, the bivariate model depicted in Figure 4 may be underspecified. As Ramaswamy points out, "it is defensible to suggest that this incomplete specification could have led to divergent findings that are difficult to reconcile."¹⁵⁹

¹⁵⁷ Ramaswamy (1995), p. 232.

¹⁵⁸ Cf. Ramaswamy (1992), pp. 241-267.

¹⁵⁹ Ramaswamy (1995), p. 237.

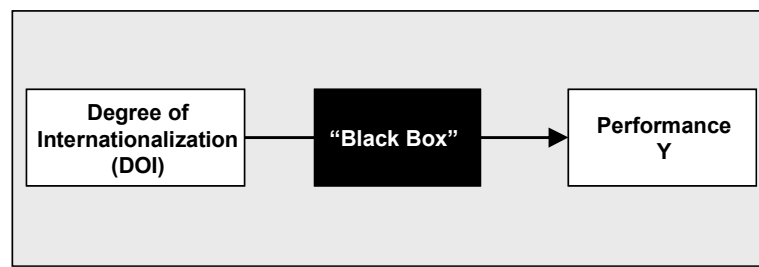


Figure 4: Model Used in Most Previous Literature (Source: own illustration)

A necessary step then is to move from bivariate conceptualizations to multivariate frameworks to allow for the simultaneous consideration of several key factors that either directly or indirectly influence MNC performance. Osegowtisch and Zalan agree with this suggestion. They find that "invariably empirical studies merely examine the overall association between multinationality and performance."¹⁶⁰ Accordingly, they argue for model specifications that include moderating variables in order to better account for performance rationales and contingencies that may be at the heart of the discovered inconsistencies.

Some researchers already recognized this need and explored the moderating effects of intangible assets on the internationalization-performance relationship. They commonly define intangible assets in terms of technical expertise and consumer goodwill that are measured by research and development (R&D) spending and advertising spending respectively. For example, Kotabe et al. find that the impact of multinationality on both financial and operating performance is positively moderated by firms' R&D and marketing capabilities. Thus, the ability of internationalization to positively impact firm performance depends on the level of R&D and advertising spending by the firm. The higher these investments are, the higher are the benefits derived from corporate internationalization.¹⁶¹ Similarly, Morck and Yeung find a positive moderating effect of both R&D and advertising spending on the impact of multinationality on firms' market value. Moreover, they find that the direct effect of multinationality is statistically insignificant. Thus, multinationality appears to have no significant value unless the firm possesses R&D or advertising-related intangible assets. The authors interpret this finding as providing strong support for the internalization theory, which proclaims that MNCs benefit from

¹⁶⁰ Cf. Osegowtisch and Zalan (2005), p. 11.

¹⁶¹ Cf. Kotabe, Srinivasan, and Aulakh (2002), pp. 79-97.

internalizing the markets for their unique intangible assets.¹⁶² In addition, Vermeulen and Barkema examine the influence of process-related variables on the internationalization-performance relationship. Their findings show that the speed of internationalization, the spread of geographical and product markets entered, and the irregularity of the expansion pattern negatively moderate a firm's increase in profitability.¹⁶³

While these studies indicate the fruitfulness of such multivariate model specifications, they only include a small number of the potentially moderating variables that can be derived from the international business and management literature. Especially, variables that relate to the management and organization of MNCs, as well as those relating to external contingencies, have so far been neglected in empirical research. However, such variables potentially exert a large influence on the performance outcomes from corporate internationalization.

First, they may either determine which types of benefits an MNC is able to realize or may even be a source of advantage in their own right. For example, several economic theories suggest that multinational corporations benefit from economies of scale and the possibility to exploit differential factor costs. However, the extent to which these advantages can be realized largely depends on the configuration of MNCs. Thus, it would be necessary to concentrate certain value chain activities or to locate them in certain foreign countries. Moreover, several researchers have emphasized the importance of resources and competences that result from complex social interactions within the MNC, e.g., the ability to engage in collective learning processes. Thus, by employing certain organizational structures and processes, some multinational corporations may be better able to generate a (sustainable) competitive advantage.

Second, these variables represent key elements of international strategy implementation. In principle, companies have a significant degree of freedom in the way they implement their international strategies. Therefore, some multinational corporations may adopt certain organizational structures and managerial policies that are able to limit the costs generally associated with international expansion. As a result, these MNCs should be better able to extract rents from their international diversity.

Third, they create the environment in which individual companies operate. Especially, external contingencies such as industry affiliation and geographic origin potentially

¹⁶² Cf. Morek and Yeung (1991), p. 176.

¹⁶³ Cf. Vermeulen and Barkema (2002), pp. 637-653.

influence the profit potential and operations practices of MNCs by either presenting greater opportunities or limitations. For example, these may result from differences in the relative importance of intangible assets between industries, or differential home market sizes of MNCs.

Thus, this dissertation argues that research on the internationalization-performance relationship should be conducted on a more granular level. Specifically, further moderating variables relating to the management and organization of MNCs are to be included in the employed model. In this way, a deeper understanding of the relationship may evolve which may also help to resolve the inconsistencies found in prior empirical research. As Geringer et al. point out, "reaping the full rewards of diversity also requires the exercise of good managerial practices. Thus, the relationship between managerial practices and diversification strategies of MNCs represents another potentially fruitful research topic." Moreover, "a focus on how and why these variables [degree of internationalization and performance] interplay may substantially enhance our understanding of the relative performance of multinational enterprises, and therefore warrants further research."¹⁶⁴ Thus, the following research questions are the object of investigation during the course of this dissertation:

- 1.) Which company-level variables relating to the organization and management of MNCs affect the outcome of corporate international expansion?*
- 2.) Which external contingencies influence the internationalization-performance relationship?*

¹⁶⁴ Cf. Geringer, Beamish, and daCosta (1989), p. 118.

4 DEVELOPMENT OF HYPOTHESES

This dissertation seeks to answer the above research questions by conducting an empirical examination. It is therefore necessary to first derive specific variables and hypotheses that will subsequently be tested in an empirical setting. Thus, the purpose of this chapter is to develop hypotheses on both company-level and contextual variables that potentially moderate the relationship between corporate internationalization and performance.

4.1 Company-Level Variables Affecting the Internationalization-Performance Relationship

As stated previously, the company-level variables that are of interest to this study relate to the management and organization of MNCs. However, because organizational structures and managerial practices represent the main tools to implement international strategies, it is useful to first review some of the main concepts provided by the literature on international strategy and organization theory. Together with the theoretical foundations in chapter 2, these concepts will then be used to derive concrete hypotheses on company-level variables that potentially moderate the internationalization-performance relationship.

4.1.1 Development of International Strategies

"A dominant conceptualization for examining strategy in the international context has been the integration-responsiveness framework."¹⁶⁵ According to this framework, companies generally face two competing, strategic imperatives when internationalizing their operations. The two imperatives are pressures for global integration and pressures for local responsiveness. Pressures for global integration are industry forces that necessitate worldwide resource deployments for strategic purposes. Strategic decisions are made to optimize the organization as a whole, so that activities are integrated across national boundaries. For example, a company feeling pressures for global integration may centralize certain value chain activities (e.g., production) in order to realize economies of scale and scope. As a result, the respective competences are leveraged across different organizational units while the level of standardization within the organization increases. In contrast, pressures for local responsiveness represent industry forces that necessitate local context-sensitive strategic decisions. As a consequence, management must respond to these forces by adapting the company's resources, processes, and services to each local market setting, irrespective of the strategic considerations of other organizational units. Because

¹⁶⁵ Roth and Morrison (1990), p. 541.

the latter provides little opportunities for standardization and centralization, it becomes more difficult for the overall company to integrate operations and realize economies of scale.

A priori, the two strategic options discussed above appear to be incompatible. Therefore, they involve a trade-off decision based on the unique requirements imposed by each company's external environment, primarily its' industry. Similarly, Ghoshal views the framework as a "conceptual lens for visualizing the cost advantages of global integration of certain tasks vis-à-vis the differentiation benefits of responding to national differences in tastes, industry structures, distribution systems, and government regulations."¹⁶⁶

Pressure for global integration	High	1	3
	Low	2	4
		Low	High
		Pressure for local responsiveness	

Figure 5: Integration-Responsiveness Matrix (Source: Prahalad and Doz (1987))

In order to assist the international strategy formulation process, Prahalad and Doz depict the two competing pressures for global integration and national responsiveness as two separate axes comprising a 2x2 matrix, as illustrated in Figure 5. While the original framework suggests two strategic requirements that are imposed on multinational organizations (global integration and local responsiveness), other researchers proposed to expand the framework by incorporating a third dimension which encompasses the need for worldwide learning.¹⁶⁷ Learning contributes to product and process innovations, which in turn diffuse throughout the internationally dispersed organization by means of intense knowledge transfers. The transfer of knowledge may be crucial in situations where a

¹⁶⁶ Cf. Ghoshal (1987), p. 429.

¹⁶⁷ Cf. Bartlett and Ghoshal (1987), p. 10.

simultaneous need for global integration and local responsiveness exists (quadrant 3 in the integration-responsiveness matrix).

In general, the integration-responsiveness framework can be applied to analyze the previously described pressures at the aggregate level of industry, at the level of individual companies within an industry, or even at the level of different functions within a company.¹⁶⁸ Choosing individual companies as the unit of analysis, several researchers have developed *generic strategic responses* to the above pressures.

For example, Porter also argues that within an international context companies make a fundamental choice of competing on a global or country-by-country basis. Firms competing with a country-by-country or *multinational strategy* attempt to isolate themselves from global competitive forces through protected market positions or by competing in industry segments that are most affected by local differences (forces for local responsiveness).¹⁶⁹ The competitive advantage of a multinational strategy therefore rests on developing non-imitable responsiveness within each country setting. Thus, "if managers perceive industry pressures predominantly at the domestic level, locally responsive strategies will be emphasized."¹⁷⁰

In contrast, if managers perceive industry pressures for global integration as dominant, emphasis will be placed on global strategic coordination. Companies pursuing a *global strategy* consider that their "competitive position in one national market is significantly affected by [their] competitive position in other national markets."¹⁷¹ Thus, the global operating environment and worldwide consumer demand are their dominant units of analysis, not the nation-state or the local market. The linking of competitive positions across country locations implies that the international activities of these companies must be integrated in order to develop and sustain advantage in response to the global competitive forces.¹⁷² Therefore, the main objective of a global strategy is to ingrate the company's worldwide activities in order to foster global efficiency. Accordingly, the primary sources of advantage are (1) international scale and scope economies and (2) the exploitation of location-specific advantages through the arbitrage of factor cost differentials across

¹⁶⁸ Cf. Bartlett (1985).

¹⁶⁹ Cf. Porter (1986a), p. 48.

¹⁷⁰ Roth and Morrison (1990), p. 543.

¹⁷¹ Ghoshal (1987), p. 425.

¹⁷² Cf. Roth, Schweiger, and Morrison (1991), p. 371.

country locations.¹⁷³

A third generic strategic response can be found in situations where management perceptions of environmental pressures indicate a need to simultaneously respond to pressures for global integration and local responsiveness. Consequently, companies facing such a situation coordinate their collective operations while maintaining a high level of responsiveness to each local market. Prahalad and Doz label such a strategy as "multifocal" strategy.¹⁷⁴ Bartlett and Ghoshal refer to a similar behavior as an *international strategy*. In their conceptualization, the primary objective of international strategies is to transfer and adapt the parent company's knowledge or expertise to foreign markets. The parent company (headquarters) retains considerable influence and control, but less than in companies pursuing a global strategy. Moreover, national units can adapt products and ideas coming from the headquarters, but have less independence and autonomy than subsidiaries in companies pursuing a multinational strategy. Thus, the competitive advantage of an international strategy is based on the ability to learn and to appropriate the benefits of learning in multiple national markets.¹⁷⁵

In summary, the literature on international management suggests that multinational corporations may devise three distinct generic strategies in response to environmental pressures, especially to the competitive forces at the industry level. The three generic international strategies encompass global, multinational, and international strategies. Each of these strategies is designed to specifically emphasize one of the strategic requirements that may be imposed on MNCs by the external industry environment. Thus, global strategies concentrate on integrating the company's worldwide activities thereby trying to achieve global efficiency. In contrast, multinational strategies emphasize a company's responsiveness to the specific demands of local markets. Finally, international strategies focus on learning (i.e. the development of innovations) and the subsequent transfer and adaptation of the parent company's knowledge to foreign markets.

¹⁷³ See chapters 2.1.1.2.2, 2.1.1.2.3, and 2.1.2.3 for a more detailed description of these two sources of competitive advantage that may accrue to MNCs.

¹⁷⁴ Cf. Prahalad and Doz (1987).

¹⁷⁵ Cf. Bartlett and Ghoshal (1987), p. 10; Bartlett and Ghoshal (2002), p. 17. - Bartlett and Ghoshal also highlight the importance of the international product-life-cycle theory (see chapter 2.1.1.2.1) in characterizing this strategy.

4.1.2 International Strategy Implementation

International strategies have to be supported by the appropriate organizational structures and managerial practices that facilitate their implementation. This notion is rooted in the strategy-structure-performance model developed by Chandler. Chandler's study of 70 large U.S. corporations tended to show that as a company's product/market strategy changed it was important that the organization's structure also changed to support implementation of the new strategy.¹⁷⁶ Thus, structure is supposed to follow strategy and superior performance is argued to be the result of establishing the correct "fit" between both of them.¹⁷⁷

Several empirical studies have attempted to describe the relationship between strategy and structure for multinational corporations. Among these studies, the one conducted by Stopford and Wells is probably the best known. Based on a sample of 187 U.S. multinational companies, Stopford and Wells create a framework relating certain types of structure (international divisions, worldwide product divisions, and area divisions) to certain elements of a firm's international strategy (foreign product diversity, and percentage of foreign sales). In essence, this framework suggests that worldwide companies typically manage their international operations through an international division at the early stage of foreign expansion, when both foreign sales and the diversity of products sold abroad are limited. Subsequently, some companies expand their sales abroad without significantly increasing foreign product diversity. These companies then adopt an area structure. In contrast, other companies face a substantial increase in foreign product diversity as they expand internationally and therefore tend to adopt the worldwide product division structure. Finally, when both foreign sales and foreign product diversity are high, companies resort to a global matrix organization.¹⁷⁸ Because the framework suggests firms to adopt certain types of organizational structure along their international expansion process, the model developed by Stopford and Wells is mostly referred to as the "international structural stages model". However, the suggested organizational structures can also be related to the integration-responsiveness framework discussed in the previous section. The worldwide product division structure represents a managerial choice toward integration. Worldwide product divisions adopt a multi-country view of the business, and

¹⁷⁶ Cf. Chandler (1962).

¹⁷⁷ Cf. Jones and Hill (1988), p. 159.

¹⁷⁸ Cf. Stopford and Wells (1972).

of its markets, technologies and competitors. Consequently, much of the decision-making authority and responsibilities are concentrated at headquarters, which also controls/coordinates the majority of specialized resources. In contrast, area structures reflect managerial choices toward responsiveness. Much of the decision-making authority and responsibility is delegated to subsidiary managers who are close to individual market conditions and host country governments. Finally, the global matrix organization represents the trade-off between integration and responsiveness by balancing the power of headquarters and subsidiaries.¹⁷⁹

Although being primarily descriptive, Stopford and Wells's international structural stages model was soon applied prescriptively by consultants, academics, and managers alike. Consequently, the debate frequently centers upon rather simplistic choices between "centralization" and "decentralization" or the comparative value of product- and geography-based structures. While recognizing the importance of structuring the relationship between headquarters and subsidiaries for managing MNCs, Doz and Prahalad criticize the traditional approach to the problem. "The traditional approach to this task, as depicted in the multinational management literature, has been architectural: a search for the right structure – product, geographic, or matrix."¹⁸⁰

In contrast, Bartlett and Ghoshal apply a less architectural approach in their examination of large multinational corporations. They identify three different organizational models that companies used to directly "fit" the three generic international strategies described previously. Accordingly, they label these forms of organization as global, multinational, and international organizations. As outlined below, each of these organizational models is characterized by distinct structural configurations, administrative processes, and management mentalities.¹⁸¹

Multinational organizations decentralize their assets and capabilities to allow foreign subsidiaries to respond to the differences that distinguish national markets. Bartlett and Ghoshal describe the resulting configuration of distributed resources and delegated responsibilities as a "decentralized federation". Control and coordination are achieved primarily through the personal relationship between top corporate management and subsidiary managers. This social control process is supplemented by some simple

¹⁷⁹ Cf. Doz and Prahalad (1984), p. 58.

¹⁸⁰ Doz and Prahalad (1984), p. 58.

¹⁸¹ Cf. Bartlett and Ghoshal (2002), pp. 55-60.

technocratic (financial) control systems to allow accounting consolidation and to manage the capital outflows and dividend repatriation. The dominant management mentality in multinational organizations views the company's worldwide operations as a portfolio of independent businesses. Each national unit is managed as an independent entity whose strategic objective is to optimize its situation in the local environment. Thus, the multinational organizational model is best suited to support a multination strategy that emphasizes the company's responsiveness to local market differences.

In contrast, the global organization model is based on a centralization of assets, resources, and responsibilities. Overseas subsidiaries are primarily used to reach foreign markets in order to build global scale so that their role is mostly limited to sales and service¹⁸².

Compared with subsidiaries in multinational or international organizations, they have much less freedom to create new products or strategies or even to modify existing ones. Thus, global organizations can be described as a "centralized hub" in which subsidiaries depend on headquarters for resources and direction. In addition, headquarters managers keep tight control on subsidiary operations, and the flow of goods, knowledge, and support is one-way. The dominant management mentality is to view the world as a single integrated market in which similarities are more important than differences. The global organizational model facilitates the development of coordinated strategies and the realization of global-scale efficiencies. Therefore, it "fits" the generic global strategy derived from the integration-responsiveness framework, which also strives for global integration and efficiency.

International organizations grant their subsidiaries the freedom to adapt new products and strategies to the local market environment. However, they retain overall control at headquarters through sophisticated management systems and specialist corporate staffs. Local subsidiaries are still dependent on the parent company for new products, processes, or ideas, which in turn requires a great deal more coordination and control than in the multinational organizational model. Consequently, the management of international organizations makes greater use of formal systems and controls in the headquarters-subsidiary link. Bartlett and Ghoshal describe the resulting configuration as a "coordinated federation". Because overseas subsidiaries are largely dependent on the center for the transfer knowledge and expertise, the management of international organizations often views its foreign operations as "appendages whose principal purpose is to leverage the

¹⁸² However, local assembly plants may be dictated by economic or, more often, political pressures.

capabilities and resources developed in the home market."¹⁸³ The international organizational model is well suited to simultaneously respond to both pressures for global integration and local responsiveness. It provides an effective means for companies to transfer knowledge and skills from the parent company, and adapt them to local needs. Thus, the international organizational model fulfills the requirements contained in the international strategy type derived from integration-responsiveness framework.

Figure 6 provides a summary of the key characteristics of the three different organizational models.

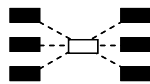
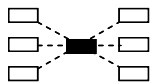
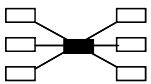
	Multinational organization	International organization	Global organization
Organizational model	Decentralized federation 	Coordinated federation 	Centralized hub 
Role of subsidiaries	<ul style="list-style-type: none"> • Sense and exploit local opportunities 	<ul style="list-style-type: none"> • Adapting and leveraging parent company competencies 	<ul style="list-style-type: none"> • Implement parent company strategy
Configuration of assets and capabilities	<ul style="list-style-type: none"> • Decentralized and nationally self-sufficient • Local production with complete value chain 	<ul style="list-style-type: none"> • Sources of core competencies centralized • Products centrally developed but locally adapted 	<ul style="list-style-type: none"> • Centralized and globally scaled
Development and diffusion of knowledge	<ul style="list-style-type: none"> • Develop and retain knowledge within each unit 	<ul style="list-style-type: none"> • Develop knowledge at parent level • Transfer to subsidiaries 	<ul style="list-style-type: none"> • Develop and retain knowledge at headquarters

Figure 6: Characteristics of Multinational, Global, and International Organizational Models (Source: Bartlett and Ghoshal (2002), p. 67.)

A theoretical framework for understanding the implementation of international strategies through the choice of appropriate organizational models is provided by Roth et al. Their first premise is that the choice of international strategy influences the extent to which the activities of international corporations have to be linked or integrated across countries. The organization's ability to manage these intra-organizational linkages is determined by its international operational capabilities, which are defined by the level of coordination, managerial philosophy, and geographic configuration. These operational capabilities in

¹⁸³ Bartlett and Ghoshal (2002), p. 57.

turn are created and controlled through administrative mechanisms (centralization, formalization, integrating mechanisms). Roth et al. posit that the match or fit achieved among international strategy, operational capabilities, and administrative mechanisms is positively associated with business performance.¹⁸⁴ Thus, their international strategy implementation framework is consistent with the strategy-structure-performance paradigm.

4.1.3 The Transnational Concept

In their seminal work Bartlett and Ghoshal criticize the traditional approaches to formulating and implementing international strategies. They recognize that "until fairly recently, most worldwide industries presented relatively unidimensional strategic requirements."¹⁸⁵ Thus, in each industry, either responsiveness, or efficiency, or knowledge transfer was crucial, and companies that possessed the matching strategic competency were rewarded. Accordingly, company performance was primarily based on the "fit" between the dominant strategic requirement of the industry and the company's dominant strategic capability. However, "today, no firm can succeed with a relatively unidimensional strategic capability that emphasizes only efficiency, or responsiveness, or leveraging of parent company knowledge and competencies. To win, a company must now achieve all three goals at the same time."¹⁸⁶ Bartlett and Ghoshal describe the multidimensional capabilities of efficiency, responsiveness, and innovation as the hallmark of transnational strategies. Rugman and Hodgetts exemplify the simultaneous demand for different strategic requirements on the basis of the pharmaceutical industry. Generally, the pharmaceutical industry is considered a "global industry" because it manufactures medicines that are mostly referred to as "universal products". Consequently, local responsiveness is not of great importance to this business. Pharmaceutical companies should thus be able to easily integrate their activities on a global scale, thereby realizing efficiency gains from economies of scale and scope. However, even pharmaceuticals have to modify their products to satisfy national and state regulations, making centralized production and worldwide distribution economically difficult.¹⁸⁷ Although expected to

¹⁸⁴ Cf. Roth, Schweiger, and Morrison (1991), pp. 370-373.

¹⁸⁵ Bartlett and Ghoshal (2002), p. 23.

¹⁸⁶ Bartlett and Ghoshal (2002), p. 29.

¹⁸⁷ Cf. Rugman and Hodgetts (2001), p. 334.

pursue a textbook strategy of global integration, pharmaceutical companies obviously have to simultaneously respond to local market differences.

The traditional organizational models¹⁸⁸ cannot effectively cope with the multidimensional demands outlined above. According to Bartlett and Ghoshal, the ways in which these models approach different strategic tasks lead to dilemmas that prevent them from achieving any one objective without sacrificing, or at least seriously comprising, the others. For example, the global organization consolidated its resources and capabilities at the center thereby achieving efficiency by exploiting potential scale economies in all its activities. However, such a configuration implies that foreign subsidiaries are managed without any slack resources. Thus, they have neither the motivation nor the ability to respond to local market needs. Furthermore, the limited resources and narrow implementation role of their foreign subsidiaries prevent global organizations from tapping into learning opportunities outside of their home environment, which compromises their ability to innovate.¹⁸⁹ The basic problem underlying these dilemmas is that the traditional organizational structures do not "fit" the multidimensional demands imposed on companies. However, given the complexity and volatility of these demands, structural fit not only becomes harder to achieve but also less relevant. As Bartlett and Ghoshal note, success in coping with the multidimensional strategic task depends on building strategic and organizational flexibility.

The "transnational" organization conceptualized by Bartlett and Ghoshal is able to overcome the described dilemma. In contrast to the traditional organizational models, it does not emphasize only efficiency, or local responsiveness, or worldwide learning. Rather, it is simultaneously responsive to all three strategic requirements. To do so, the transnational organization is configured as an integrated network with dispersed, interdependent, yet specialized assets and capabilities. This way, it can benefit from increased efficiency by exploiting potential scale economies while maintaining the flexibility to take advantage of low input costs or ready access to scarce resources. Local responsiveness is regarded as a tool for achieving flexibility in international operations. This "multinational flexibility" is achieved through differentiated subsidiary roles accompanied by multiple and flexible coordination processes. Moreover, the transnational organization considers innovation as an outcome of a worldwide learning process.

¹⁸⁸ See chapter 4.1.3.

¹⁸⁹ Cf. Bartlett and Ghoshal (2002), pp. 65-68.

Consequently, knowledge is jointly developed and shared among all organizational units. In order to facilitate this process and to integrate the organization at the fundamental level of individual members, the transnational organization strives to build a shared vision and individual commitment.¹⁹⁰

As Bartlett and Ghoshal point out, "to develop multidimensional strategic capabilities, a company must go beyond [formal] structure and expand its fundamental organizational capabilities."¹⁹¹ Thus, the key task is to reshape the core decision-making systems by employing the appropriate management processes (i.e. administrative systems, communication channels, and interpersonal relationships). Similarly, Martinez and Jarillo confirm that multinational corporations must develop a sophisticated set of coordination mechanisms in order to be simultaneously responsive to different strategic requirements. This set of coordination mechanisms should avoid the simplistic centralization-decentralization dichotomy. Rather, "all informal mechanisms (developing informal networks of communication, stressing a corporate culture, managing career paths, etc.) must be used if the firm is to have enough flexibility to remain responsive to local differences and, at the same time, have enough consistency to take advantage of global opportunities, especially of learning and exploiting local expertise at a world level."¹⁹²

4.1.4 Hypotheses on Organizational and Managerial Variables

The "transnational organization" describes a new form and ideal structure for international business management. Therefore, it may not yet be the most prevalent form observed in the market place,¹⁹³ especially because it is not easy to develop and manage. However, one may expect that the more an MNC shows the traits of a transnational organization, the better it will be able to simultaneously cope with different strategic requirements and to reap the benefits of corporate internationalization. Therefore, this dissertation develops hypotheses on specific organizational variables based on the predictions of the transnational concept as well as the general theories on the benefits and costs of corporate internationalization outlined in chapter 2. These organizational variables concentrate on key aspects of organizational structure such as configuration, coordination, and administrative processes.

¹⁹⁰ Cf. Bartlett and Ghoshal (2002), pp. 68-81.

¹⁹¹ Bartlett and Ghoshal (2002), p. 37.

¹⁹² Cf. Martinez and Jarillo (1989), p. 500.

¹⁹³ Indeed, Leong and Tan (1993) conducted a survey among 131 executives of MNCs around the world and found that only 18% of these executives perceived their organization as being "transnational".

4.1.4.1 Configuration of Value Chain Activities

Several theories suggest that multinational corporations may benefit from economies of scale and scope¹⁹⁴. Moreover, they may take advantage of arbitrage opportunities that result from differences in factor costs, regulatory environments, or the quality of inputs (e.g., managerial talent) between countries.¹⁹⁵

The ability of MNCs to realize these benefits is closely linked to the configuration of their value chain activities. In general, multinational corporations face a broad range of options to configure their activities across borders. The spectrum ranges from concentration to dispersion, i.e. from performing a certain activity in only one location that serves all other countries to performing every activity in each country. Between these extremes, a multitude of further configuration options exists that can be distinguished along two dimensions - the number of locations (concentration) and where in the world each activity in the value chain is performed (geographic location). According to Porter, the potential of realizing economies of scale and scope in an activity relates to the number of locations in which the activity is performed. In contrast, the ability to exploit national differences depends on the geographic location of the value activities. Thus, the way in which MNCs configure their value chain activities significantly influences the types of benefits they may realize. While a concentrated configuration is especially capable of realizing economies of scale/scope, a dispersed configuration facilitates the exploitation of location advantages. However, in order to realize both benefits, multinational corporations have to choose a configuration that lies between these two extremes. On the one hand, they need to concentrate activities in one or a few locations in order to capture economies of scale and scope. On the other hand, these activities need to be performed in one or several countries outside their home country in order to benefit from national differences, e.g., in factor costs or quality of inputs. Multinational corporations clearly cannot centralize all of their value chain activities. In international competition, a firm must always perform some functions in each of the countries in which it competes. These functions largely represent downstream activities that are more related to the customer (e.g., service, marketing and sales). Different customer requirements in these activities hamper the standardization of products and processes and therefore require higher degrees of decentralization. However,

¹⁹⁴ See discussions on the theory of monopolistic advantages and internalization theory in chapter 2.

¹⁹⁵ See discussions on the theories of comparative costs and operational flexibility in chapter 2.

depending on the industry and individual firms, some specific downstream activities such as the production of advertising may still be performed centrally.¹⁹⁶

The concept of the transnational organization supports such a configuration¹⁹⁷. According to Bartlett and Ghoshal, the transnational organization takes selective decision between centralization and dispersion. Similar to the global organization model, certain resources and capabilities are centralized within the home country operation. In this way, the organization can realize scale economies, protect certain core competencies, and provide the necessary supervision of corporate management. However, certain other resources are also centralized but not at home. For example, a world-scale production plant for labor-intensive products may be located in a low-wage country such as Mexico. Such flexible centralization complements the benefits of scale economies with the advantage of low input costs or ready access to scarce resources. Finally, some other activities may be best decentralized and performed on a "local-for-local" basis. This might be the case if activities only provide a small potential for scale economies, or require higher degrees of flexibility. Thus, "the transnational organization centralizes some resources at home, some abroad, and distributes yet others among its many national operations. The result is a complex configuration of assets and capabilities that are distributed, yet specialized."¹⁹⁸ According to Meier, the transnational organization can first of all be characterized by a specialization and concentration of its activities that not necessarily has to take place at the location of headquarters¹⁹⁹. This process is often referred to as "excentralization".²⁰⁰

The above discussion shows that the configuration of value chain activities may enable MNCs to simultaneously benefit from economies of scale/scope and the arbitrage of national differences in factor, product, or capital markets. To leverage both of these advantages, an MNC's configuration of value activities has to simultaneously show some degree of concentration and geographic dispersion. These considerations lead to the following hypothesis:

H1: Multinational corporations with a higher degree of both concentrated and geographically dispersed value activities are better able to reap the benefits of corporate internationalization.

¹⁹⁶ Cf. Porter (1986b), pp. 11-20.

¹⁹⁷ Cf. Bartlett and Ghoshal (2002), pp. 68-69.

¹⁹⁸ Bartlett and Ghoshal (2002), p. 69.

¹⁹⁹ Cf. Meier (1997).

²⁰⁰ See Chng and Pangarkar (2000), p. 100.

4.1.4.2 Intra-Company Knowledge Flows

One of the key elements that distinguish the transnational organization from other organizational models is the integrated network structure, which involves interdependent relationships among the various organizational subunits. Interdependent relationships allow transnational organizations to engage in collaborative information sharing and problem solving, cooperative resource sharing, and collective implementation. According to Bartlett and Ghoshal, all of these skills are required to cope with today's worldwide competitive environment.²⁰¹ Such powerful interdependencies among organizational subunits arise from three distinct intra-company flows of resources and capabilities that need to be integrated and managed. First, a company needs to coordinate the flow of parts, components, and finished goods. Second, it has to manage the flow of funds, skills, and other scarce resources among units. Third, it must link the flow of intelligence, ideas, and knowledge that are central to its innovation and learning capabilities.²⁰² While some of these interdependencies are automatic outcomes of the specialized and distributed configuration of assets and resources, others are specifically designed to build self-enforcing cooperation among interdependent units.

Especially intra-company flows of knowledge or know-how may represent an important source of value in multinational corporations. The resource-based view of the firm proclaims that a sustainable competitive advantage results from the possession and exploitation of unique, non-imitable resources and capabilities. Such resources and capabilities can be found in a firm's core competencies that are defined as the collective learning in the organization.²⁰³ Moreover, "the primary reason why MNCs exist is because of their ability to transfer and exploit knowledge more effectively and efficiently in the intra-corporate context than through external market mechanisms."²⁰⁴ This "internalization of intangible assets" argument is widely recognized and accepted as received theory on why MNCs exist.

Because multinational corporations are complex organizations, knowledge flows within such companies can occur along multiple directions. According to Fayerweather's resource transmission theory, there is considerable value in transferring and unifying the capabilities

²⁰¹ Cf. Bartlett and Ghoshal (2002), p. 106.

²⁰² Cf. Bartlett and Ghoshal (2002), pp. 79-80.

²⁰³ See chapter 2.1.2.2.

²⁰⁴ Gupta and Govindarajan (2000), p. 473.

embodied in the parent company, especially its technological competence and managerial know-how.²⁰⁵ However, several authors emphasize that the key competencies to be leveraged in foreign markets do not only reside at the center of the MNC. In their point of view, foreign subsidiaries play at least an equally important role in generating competitive advantages for MNCs.²⁰⁶ O'Donnell suggests that multinational corporations often encounter multipoint competition where they face the same global competitors in multiple international markets. Therefore, competitive tools in the form of resources or knowledge developed at the subsidiary level in order to compete effectively against a competitor in one country market also may be used effectively against the same competitor in a different market or country. This consideration implies that "individuals with specific knowledge and expertise vital to global competitiveness are often located, not at headquarters, but within operational groups at international locations where this specialized knowledge was first developed in response to local market and resource conditions."²⁰⁷ The ability to tap into these valuable subsidiary resources and transfer them across the firm is therefore critical to creating as well as sustaining the international competitiveness of the MNC. The above discussion indicates that multinational corporations need to engage in both vertical and lateral transfers of knowledge and know-how in order to maximize the benefits from their international presence. Vertical knowledge flows between the headquarters and subsidiaries mainly allow the MNC to leverage the skills and competencies (e.g. technological know-how or managerial capabilities) embodied in the parent company in foreign markets. In contrast, lateral knowledge flows between organizational units transfer the unique knowledge and capabilities developed in the MNC's diverse operating environments across the whole company, thereby allowing their exploitation in multiple locations. For example, a Japanese subsidiary may transfer its unique customer service skills to one in the U.S. or Europe. Together these two flows contribute to the worldwide learning capability proclaimed by the transnational organization concept, which involves the joint development and worldwide sharing of knowledge.

Because it is widely recognized that the internalization of knowledge flows might well be the most important function of foreign direct investment and that the effective management

²⁰⁵ See chapter 2.1.2.1

²⁰⁶ See also the discussion on the resource-based view and organizational learning in chapter 2.1.2.2

²⁰⁷ O'Donnell (2000), p. 530.

of knowledge flows is possibly the most important source of competitive advantage for MNCs²⁰⁸, the following hypothesis is advanced:

H2: Greater usage of both vertical and lateral knowledge flows enhances an MNC's ability to benefit from corporate internationalization.

4.1.4.3 Social Control Mechanisms

A key managerial challenge in multinational corporations is to ensure that all organizational units strive towards common goals. In order to achieve this objective, the literature has identified various control and coordination mechanisms that can be classified into four major categories, as illustrated in Figure 7.

	Personal/Cultural (founded on social interaction)	Impersonal/Bureaucratic/ Technocratic (founded on instrumental artefacts)
Direct/ Explicit	<ul style="list-style-type: none"> Centralization, Direct Supervision, Expatriate Control 	<ul style="list-style-type: none"> Standardization, Formalization
Indirect/ Implicit	<ul style="list-style-type: none"> Socialization, Informal Communication, Management Training 	<ul style="list-style-type: none"> Output control, Planning

Figure 7: Classification of Control and Coordination Mechanisms on Two Dimensions (Source: Harzing and Sorge (2003), p. 198)

In view of the fact that transnational configuration of value activities leads to an increased need for cross-border coordination and control, several empirical studies examined the relative efficiency of the different instruments²⁰⁹. "A main implication of these studies is a shift in the spectrum of coordination instruments from vertical and technocratic instruments to horizontal and personal mechanisms because the latter are more flexible in coping with growing functional specialization and resource interdependencies in transnational value-added networks."²¹⁰ Martinez and Jarillo conduct an extensive literature review and similarly propose that subtle and informal mechanisms of

²⁰⁸ Cf. Harzing and Noorderhaven (2006a), p. 2.

²⁰⁹ See Mendez (2003); Persaud, Kumar, and Kumar (2002); Mascarenhas (1984); Kogut and Kulatilaka (1994); Vorhies and Morgan (2003)

²¹⁰ Holtbrügge (2005), p. 566.

coordination and control are becoming increasingly important in managing MNCs.²¹¹ While many researchers agree on the importance of personal-informal control and coordination mechanisms, they label these differently. For example, Harzing and Noorderhaven use the term "control by socialization and networks", Ghoshal and Bartlett refer to "normative integration" as well as "intra- and inter-unit communication", while O'Donnell allots personal-informal mechanisms to "vertical and lateral integrating mechanisms".²¹² However, the constituent elements are largely congruent and encompass (1) joint work in international task forces, multidisciplinary management committees, and cross-functional teams; (2) informal communication among organizational subunits; (3) participation in international management training programs; (4) extensive travel and transfer of managers between organizational subunits; (5) shared corporate values and goals across all parts of the organization. For the sake of consistency and simplicity, this dissertation uses the term "*social control mechanisms*" to summarize all of the above elements.

The advantages of such social control mechanisms have been documented in literature on several occasions. For example, Hamel and Prahalad investigate the efficacy of different coordination and control mechanisms for managing strategic responsibility within MNCs.²¹³ Managing strategic responsibility refers to the assignment and distribution of decision-making authority between headquarters and subsidiaries in response to divergent and constantly shifting strategic imperatives. These strategic imperatives encompass the same forces for global integration and local responsiveness that were illustrated in the integration-responsiveness framework.²¹⁴ Hamel and Prahalad argue that simple structural or technocratic mechanisms are most effective when strategic and organizational clarity prevails, i.e. the multinational corporation faces a single dominant imperative of either global integration or local responsiveness. However, formal structure is a relatively ineffective tool for managing strategic responsibility when a firm faces strategic and organizational ambiguity. In such situations "management must use other tools at its disposal, including systems, corporate values and culture, and positioning assignment of key people."²¹⁵ The transnational concept implies that multinational corporations need to

²¹¹ Cf. Martinez and Jarillo (1989), pp. 489-514.

²¹² Cf. Harzing and Noorderhaven (2006a), p. 6; Ghoshal and Bartlett (1988), pp. 371-372; O'Donnell (2000), p. 548.

²¹³ See Hamel and Prahalad (1983), pp. 341-351.

²¹⁴ See chapter 4.1.1.

²¹⁵ Hamel and Prahalad (1983), p. 347.

simultaneously meet the strategic requirements of integration (efficiency), local responsiveness, and worldwide learning in order to stay competitive in today's environment. Thus, MNCs are expected to face increasing strategic ambiguity requiring them to make more extensive use of social control mechanisms to cope with this multidimensional challenge. As Martinez and Jarillo note, an MNC must use all informal mechanisms (developing informal network communication, stressing a corporate culture, managing career paths, etc.) if the firm is to have enough flexibility to remain responsive to local differences and, at the same time, have enough consistency to take advantage of global opportunities, especially of learning and exploiting local expertise at a world level.²¹⁶

Moreover, social control mechanisms may alleviate some of the problems caused by the matrix organization. Traditional approaches to strategy and structure suggest that multinational corporations adopt a complex "global matrix organization" that integrates product, functional, and geographic perspectives into the corporate decision-making processes. At least in theory, such an organizational structure should enable the company to maintain the balance among centralized efficiency, local responsiveness, and the building and leveraging of functional competencies.²¹⁷ However, Bartlett and Ghoshal argue that the matrix organization even amplifies the differences in perspectives and interests by forcing all issues through the dual chains of command. Instead of resolving conflicts and creating the most effective and efficient outcomes, the very design of the global matrix develops management processes that are slow, acrimonious, and costly. Communications are routinely duplicated, approval processes are costly and time-consuming, and frequent meetings raise the company's administrative costs dramatically. According to Bartlett and Ghoshal, "the basic problem underlying companies' search for structural fit was that it focused on only one organizational variable – formal structure – that could not capture the complexity of the strategic task facing the worldwide company."²¹⁸ Thus, the challenge in building multidimensional strategic capabilities is not to find the structure that provides the best fit, but to build and manage the appropriate decision-making processes. These processes need to be capable of detecting and responding to multiple changing environmental demands and are vital to transnational organizations. Bartlett and Ghoshal propose tools to build such decision-making processes

²¹⁶ Cf. Martinez and Jarillo (1989), p. 500.

²¹⁷ See also the discussion on Stopford and Wells's "international structural stages model" in chapter 4.1.2.

²¹⁸ Cf. Bartlett and Ghoshal (2002), p. 36.

that are largely conform with the above definition of social control mechanisms. These tools include task forces, committees and project teams; informal communication channels and relationships; frequent international management trips; creating a shared understanding of a company's mission and objectives; and management development processes that move high-potential managers across product lines and between countries.²¹⁹

It has also been argued that social control mechanisms can help to manage and reduce some of the additional costs that may arise from corporate internationalization. Numerous researchers point out that multinational corporations incur monitoring costs that result from agency problems within the MNC. Agency problems arise from the potentially incongruent goals and interests between headquarters (principal) and foreign subsidiaries (agents).²²⁰ However, "if there is no goal conflict, the agent will behave as the principal would like, regardless of whether his or her behavior is monitored."²²¹ Thus, agency problems and the resulting monitoring costs in MNCs are largely determined by the extent to which subsidiary managers accept and work toward organizational goals. Roth and O'Donnell refer to this notion as "parent commitment" which they define as the psychological identification of a foreign manager with headquarters. The importance of parent commitment in this context results from the international interdependencies in MNCs, which require extensive collaboration and mutual adjustments among the participants involved. Although commitment to local operations remains important, a high level of commitment to a corporation-wide perspective is necessary for foreign subsidiary managers because they may need to embrace decisions or adjustments that are suboptimal at the subsidiary level.²²² Therefore, researchers call for a "common world view" or "shared vision" to cope with forces of fragmentation and reduce goal incongruence. Building such a sense of unity requires top management to create a shared understanding of the company's purpose and values among individual managers of the organization. Furthermore, it involves managers' identification with broader goals and their commitment to the overall corporate agenda.²²³

Essentially, this is an application of control by socialization, where the desire is to "deemphasize national cultures and to replace them with an integrating company

²¹⁹ Cf. Bartlett and Ghoshal (2002), pp. 285-290.

²²⁰ See chapter 2.2.2 for further details.

²²¹ Eisenhardt (1989), p. 62.

²²² Cf. Roth and O'Donnell (1996), p. 682.

²²³ Cf. Bartlett and Ghoshal (2002), pp. 203-204.

culture."²²⁴ As O'Donnell points out, social control methods are best able to facilitate the cooperative behaviors among subsidiary managers that are necessary for an interdependent organizational network to function effectively.²²⁵ Thus, the use of social control mechanisms enables MNCs to increase the willingness of their foreign subsidiary managers to accept and work toward organizational goals. This in turn reduces potential agency problems and the resulting monitoring (bureaucratic) costs.

Moreover, social control mechanisms are supposed to reduce the costs that may arise from organizational limits on information sharing. The importance of organizational learning as a source of competitive advantage has already been emphasized on several occasions. However, in complex organizations such as MNCs the amount of information to be processed and assimilated may exceed the individuals' and organization's cognitive limits.²²⁶ Thus, MNCs may face organizational constraints that seriously impede their ability to benefit from collective learning. Several authors, however, suggest that internationalizing firms can mitigate such problems through horizontal and informal links between subsidiaries and headquarters, using task forces, project teams, and so on.²²⁷ Thus, social control mechanisms can facilitate the transfer of information and skills within the organization, which contributes significantly to an MNC's ability to learn and innovate. Several empirical studies support this finding. For example, Gupta and Govindarajan consider the previously defined social control mechanisms as transmission channels that are necessary for knowledge flows to occur. Their results show that these mechanisms have a positive effect on both knowledge inflows into a subsidiary and knowledge outflows from a subsidiary.²²⁸ Thus, their study lends support to the notion that social control facilitates the transfer of information and skills. Furthermore, Ghoshal and Bartlett investigate the organizational attributes that facilitate the creation, adoption, and diffusion of innovations by subsidiaries of MNCs. They report an unambiguous and positive impact of normative integration and dense intra- and inter-unit communication on a subsidiary's ability to contribute to all three innovation tasks.²²⁹ Their study corroborates the

²²⁴ Edström and Galbraith (1977), p. 256.

²²⁵ Cf. O'Donnell (2000), p. 531.

²²⁶ Cf. Chapter 2.2.2.

²²⁷ Cf. Barkema and Vermeulen (1998), p. 21.

²²⁸ Cf. Gupta and Govindarajan (2000), pp. 473-496.

²²⁹ Cf. Ghoshal and Bartlett (1988), pp. 365-388. Normative integration and intra-/inter-unit communication are both included in the definition of social control mechanisms used in this dissertation.

importance of social control mechanisms for promoting innovations in complex organizations.

The above discussion already indicates that the use of social control mechanisms not only allows MNCs to effectively manage complexity and reduce costs associated with corporate internationalization, but also contributes to the generation of competitive advantage.

Scholars of the resource-based view of the firm propose that a sustainable competitive advantage rests on valuable, imperfectly imitable resources and capabilities that may result from complex social phenomena. Amongst others, such socially complex resources and capabilities include interpersonal relations among managers in a firm and a firm's culture.²³⁰ Thus, elements of the outlined social control mechanisms represent an organizational asset/capability that itself may be a source of competitive advantage. Collis lends support to this argument by stating that "complex social phenomena, expressed as organizational capability, are necessary to effectively implement any strategy, and can be an independent source of sustainable competitive advantage."²³¹

Overall, the considerations discussed in this chapter provide convincing arguments for the important role that social control mechanisms can play in the successful management of MNCs. This leads to the following hypothesis:

H3: The use of social control mechanisms positively moderates the effects of international expansion on corporate performance.

4.1.4.4 Subsidiary Autonomy

According to the transnational organization concept, local responsiveness is one of the key strategic requirements that multinational corporations have to satisfy in order to succeed in today's competitive environment. The need for MNCs to be locally responsive results from fragmenting influences that encourage management to tailor the company's operations (i.e. its products and services) to the unique local requirements of individual host countries. Thus, the local responsiveness of an MNC can generally be defined as the extent to which its foreign subsidiaries respond to local differences in culture, customer preferences, and market structures.

²³⁰ See chapter 2.1.2.2.

²³¹ Collis (1991), p. 65.

Harzing provides several ways in which responsiveness to such local differences can be conceptualized. For example, foreign subsidiaries can actively adapt products to differences in local tastes and customer preferences. This may involve the modification of existing products (e.g., changes in the product design) as well as the development and introduction of new products that are specifically designed to meet local demands. Moreover, local responsiveness manifests itself through the adaptation of marketing to local circumstances in order to make the products more appealing to a variety of customers. Foreign subsidiaries may for example change the price for the products sold on the local market or design specific advertising campaigns that appeal to local tastes and reflect the local culture. Finally, having a local presence in production as well as in R&D makes it easier to perform the adaptations that are required to successfully sell the product on the local market.²³²

The common denominator of all these conceptualizations of local responsiveness is that they grant foreign subsidiaries some decision-making autonomy and leeway in implementing corporate strategy. Therefore, the level of subsidiary autonomy largely determines an MNC's ability to respond to local market differences.

However, high degrees of subsidiary autonomy also involve a considerable amount of managerial discretion, which in turn may lead to increased agency problems and bureaucratic costs. As Rajagopalan and Finkelstein point out, "as managerial discretion increases, managers are less constrained in decision-making, and monitoring managerial work is more difficult."²³³ The difficulty in monitoring managers arises from the fact that the increased decision options that accompany managerial discretion render management behavior essentially non-programmable. Furthermore, the number of factors influencing outcomes increases with discretion, which leads to high ambiguity in the behavior-outcome relationships.²³⁴ Thus, conditions of high managerial discretion at the subsidiary level make it difficult and costly for MNCs' executives to detect subsidiary opportunism and to limit decisions that diverge from the interests of headquarters or the MNC as a whole. Consequently, it can be expected that high levels of subsidiary autonomy increase the agency problem in the headquarters-foreign subsidiary relationship causing monitoring costs of MNCs to rise as well.

²³² Cf. Harzing (2000), p. 109.

²³³ Rajagopalan and Finkelstein (1992), p. 128.

²³⁴ Cf. Roth and O'Donnell (1996), p. 681; Rajagopalan and Finkelstein (1992), p. 128.

The preceding discussion illustrates that the level of subsidiary autonomy can have a significant positive or negative effect on the outcomes from corporate internationalization. Thus, instead of examining how multinationality independently affects performance, it would be critical to explore how it acts in tandem with the level of subsidiary autonomy to influence outcomes. However, it is not possible to a priori predict the direction of the effect for two reasons. The opposing theoretical positions are equally persuasive and prior empirical research does not provide any definite evidence that would enable identification of a specific direction. Therefore, it is only hypothesized that:

H4: The relationship between corporate internationalization and performance is moderated by the level of subsidiary autonomy.

4.1.4.5 Organizational Slack

The concept of organizational slack has received much attention from organization theorists in recent years. Without any value judgment, organizational slack can be defined as "the difference between the resources of the organization and the combination of demands made on it"²³⁵ or "the pool of resources in an organization that is in excess of the minimum necessary to produce a given level of organizational output."²³⁶ However, the perception of slack varies between organizational economists²³⁷ and scholars of the behavioral theory of the firm²³⁸.

Organizational economists view slack as inefficiency that results from an organization's failure to use resources optimally. As a consequence, organizational performance is lowered and does not meet the full potential of the available resources.²³⁹ Leibenstein uses the term *X-inefficiency* to describe the excess of actual over minimum cost for a given output. *X-inefficiency* results from the non-cost-minimizing behavior in the multiperson firm that is rooted in the effort discretion of individuals and differential principal-agent interests.²⁴⁰ Jensen also builds his argument on the principal-agent theory. In his point of view, managers have an incentive to grow their firms beyond the optimal size because

²³⁵ Cohen, March, and Olsen (1972), p. 12.

²³⁶ Nohria and Gulati (1997), p. 604.

²³⁷ See, e.g., Leibenstein (1969); Leibenstein (1978); Jensen (1986).

²³⁸ See, e.g., Cyert and March (1963); March (1981).

²³⁹ Cf. Leibenstein (1969), pp. 600-623.

²⁴⁰ Cf. Leibenstein (1978), pp. 328-329.

increases in the resources under managers' control are associated with greater managerial power and higher compensation.²⁴¹ Therefore, excess resources in the form of free cash flow²⁴² are frequently squandered by investing them in low-return projects. As Jensen points out, the conflicts of interest between managers and shareholders are especially severe when the company generates substantial free cash flow. "The problem is how to motivate managers to disgorge the cash rather than investing it at below the cost of capital or wasting it on organizational inefficiencies."²⁴³ To support this notion, Jensen draws on evidence from the oil industry in the late 1970s and early 1980s. Due to price increases, companies in the industry were left with substantial cash flows. However, consistent with the agency costs of free cash flow, managers did not pay out the excess resources to shareholders but continued to spend heavily on exploration and development activities even though the average returns were below the cost of capital. Thus, most companies only gained about 60 cents for every dollar invested in exploration and development.

In contrast, scholars of the behavioral theory of the firm adopt a positive view on organization slack. James Thompson was among the first to explain organizational behavior in terms of the need to "buffer the technical core" from the variances and discontinuities presented by environmental demands.²⁴⁴ Further, the "ability to adapt to dramatic shifts or discontinuities in the environment is frequently linked to the absorption mechanism termed organizational slack."²⁴⁵ Similarly, Galbraith considers slack resources as buffers between interdependent organizational units that reduce the information-processing and coordination costs. The existence of organizational slack reduces the need to coordinate activities of subunits as tightly as it would be necessary if there were for example no leeway between one department's production schedule and that of the subsequent department. Furthermore, the creation of slack resources reduces the amount of information that must be processed during task execution and prevents the overloading of hierarchical channels.²⁴⁶

The literature also suggests that organizational slack functions as a resource for conflict resolution. According to Cyert and March, the key actors and decision-makers in an

²⁴¹ Cf. Jensen (1986), pp. 323-329.

²⁴² Jensen (1986) defines free cash flow as cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital

²⁴³ Jensen (1986), p. 323.

²⁴⁴ See Thompson (1967).

²⁴⁵ Bourgeois (1981), p. 29.

²⁴⁶ Cf. Galbraith (1973), p. 15.

organization form the "dominant coalition". The members of this coalition tend to represent separate subunits with competing goals that result from their "local rationality".²⁴⁷ The resolution of such subunit goal conflicts is achieved partly by sequential attention to goals, and partly by decentralization of decision-making, which in turn is facilitated by the presence of organizational slack. This function of organizational slack is supported by Moch and Pondy who note that "slack allows choice opportunities to be distributed generally to all participants. With sufficient slack, there will be a solution for every problem, and enough participants for choice situations."²⁴⁸ They further argue that without slack resources, decision processes can change substantially so that political bargaining processes replace rational criteria. Empirical evidence is provided by Bourgeois and Singh who find that slack can reduce conflict and goal disagreement within top management teams.²⁴⁹

Researchers also consider organizational slack as a facilitator of strategic behavior. Especially its ability to facilitate creative behavior and innovation has received much attention. According to Nohria and Gulati, "slack causes relaxation of controls and represents a source of funds whose use may be approved even in the face of uncertainty."²⁵⁰ Thus, slack alleviates the problem of scarcity and provides a source funds for innovations that would not ordinarily be approved in lean times. In doing so, organizational slack provides the resources necessary for creative and innovative experimentation.²⁵¹ For example, slack resources enable firms to experiment with new strategies such as introducing new products and entering new markets.²⁵² Nohria and Gulati also provide empirical evidence for the effect of organizational slack on corporate innovation. Their results support a curvilinear (inverted U-shaped) relationship between slack and innovation in multinational firms. Thus, very high levels of slack are detrimental to innovation because the amount of discipline that is exercised in the selection, ongoing support, and termination of projects becomes too lax. However, (very) low levels of slack do not support innovation either because experimentation and creative behavior are suppressed. Consequently, an intermediate level of slack is optimal for innovation.

²⁴⁷ See Cyert and March (1963).

²⁴⁸ Moch and Pondy (1977), p. 356.

²⁴⁹ Cf. Bourgeois and Singh (1983), pp. 43-47.

²⁵⁰ Nohria and Gulati (1997), p. 604.

²⁵¹ Cf. Bourgeois (1981), p. 35.

²⁵² See Hambrick and Snow (1977), p. 111.

While the cases, both for and against organizational slack, provide theoretically convincing arguments, there are strong reasons to believe that in the context of the internationalization-performance relationship the positive effects of slack outweigh the negative.

In principle, corporate internationalization represents a diversification strategy. Using computer simulation to test a formal model that describes the process and performance implications of diversification moves, Gary shows that successful diversification strategies require managerial policies that maintain organizational slack. In absence of such policies, diversification can negatively impact firm performance even when substantial synergy opportunities exist. While this finding first appears to be counterintuitive, the underlying rationale is persuasive. Firms initially engage in diversification due to organizational slack and overcapacity. By expanding their scope, these firms are then able to apply their resources over a larger base, which leads to a higher resource utilization and reductions in organizational slack. However, rapid growth through diversification may result in steeply rising work demands that quickly outstrip the initial organizational slack that motivated the diversification move in the first place. The consequences of this phenomenon are implementation costs that arise from administrative diseconomies of coordination and control, decision errors, and quality problems.²⁵³ Thus, diversifying firms have to maintain organizational slack in order to avoid these costs.

In contrast to purely domestic companies, multinational corporations operate in a multitude of foreign environments that differ in culture, customer preferences, market structures, and government regulations. Thus, the higher the degree of internationalization (DOI) of a company, the more complex and dynamic is the environment in which it operates. The successful management of MNCs therefore requires the existence of organizational slack because "slack is the resource that enables an organization both to adjust to gross shifts in the external environment with minimal trauma, and to experiment with new postures in relation to that environment, either through new product introductions or through innovations in management style."²⁵⁴ Similarly, Staehle argues that integrated network organizations (such as MNCs) use slack and redundancies to increase their flexibility, learning capability, and their room for error. In contrast to traditional hierarchical organizational structures, slack is not considered as dysfunctional.²⁵⁵

²⁵³ Cf. Gary (2005), pp. 643-664.

²⁵⁴ Bourgeois (1981), p. 31.

²⁵⁵ Cf. Staehle (1991), pp. 313-345.

Most importantly, however, there is considerable empirical evidence that firms use slack to improve performance. Daniel et al. conduct a meta-analysis of 66 empirical studies and find direct large-scale support for a positive slack-performance relationship. They interpret this result as being consistent with both the resource-based view and behavioral theory of the firm.²⁵⁶ Thus, contrary to the position of economic theory that increasing slack induces inefficiency, empirical evidence shows that the main effect of organizational slack on performance is positive.

Summarizing the preceding discussion, it can be hypothesized that:

H5: Organizational slack positively moderates the relationship between corporate internationalization and performance.

4.2 Contextual Variables Affecting the Internationalization-Performance Relationship

An issue barely addressed in the literature to date is that the form of the internationalization-performance relationship is likely to be context dependent. For example, firms located in different contextual settings are likely to choose or be obliged to pursue idiosyncratic strategic actions that, in turn, moderate the internationalization-performance relationship. Macro-level contextual variables that are likely to moderate the effect of corporate internationalization on performance include a company's industry and its geographic origin.²⁵⁷ These two variables represent external contingencies that may influence most of the constituent elements of the relationship. In particular, it has been shown that industry membership and geographic origin can affect companies' profit potential, their propensity to internationalize, and their operating procedures in terms of configuration, coordination, and administrative processes. A detailed discussion of these potential moderating effects follows next.

²⁵⁶ Cf. Daniel et al. (2004), pp. 565-574.

²⁵⁷ Cf. Ruigrok and Wagner (2003a), pp. 26-37.

4.2.1 Industry Membership

While empirical studies in general have failed to systematically examine the effect of a company's industry on the internationalization-performance relationship, the results of two studies can be interpreted as providing indicative support for the moderating role of industry. Daniels and Bracker examine the effect of multinationality on performance for a sample of 116 U.S. firms in 8 industries and find that the explanatory power of their regression models varies by industry. Moreover, the majority of empirical studies postulating an inverted U-shaped form of the internationalization-performance relationship are cross-sectional studies focusing on manufacturing industries. The only notable exception is the study conducted by Capar and Kotabe, which uses a sample of 81 major German service firms. The results of this study support a U-shaped curvilinear relationship between multinationality and firm performance, thereby indicating that the form of the relationship might depend on the contextual setting in terms of industry.²⁵⁸

A theoretical explanation for the above observation is provided by Ruigrok and Wagner who suggest that differing internationalization-performance relationships may result from divergent goals of international expansion among companies. One major reason for this divergence can be found in a company's industry membership.²⁵⁹ For example, due to the labor intensiveness of the manufacturing process, the primary goal of internationalization in the textile and clothing industry has been to reduce labor costs. Consequently, as suggested by location theory and the theory of comparative costs, companies in this industry strive to locate their manufacturing activities in countries with a comparative advantage in terms of labor costs.²⁶⁰ Thus, the main benefit of internationalization for MNCs in the textile and clothing industry arises from their ability to arbitrage differential factor markets. In contrast, due to their industries' technological intensiveness, the major goal of internationalization for companies in the pharmaceutical and automotive industries has been the redemption of high research and development costs. Therefore, these companies aim to integrate their activities on a worldwide basis to realize economies of scale and scope. As Hout et al. note, advantages relating to increased volume may not only come from larger production plants or runs. Worldwide volume is also particularly

²⁵⁸ Cf. Daniels and Bracker (1989), pp. 46-56; Capar and Kotabe (2003), pp. 345-355.

²⁵⁹ Cf. Ruigrok and Wagner (2003a), p. 31.

²⁶⁰ See chapter 2.1.1.1.

advantageous in supporting high levels of investment in research and development.²⁶¹ Kobrin supports the role of technological intensity as a key driver of global integration. His study specifically investigates the structural characteristics of industries that foster transnational integration. Examining 56 industries, he finds that technological intensity, measured by research and development expenditures as a percentage of sales, is the most important structural determinant of global integration. Kobrin argues that due to the steady and marked increase in the technological intensity of many industries, even the largest national markets are too small to support development of competitive technologies. Thus, the main benefit of internationalization for MNCs in these industries is their ability to generate the worldwide volume necessary to realize economies of scale and support their high levels of research and development.²⁶² Moreover, Kobrin finds that advertising intensity negatively affects global integration, which "confirms that lower pressures to respond to national differences facilitate integration."²⁶³ Conversely, it could be argued that industries requiring high degrees of local responsiveness pay lower returns to global integration.

As illustrated above, industry membership may have a significant influence on a firm's primary goal of international expansion and hence on the main types of benefits it aims to realize. However, because empirical research so far has failed to provide insights on the relative size and effectiveness of the various benefits associated with corporate internationalization, the choice of companies regarding which benefits to pursue may significantly alter the internationalization-performance relationship.

The preceding discussion is closely related to the integration-responsiveness framework and the "structure follows strategy follows industry" paradigm. In principle, these two concepts suggest that multinational corporations devise their strategies and structures in response to environmental pressures, especially to the competitive forces at the industry level. The latter includes forces for global integration, local responsiveness, and, in the extended version of the framework, forces for worldwide learning. In "global industries" the competitive position of a company in one national market is significantly affected by its competitive position in other national markets, so that forces for global integration are at work. In response, companies in these industries pursue strategies and structures that standardize and integrate/concentrate operations with the primary source of competitive

²⁶¹ Hout, Porter, and Rudden (1982), p. 99.

²⁶² Cf. Kobrin (1991), pp. 26-29.

²⁶³ Kobrin (1991), p. 26.

advantage being the realization of international economies of scale and scope. In contrast, "multinational industries" are characterized by forces for localization that require context-sensitive strategic actions. Consequently, companies in multinational industries employ strategies and structures that decentralize their assets and capabilities to allow foreign subsidiaries to respond to differences that distinguish national markets, e.g., by adapting products and services to local market needs. Thus, the competitive advantage of these companies rests on developing non-imitable responsiveness in each country setting.²⁶⁴

The above considerations indicate that the competitive structure of industries may lead firms to pursue idiosyncratic strategic actions that, in turn, determine the types of benefits they can realize from corporate internationalization. As Welge and Holtbrügge note, even though efficiency at the subsidiary level may be high, companies pursuing a multinational strategy are hardly able to realize economies of scale and scope.²⁶⁵

It is widely recognized that the international competitive environment has undergone an evolution from being "multinational" to "global" and finally "transnational". As a result, today's multinational corporations face the multidimensional strategic requirement to simultaneously respond to forces for global integration (efficiency), local responsiveness, and worldwide learning.²⁶⁶ Although this evolution may apply to most existing industries, it is still possible that the relative power of the three competitive forces differs in some industries. As Martinez and Jarillo note, "not all MNCs have passed exactly through the same phases because not all industries have had their competitive structures modified in the same way."²⁶⁷ However, this is an ongoing process and it is unquestionably most advantageous for individual MNCs to be responsive to all three strategic requirements.

Besides affecting the types of benefits that companies may realize from their international presence, industry membership has also been shown to influence companies' propensity to internationalize. In particular, Elango examines 158 U.S. based MNCs in 7 industries and finds that industry drivers influence the rate of internationalization of firms and hence their degree of internationalization (DOI). While the global market growth rate of a company's industry positively relates to the firm's rate of internationalization, the domestic market growth rate of the industry as well as the growth in the ratio of domestic market sales to total global sales of the industry are negatively related to a firm's growth in

²⁶⁴ See chapters 4.1.1 and 4.1.2.

²⁶⁵ Cf. Welge and Holtbrügge (2001), p. 134.

²⁶⁶ Cf. chapter 4.1.3; Martinez and Jarillo (1989), pp. 500-508; Bartlett and Ghoshal (2002), p. 23/29.

²⁶⁷ Martinez and Jarillo (1989), p. 508.

internationalization.²⁶⁸ If industry drivers affect a company's rate of internationalization, it is also reasonable to assume that a company's industry membership affects the relationship between corporate internationalization and performance. Assuming that managers act rationally and are not guided by their self interest, international expansion should be based on the expectation of benefits that positively impact corporate performance. Thus, the performance outcomes from corporate internationalization should be higher for companies located in industries that foster international expansion. Elango supports these considerations by stating that a missing link in his research is performance. "Therefore, a fruitful area of research could be to test if there are any moderating/mediating effects of industry and firm drivers on the relationship between internationalization and performance."²⁶⁹

In summary, the arguments presented suggest that a company's industry membership may significantly influence (1) the company's primary goal of international expansion, (2) the main types of benefits it may realize, and (3) its rate of internationalization. Therefore, it is proposed that:

H6: The relationship between corporate internationalization and performance is moderated by companies' industry membership.

4.2.2 Geographic Origin

Besides a company's industry membership, its geographic origin has been argued to represent a macro-level contextual variable that potentially moderates the effects of corporate internationalization on performance. Several conceptual rationales have been advanced to support this proposition.

According to Ruigrok and Wagner, a company's geographic origin greatly influences its experience with internationalization. Compared to U.S. firms that can draw on a large home market to generate economies of scale, companies headquartered in smaller countries (e.g., most European firms) have to move outside their home country early on in order to take advantage of these benefits.²⁷⁰ As a result, these companies currently operate at higher degrees of internationalization, as illustrated by the transnationality index (TNI) published

²⁶⁸ Cf. Elango (1998), pp. 201-221.

²⁶⁹ Elango (1998), p. 218.

²⁷⁰ Cf. Ruigrok and Wagner (2003a), p. 13.

by the United Nations Conference on Trade and Development (UNCTAD). TNI is the average of the following three ratios: foreign assets to total assets, foreign sales to total sales, and foreign employment to total employment. In 2004 the largest U.S.-based MNCs exhibited an average TNI value of about 48%. In contrast, the largest MNCs from France and the United Kingdom showed an average index value of 62% and 71% respectively. The highest values on the transnationality index, however, are achieved by the top multinational corporations from small countries such as Finland, Ireland, and Switzerland.²⁷¹ Consequently, European MNCs can draw on profound, accumulated internationalization experience because they have been "obliged to address organizational needs at high degrees of internationalization and in culturally diverse business environments at an earlier stage than their average U.S. counterparts."²⁷² Such strong experiential knowledge may facilitate the organizational learning that eventually allows for successful foreign expansion. Thus, given their differing internationalization experiences, companies from different regions are likely to encounter divergent relationships between corporate internationalization and performance.

Similar to differences in internationalization experience, companies with different geographic origins may also exhibit differences in the scope of their international expansion activities. Several researchers found that U.S. corporations predominantly locate their initial foreign activities in Canada, the United Kingdom, and Australia²⁷³. Thus, U.S. companies are expected to pursue culturally related strategies in their foreign expansion activities. In contrast, due to their small home market sizes, most European and Japanese companies are compelled to expand early into culturally unrelated business environments.²⁷⁴ The scope of international expansion activities (i.e., culturally related vs. unrelated) may have important implications for the balance between the benefits and costs associated with corporate internationalization. For example, theory suggests that firms first narrow their international expansion to locations that are geographically and culturally close to their home country because in this way they are able to limit the costs of internationalization. This is due to the fact that market familiarity presupposes similar administrative mechanisms, consumer tastes, and distribution systems²⁷⁵. Thus, companies

²⁷¹ UNCTAD (2006), p. 33.

²⁷² Ruigrok and Wager (2003b), p. 81.

²⁷³ E.g., Davidson (1980), pp. 9-22.

²⁷⁴ Cf. Ruigrok and Wagner (2003a), p. 14.

²⁷⁵ See chapter 2.2.2.

pursuing a culturally related strategy can be expected to benefit more easily from international expansion because they can leverage their home-based skills without huge cost increases. However, once companies move into unfamiliar territory this initial advantage is lost. European and Japanese firms may therefore be inherently disadvantaged because they are forced to expand early into culturally remote areas. Thus, a second rationale for a company's geographic origin to moderate the internationalization-performance relationship can be found in its ability to determine the scope of international expansion activities.

A third rationale for the moderating effect of companies' geographic origins can be derived from the existence of "country-of-origin effects" in multinational corporations. A considerable number of empirical studies indicates that even the most global MNCs are far from being "nationalityless" as suggested by Ohmae.²⁷⁶ For example, Pauly and Reich conclude from their analysis of U.S., German, and Japanese MNCs that "recognizable and patterned differences persist in the behavior of leading MNCs." They go on to say, "The precise nature of those differences in turn suggests that we not rule out as an explanation what is popularly termed corporate nationality."²⁷⁷ In particular, such differences in MNC behavior (country-of-origin effects) refer to the predisposition of MNCs vis-à-vis the choice of international strategy, organizational structure, and control mechanisms. As discussed previously, Bartlett and Ghoshal identified three organizational models that companies have traditionally employed to "fit" the strategic requirements of either global efficiency, local responsiveness, or worldwide learning. They labeled these organizational forms global, multinational, and international organizations respectively.²⁷⁸ Each of these organizational models is not only characterized by distinct structural configurations and administrative processes, but also by unique benefits and costs that arise from their deployment. For example, while the global organization is well able to achieve efficiency by exploiting scale economies, its centralized configuration prevents it from being locally responsive as well as from tapping into learning opportunities outside of the home market.²⁷⁹ Moreover, Bartlett and Ghoshal recognize that a company's administrative heritage, expressed by its geographic origin, influences its choice regarding which of the three traditional organizational models to employ. In particular, they note that the

²⁷⁶ Cf. Ohmae (1990), pp. 3-19; Harzing and Sorge (2003), pp. 187-214; Noorderhaven and Harzing (2003), pp. 47-66.

²⁷⁷ Pauly and Reich (1997), pp. 22-23.

²⁷⁸ See chapters 4.1.2 for a detailed description of the three organizational models.

²⁷⁹ Cf. chapter 4.1.3.

management norms of many European companies that expanded abroad in the prewar period were well suited for multinational organizational structures. This is largely due to the enduring influence of family ownership in these companies, which created organizational processes built on personal relationships and informal contacts. As a consequence, it is reasonable to expect that European MNCs today predominantly show the traits of multinational organizations that emphasize the strategic capability of local responsiveness. In contrast, the managerial culture of U.S.-based companies fits well to the international organizational model. Due to the early employment of professional management, U.S. companies developed the ability to delegate some responsibility while retaining overall control at headquarters through sophisticated management systems. Such a management process is necessary to support the strategic capability of the international organization, which is to leverage parent company knowledge and competencies in foreign markets. Finally, Japanese companies are expected to adopt the global organizational model, which primarily aims at achieving global efficiency through the centralization of assets, resources, and responsibilities. The Japanese management system is culturally based in group-oriented behavior. Because it involves intensive communication and a complex system of personal interdependencies and commitments, it is difficult to transfer abroad. However, it works very effectively, if decisions are centralized at headquarters. The global organization model was the organizational form that underlay the much-studied Japanese model of worldwide competition in the 1970s and 1980s, and it is reasonable to expect Japanese MNCs to exhibit traits of this organizational model today.²⁸⁰

As illustrated, a company's geographic origin represents an important element of its administrative heritage and may therefore have a significant influence on the company's existent organizational forms and capabilities. Even more important, however, it may exert a large influence on the company's ability to develop the multidimensional strategic capabilities necessary to cope with today's international competitive environment. As Bartlett and Ghoshal note, a company's ability to build and manage these new strategic capabilities depends on its existing organizational attributes, i.e., its configuration of assets and distribution of responsibilities and influence. Thus, "the administrative heritage can be one of the company's greatest assets – the underlying sources of its key competencies – and also one of its most significant liabilities, since it resists change and thereby prevents realignment or broadening of strategic capabilities."²⁸¹ Based on the latter considerations,

²⁸⁰ Cf. Bartlett and Ghoshal (2002), pp. 55-59.

²⁸¹ Bartlett and Ghoshal (2002), p. 38.

it appears plausible to assume that the geographic origin of companies exerts a moderating effect on the internationalization-performance relationship.

The results of further empirical studies corroborate the findings of Bartlett and Ghoshal regarding the influence of companies' geographic origins on organizational attributes. Examining 50 multinational corporations from the U.S., UK, and continental Europe, Egelhoff finds that the nationality of an MNC has a strong influence on the type of managerial control it chooses to exercise over its foreign subsidiaries. In particular, U.S. MNCs monitor subsidiary outputs and rely more upon frequently reported performance data than do European MNCs. The latter tend to assign more parent company nationals to key positions in foreign subsidiaries and can count on a higher level of behavioral control than their U.S. counterparts.²⁸² Thus, U.S. MNCs appear to make more extensive use of bureaucratic/technocratic control mechanisms, while European multinational corporations tend to rely on social control mechanisms. Similarly, controlling for universal factors such as industry or headquarter size, Harzing and Sorge find that the country of origin has significant effect on the level of impersonal (technocratic) and indirect personal (social) control exercised in MNCs.²⁸³ Moreover, Johansson and Yip establish a link between geographic origin, the type of international strategy pursued by MNCs, and corporate performance. Applying a structural equation model to a sample of 36 multinational corporations from the US and Japan, the authors find that "the Japanese firms have more globalized strategies than do the Americans, and that this factor affects their performance favorably."²⁸⁴

A fourth rationale for the moderating effect of a company's geographic origin on the internationalization-performance relationship can be derived from the resource-based view of the firm and transaction cost theory. In the resource-based view of the firm, the possession of firm-specific resources and core competencies plays a decisive role in the generation of sustainable competitive advantage. However, because domestic factor markets are the easiest and cheapest to access in terms of transaction costs, firms primarily acquire resources from those factor markets (including both capital and labor). Consequently, companies generally tend to build their core competencies and firm-specific resources around factors with which their home country is relatively well endowed.²⁸⁵

²⁸² Cf. Egelhoff (1984), pp. 73-83.

²⁸³ Cf. Harzing and Sorge (2003), pp. 201-203.

²⁸⁴ Johansson and Yip (1994), p. 579.

²⁸⁵ Cf. Collis (1991), p. 51 and 65.

Internationalizing firms from different home markets can therefore be expected to differ in their initial set of firm-specific resources and competencies. This difference, in turn, may lead to divergent internationalization-performance relationships because it can significantly affect the trade-off between the costs and benefits associated with corporate internationalization. Porter confirms this proposition in his "diamond" of country advantage. In this framework, home-base factor markets are one of the four variables that combine to create an incentive structure for firms that determines their strategic choice and subsequent performance in world-wide competition.²⁸⁶

Based on the above rationales, it is reasonable to expect that a company's geographic origin represents an important contextual setting and macro-level moderator of the internationalization-performance nexus. Coupled with the fact that Geringer et al. found significant effects of multinationality on firm performance only after standardizing their data for continent of origin²⁸⁷, this leads to the following hypothesis:

H7: The relationship between corporate internationalization and performance is moderated by companies' geographic origins.

²⁸⁶ Cf. Porter (1990).

²⁸⁷ Cf. Geringer, Beamish, and daCosta (1989), pp. 109-119.

4.3 Overview of Hypotheses

Table 1 provides an overview of the potential moderating variables and corresponding hypotheses that were derived from the literature on international business and management. The following chapters of this dissertation describe the empirical measurement of these variables and incorporate them into a multivariate model in order to test their effects on the internationalization-performance relationship.

Central Idea	Potential moderating variables	Hypotheses
The organization and management of MNCs influences the effects of internationalization on performance	Value chain configuration	H1: Multinational corporations with a higher degree of both concentrated and geographically dispersed value activities are better able to reap the benefits of corporate internationalization.
	Intra-company knowledge flows	H2: Greater usage of both vertical and lateral knowledge flows enhances an MNC's ability to benefit from corporate internationalization.
	Social control mechanisms	H3: The use of social control mechanisms positively moderates the effects of international expansion on corporate performance.
	Subsidiary autonomy	H4: The relationship between corporate internationalization and performance is moderated by the level of subsidiary autonomy.
	Organizational slack	H5: Organizational slack positively moderates the relationship between corporate internationalization and performance.
The relationship between internationalization and performance is dependent on contextual settings	Industry membership	H6: The relationship between corporate internationalization and performance is moderated by companies' industry membership.
	Geographic origin	H7: The relationship between corporate internationalization and performance is moderated by companies' geographic origins.

Table 1: Overview of Hypotheses (Source: own illustration)

5 CONCEPTUALIZATION OF MEASURES AND DATA COLLECTION

In order to test the above hypotheses in an empirical model, it is first necessary to define appropriate measures for the required variables and to collect corresponding data for a sample of multinational corporations. Data for this study were collected through a combination of primary and secondary sources, because information on most of the hypothesized moderating variables is not publicly available. In particular, information on moderating variables relating to the management and organization of MNCs is not available from secondary sources because these variables address a company's inner workings. Therefore, data on variables such as "the use of social control mechanisms" were collected using a questionnaire survey among leading MNCs from the U.S. and Europe. The remainder of this chapter is organized as follows: Chapter 5.1 defines the measures used in this study to operationalize the dependent, independent, and moderating variables that are subsequently introduced into a multivariate model of the internationalization-performance relationship. Chapter 5.2 describes in detail the data collection procedure, including the sampling process and the questionnaire survey.

5.1 Definition and Measurement of Variables

In general, the literature distinguishes between two types of variables. On the one hand, there are observable (manifest) variables that are directly measurable, e.g., age, temperature, or retail prices. On the other hand, latent or unobservable variables exist that are only indirectly measurable because they refer to abstract concepts. Thus, each latent variable needs to be defined by one or several indicators²⁸⁸ that empirically represent the unobservable, latent variable. Latent variables are common to many social sciences and include concepts such as intelligence, social class, or education.²⁸⁹

Because the variables of interest in this study all represent abstract concepts (and thus latent variables), the following sections are concerned with the identification and definition of appropriate indicators that allow for their measurement and operationalization. This process largely relies on the existing literature for two reasons. First, wherever possible, this dissertation seeks to use well-established research instruments that have already

²⁸⁸ Several authors use the term "item" instead of "indicator". Because both terms have the same meaning, the terms "items" and "indicators" are used interchangeably throughout this dissertation.

²⁸⁹ Cf. Backhaus et al. (2005), pp. 338-340; Bollen (1989), p. 11.

demonstrated their validity and reliability in the past. Second, a review of the existing literature helps to ensure that the different aspects/facets of the constructs are included in the defined measures.

5.1.1 Dependent (Endogenous) Variables

The dependent (endogenous) variable in an empirical model of the internationalization-performance relationship is corporate performance. However, corporate performance represents an abstract construct (latent variable) because a single, original measure able to directly gauge firm performance does not exist. Consequently, past empirical studies on the internationalization-performance relationship have employed various accounting- and market-based performance indicators to assess corporate financial performance. The most commonly used accounting-based performance indicators include the return on sales (ROS) and the return on assets (ROA). In contrast, Tobin's q ratio represents a frequently employed market-based indicator of firm performance.²⁹⁰

The alternative use of accounting- and market-based performance measures has led to much debate among scholars. Accounting-based performance is principally oriented toward the past. The information contained in the balance sheets and income statements provides a historical record of where the firm has been and where it currently stands. Thus, accounting data provides information on the resources used by the firm and on the resulting performance. Many researchers have justified the use of accounting data to measure firm performance typically on the grounds that they are the best available data. However, other researchers have criticized their use because of measurement problems that may result from different accounting practices across industries and possibly inappropriate expensing of research and development as well as advertising expenditures. Moreover, these researchers criticize the backward looking nature of accounting-based performance measures as well as their failure to reflect the associated risk.²⁹¹ The above critique has led some scholars to proclaim the superiority of market-based performance metrics. In particular, McFarland suggests that Tobin's q has several advantages over accounting rates of return. The numerator of q, a firm's market value, reflects a firm's expected future

²⁹⁰ Please refer to the review of past empirical studies on the internationalization-performance relationship provided in Appendix A.

²⁹¹ Cf. Hirschey and Wichern (1984), p. 375; Osegowitsch and Zalan (2005), p. 7.

profits. Furthermore, a firm's market value is also influenced by the variance of expected profits, so q includes an automatic adjustment for risk.²⁹²

However, the advantages of market-based performance indicators are far from clear. As Stevens notes, Tobin's q , which is overwhelmingly the most common measure of performance used in financial economics, may be subject to many of the same limitations that burden accounting-based rates of return.²⁹³ Specifically, Tobin's q may not successfully cope with the objection to accounting rates of return regarding the evaluation of a firm's capital assets²⁹⁴. To test the sensitivity of Tobin's q and accounting rates of return to measurement errors, McFarland used Monte Carlo experiments to determine which measure provides the best approximation to its "true" value. He finds that estimates of q have smaller average errors and a higher average correlation with the true measure than accounting rates of return. However, estimates of q are neither consistently better nor consistently worse than the accounting rate of return in detecting supracompetitive profits. McFarland therefore concludes that Tobin's q and accounting rates of return are both useful measures of profitability because they have fairly high correlations with the true value and correctly indicate the presence or absence of supracompetitive profits in most cases.²⁹⁵ In the context of analyzing the internationalization-performance relationship, the use of market-based performance indicators causes an additional complication. Portfolio diversification theory suggests that higher valuations of MNCs' shares relative to those of purely domestic firms may arise from two different sources. First, multinational corporations are able to reduce their systematic risk because they have sales to, or within, foreign countries whose economic fluctuations are less than perfectly correlated with the fluctuations in their home country. Consequently MNCs benefit from more stable sales and earnings, which leads to a risk reduction in their expected earnings. The latter should be reflected positively in the valuation of their shares. Second, due to barriers to the flow of funds between various countries, MNCs may be a better vehicle for the international diversification of investors than investors directly holding a portfolio of foreign financial instruments. Thus, in a world of imperfect capital markets, shares of MNCs have a

²⁹² Cf. McFarland (1988), p. 614.

²⁹³ Cf. Stevens (1990), p. 618.

²⁹⁴ In addition, McFarland (1988) notes that Tobin's q may also suffer from disadvantages related to the calculation of market value that the accounting rate of return avoids. Market value is calculated using the price of common stock, but that price is an imperfect estimator of value.

²⁹⁵ Cf. McFarland (1990), pp. 620-622.

valuable function for investors seeking to diversify their portfolios internationally.²⁹⁶ As a result, any positive association between corporate internationalization and market-based performance may be due to superior competitive performance of the firm and/or superior outcomes for shareholders. Thus, empirical studies of the internationalization-performance relationship using market-based performance indicators investigate a joint hypothesis pertaining to differences in firms' competitive performance vis-à-vis other firms and performance differences that result from the security holder's point of view.²⁹⁷

What becomes clear from the above discussion is that neither accounting- nor market-based performance indicators can claim to be the superior measure of performance. Rather, the two types of indicators represent slightly different perspectives on corporate performance. First of all, accounting-based performance is oriented toward the past, while market-based performance is oriented toward future expected value. Furthermore, in the tradition of industrial organization economics, accounting-based indicators are most concerned with the profitability of firms, i.e. their ability to extract higher price-cost margins from sales. In contrast, market-based indicators are mostly used by the finance discipline to resolve questions around valuation, where value is determined by what investors are willing to pay for claims against the firm.²⁹⁸ Shepherd points out that unlike accounting profit, Tobin's *q* is a phenomenon of capital market valuation, not of the firm itself.²⁹⁹

The main objective of this dissertation is to investigate the moderating effects of firm-level variables on the performance outcomes from corporate internationalization. Because these moderating variables are determined by discrete managerial decisions, the primary concern is to measure performance differences between firms that can be directly associated with those decisions. Thus, firms themselves are the unit of analysis and accounting-based indicators are therefore used as the primary measure of performance.³⁰⁰ Moreover, accounting-based performance indicators may be especially appropriate in studies of

²⁹⁶ See the discussion on portfolio diversification theory in chapter 2.1.1.4.

²⁹⁷ Cf. Osegowitsch and Zalan (2005), p. 7.

²⁹⁸ Cf. Stevens (1990), pp. 618-619.

²⁹⁹ Cf. Shepherd (1986), p. 1206. Shepherd explains that the *q*-ratio's numerator (the firm's current market value) is indirect and subjective because it depends on various investors' expectations about the firm's future streams of profits. It is also subject to swings caused by changing psychology, rumors, and extraneous factors.

³⁰⁰ Accounting-based performance measures are still commonly used and also strongly defended. See, for example, Long and Ravenscraft (1984) and Hoskisson et al. (1993).

diversification because it was found that managers rely more heavily on accounting-based performance in formulating diversification strategy.³⁰¹

In particular, return on sales (ROS) is chosen as the preferred measure of performance. This choice is based on the extensive arguments provided by Geringer et al. They favor the use of sales-based accounting measures of performance because sales are generally expressed in more current terms than assets, which would have been acquired over a longer time frame and carried at book values. Consequently, "accounting ratios derived from asset-based values tend to hinder inter-company performance comparisons because they display greater distortion than do operating-based measures." In addition, major new investments undertaken during the study period, but not yet generating sales to their full potential, could further distort asset-based performance measures. This is less likely to be true for a profit-to-sales measure, which is based on income statement values.³⁰² However, recognizing that the use of multiple performance indicators may foster the accumulation of knowledge and also helps to avoid an unintended bias, the main results of this study are also reported for the return on assets (ROA) as well as Tobin's q.

The hypothesized moderating variables mostly relate to the operating procedures of MNCs. It is therefore appropriate to examine their effects on the internationalization-performance relationship in a model that uses accounting-based indicators of *operating performance* as the dependent variable. Consequently, both ROS and ROA are calculated based on companies' earnings before interest and tax (EBIT). In this way, any influence of international differences in corporate income taxation or interest rates that could blur the effects of the hypothesized moderating variables are avoided. In particular, the return on sales (ROS) is calculated as the ratio of EBIT over total company sales, whereas the return on assets ratio (ROA) is derived by dividing EBIT by total year-end assets. The required information for calculating both performance indicators was obtained from the sample companies' annual reports. It was collected for the 3-year period from 2003 until 2005. Tobin's q is chosen as market-based indicator of performance in this study not only because it is the most commonly used performance measure in financial economics but also because it has been frequently used in previous studies of the internationalization-performance relationship.³⁰³ Tobin's q is originally defined as the ratio of the market value

³⁰¹ Cf. Hoskisson et al. (1993), p. 221.

³⁰² Cf. Geringer, Beamish, and daCosta (1989), p. 113.

³⁰³ See Morck and Yeung (1991); Lu and Beamish (2004); Christophe and Lee (2005); Pantzalis (2001).

of a firm to the replacement cost of its assets. However, the procedures³⁰⁴ initially proposed to calculate q-values based on this definition haven proven to be highly complex and difficult to implement³⁰⁵. In particular, computational problems may arise from the limited availability of data regarding the replacement costs of firm assets.³⁰⁶ Therefore, this dissertation uses the estimate of Tobin's q introduced by Chung and Pruitt, which implicitly assumes that the replacement values of a firm's assets are equal to their book values. The Chung and Pruitt statistic is defined by the following formula:

$$\tilde{q} = \frac{MVE + PS + DEBT}{TA} \quad (\text{Eq.1})$$

where MVE = market value of a firm's equity (product of a firm's share price and the number of common stock shares outstanding); PS = liquidation value of a firm's outstanding preferred stock; DEBT = book value of a firm's long-term debt plus its short-term liabilities net of its short-term assets; and TA = book value of a firm's total assets.³⁰⁷ The data required to compute the above estimate of Tobin's q were obtained from the sample companies' annual reports, Bloomberg, and the Osiris database provided by Bureau van Dijk. In line with the information on ROS and ROA, information on Tobin's q was collected for the years 2003-2005.

The use of Chung and Pruitt's estimate of Tobin's q is defensible on several grounds. Performing a series of regressions, Chung and Pruitt find that their estimate of q explains at least 96 % of the variability of the q-values they obtained from the more theoretically correct model of Lindenberg and Ross. This finding suggests that their estimate of Tobin's q may be safely employed. Moreover, Christophe and Lee argue the Chung and Pruitt's method can be appropriately used to make estimator inferences in studies of the internationalization-performance relationship that do not use q-values to partition the sample, but rather examine the q-value of firms relative to other firms.³⁰⁸ The latter corresponds to the analytical approach followed by this dissertation.

In line with previous empirical studies, corporate performance is conceptualized as a single-item measure, i.e., the three performance indicators defined above are not

³⁰⁴ See, for example, Lindenberg and Ross (1981), pp. 1-32; Lang and Litzenberger (1989), pp. 181-191.

³⁰⁵ Cf. Chung and Pruitt (1994), pp. 70-71.

³⁰⁶ The measurement of replacement costs is a difficult matter because, in most cases, active markets for old (used) capital goods do not exist (Lindenberg and Ross (1981), p. 12).

³⁰⁷ Cf. Chung and Pruitt (1994), pp. 70-74.

³⁰⁸ Cf. Christophe and Lee (2005), p. 639.

aggregated to build a composite performance construct. Instead, the effects of the independent/moderating variables on corporate performance are analyzed for each of the three performance indicators (ROS, ROA, and Tobin's q) individually. Moreover, to improve the reliability of measurement, the three performance indicators are averaged over the 3-year period from 2003- until 2005. In this way, it is possible to alleviate the influence of short-term irregularities and one-time effects.

5.1.2 Independent (Exogenous) Variables

In an empirical model of the internationalization-performance relationship, the independent or exogenous variable represents the degree of internationalization (DOI) of companies.

The majority of previous empirical studies conceptualized the degree of internationalization as a single-item measure, preferably using either the ratio of foreign sales to total sales (FSTS) or foreign assets to total assets (FATA) as the sole indicator of DOI. However, because corporate internationalization is a multidimensional construct, this measurement approach may have contributed to the empirical disarray outlined in chapter 3.³⁰⁹ As Sullivan notes, a single indicator tends to misrepresent the construct because it represents only a limited portion of the content domain. Moreover, when only a single item – or even just a single aspect of a multidimensional domain – is used, any unusual circumstances that might distort the validity of the measure will contaminate the results.³¹⁰ Thus, while taking great care to develop meaningful measures of financial performance, the "vast majority of empirical studies of DOI and performance estimated the former construct with a measure that is intrinsically unreliable and has, at best, speculative validity. The consequence is that "we are unable to state with certainty that international diversification will improve the financial performance of a firm."³¹¹

Consequently, Sullivan argues for the use of a multi-item measure of DOI because such a measure "is more likely to tap a broader range of the valid content of the total meaning of the construct of a firm's DOI."³¹² In particular, Sullivan identifies three dimensions or attributes that characterize a company's degree of internationalization: a *performance*

³⁰⁹ See the discussion on the divergent forms of the internationalization-performance relationship found in past empirical studies provided in chapter 3.2.

³¹⁰ Cf. Sullivan (1994b), p. 326.

³¹¹ Sullivan (1994b), p. 300.

³¹² Sullivan (1994b), p. 337.

attribute ("what goes on overseas"), a *structural* attribute ("what resources are overseas"), and an *attitudinal* attribute ("what is top management's international orientation"). In addition, he suggests five "good" indicators that capture these three dimensions of corporate internationalization and, hence, can be combined to more completely measure the DOI of companies. The first indicator, the ratio of foreign sales to total sales (FSTS), is a measure of the performance attribute of DOI. The next two, the ratio of foreign assets to total assets (FATA) and the proportion of overseas subsidiaries to total subsidiaries (OSTS), are the two suggested indicators of the structural attribute. Finally, the top managers' international experience (TMIE) and the psychic dispersion of international operations (PDIO) indicate the attitudinal attributes. Because all of the above indicators are ratio variables and are therefore on the same scale, Sullivan computes the degree of internationalization (DOI) by treating the five indicators as a linear combination and summing the value per indicator for each individual company. Thus, a company's degree of internationalization is calculated as $DOI = FSTS + FATA + OSTS + TMIE + PDIO$.³¹³

The use of the above multi-item measure of DOI enhances content validity because the indicators capture all of the three dimensions (attributes) of corporate internationalization. Moreover, it also improves the reliability of measurement. As Sullivan points out, "the use of a multi-item scale goes further to ensure that circumstances that may invalidate one dimension of the measurement scale are not so apt to invalidate the entire measurement scale."³¹⁴ Thus, Sullivan's measure of DOI can assist international business researchers in improving the reliability and validity of their DOI analyses.

More recent empirical studies of the internationalization-performance relationship lend support to the use of a multi-item measure of DOI. For example, both the Gomes and Ramaswamy study and the Thomas and Eden study recognize the multi-dimensionality of corporate internationalization and use three indicators to create a composite measure of a firm's DOI. They use the FSTS ratio as a proxy for a firm's dependence on its overseas markets for sales revenues, and the FATA ratio as a measure of a firm's dependence on overseas production. The third indicator, the number of foreign countries in which a firm has subsidiaries, captures the dispersion element of internationalization, which encompasses locational costs and benefits. Thus, the first two components of their

³¹³ Cf. Sullivan (1994b), pp. 331-335. Because DOI is a linear combination of five ratio variables, the range of value for a firm's DOI is from 0.0 (absolutely no international involvement) to 5.0 (absolutely total international involvement).

³¹⁴ Sullivan (1994b), p. 337.

composite measure of DOI (FSTS and FATA) represent the depth of an MNC's involvement abroad, whereas the third component (country scope) captures the breadth of multinationality.³¹⁵ In general, Capar and Kotabe note that "ideally, it is desirable to have multiple or different indicators to capture the international activities of firms more fully."³¹⁶

Based on the above considerations, this dissertation conceptualizes corporate internationalization (DOI) as a multidimensional construct, and consequently uses multiple indicators to capture the different facets of MNCs' international activities. In doing so, it largely builds on the work by Sullivan for two reasons. First, Sullivan's conceptualization of DOI has been highly influential and is widely recognized in the literature. To illustrate, a search on the *Social Science Citation Index* brings up 73 articles (as of October 2007) that cited Sullivan's study. These articles were published in leading journals across many disciplines, e.g., *Journal of International Business Studies*, *Strategic Management Journal*, *Journal of Financial and Quantitative Analysis*.³¹⁷ More important, however, the three dimensions of internationalization Sullivan identifies are consistent with the attributes that the international business literature suggests to distinguish between MNCs and purely domestic firms. As illustrated in Figure 8, the static attributes of MNCs also consist of performance, structural, and attitudinal attributes. The dynamic attribute of MNCs, which is represented by the degree of internationalization (DOI), in turn, is determined by the three static attributes. Thus, by employing Sullivan's indicators of the performance, structural, and attitudinal attributes of internationalization, this dissertation is able to ensure that the DOI construct captures the total meaning of corporate internationalization. The latter is important because "all dimensions of multinationality must be considered theoretically and empirically in order to produce clear results in studies of the multinationality-performance relationship."³¹⁸

However, one exception is made to the use of Sullivan's indicators to measure a firm's DOI. Sullivan employed top managers' international experience (TMIE) as a substitute for their international orientation because he intended to develop a DOI measure that is exclusively based on archival data. Yet, the presumption that organizations led by top management teams with extensive international experience are "more internationalized"

³¹⁵ Cf. Gomes and Ramaswamy (1999), pp. 180-181; Thomas and Eden (2004), pp. 98-99.

³¹⁶ Capar and Kotabe (2003), p. 353.

³¹⁷ A complete list of the articles is provided in Appendix B.

³¹⁸ Thomas and Eden (2004), p. 93.

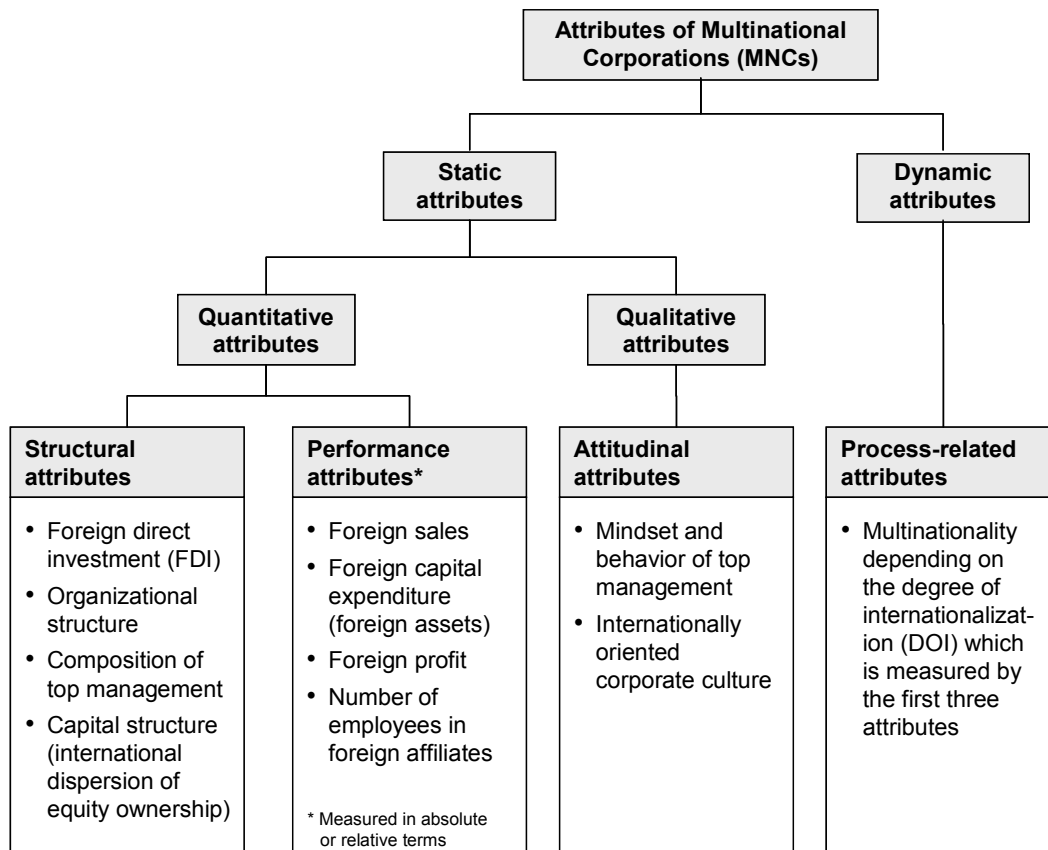


Figure 8: Attributes of Internationalization (Source: von Roessel (1988), p. 39)

than their counterparts led by executives with predominantly domestic experience is largely conjectural. As Ramaswamy et al. point out, "it requires a leap of faith to infer that years of international experience is an adequate surrogate measure of the attitude toward internationalization."³¹⁹ Similarly, Kobrin concludes that "while a geocentric mind-set is definitely associated with broad geographic scope, it does not appear to be a function of length of international experience, strategy or organizational structure."³²⁰ Therefore, this dissertation replaces TMIE with a more direct indicator of a firm's international orientation (INTOR) which reflects the geocentric or world-oriented mindset of its executives.

In particular, the indicators used in this study to measure a firm's degree of internationalization (DOI) are computed/measured as follows:

The foreign sales to total sales ratio (FSTS) is defined as a company's sales outside of its home market divided by total company sales. It measures a firm's foreign market penetration and consequently its dependence on foreign markets for sales revenues.

³¹⁹ Ramaswamy, Kroeck, and Renforth (1996), p. 173.

³²⁰ Kobrin (1994), p. 507.

The foreign assets to total assets ratio (FATA) is defined as a firm's assets outside of its home country divided by its total assets. It is a proxy for the degree to which a firm engages in activities (especially production) across borders.

The proportion of overseas subsidiaries to total subsidiaries (OSTS) is defined as the number of foreign subsidiaries divided by the total number of a firm's subsidiaries. Because foreign assets can be concentrated in a few subsidiaries of an MNC, OSTS complements the DOI construct by capturing the dispersion element of internationalization.

The psychic dispersion of international operations (PDIO) measures the dispersion of the subsidiaries of a firm among the ten psychic zones of the world as identified by Ronen and Shenkar.³²¹ It is defined as the number of psychic zones in which a firm has subsidiaries divided by the total number of psychic zones (10). Because each zone has a unique "cognitive map" of management principles,³²² PDIO not only measures the geographic range or breadth of a firm's international presence but also the psychic distance between its operating units. It is important to capture the latter in the DOI construct because it may have important implications for the benefits and costs derived from corporate internationalization (e.g., psychic distance may pose greater difficulties to MNCs' administrative systems in managing dispersed markets).

The above four indicators are calculated with data obtained from companies' annual reports. However, information on the number and dispersion of foreign subsidiaries was cross-checked and, if necessary, supplemented with data derived from the *Directory of Corporate Affiliations* provided by LexisNexis. Moreover, a 3-year average for the period from 2003 until 2005 is calculated for FSTS and FATA in order to control for changes in exchange rates and accounting methods. In contrast, a single value per indicator as of 2005 is used for OSTS and PDIO because of their comparatively slow rate of change.

The international orientation of a firm (INTOR) is based upon the mindsets and behavior of its managers and therefore cannot be directly assessed using secondary data. Thus, the measurement of INTOR has to rely on primary data collected from the questionnaire survey among leading MNCs. Moreover, the international orientation of a firm represents

³²¹ In their meta-analysis of cross-cultural studies, Ronen and Shenkar decompose the world into ten psychological zones – "Anglo", Germanic, Nordic, Near Eastern, Arab, Far Eastern, Latin American, Latin European, Independent, and Other." Cf. Ronen and Shenkar (1985), p. 449.

³²² Cf. Sullivan (1994b), p. 332.

an indicator of DOI that itself is an abstract construct which needs to be measured using one or more items that are empirically observable. Consequently, this dissertation develops four questions that are used in the survey to obtain the information required to measure a firm's international orientation. In particular, these questions assess the degree to which the deployment of people and resources as well as the corporate culture of a firm reflect a geocentric or world orientation of its managers.³²³ As Perlmutter notes, "the orientation toward foreign people, ideas and resources, in headquarters and subsidiaries, and in host and home environments, becomes crucial in estimating the multinationality of a firm."³²⁴

Because the five indicators (FSTS, FATA, OSTs, PDIO, INTOR) capture all dimensions of corporate internationalization and, in addition, each represents a unique aspect of an MNC's international activities, they are expected to measure a firm's DOI appropriately.

5.1.3 Moderating Variables

Similar to the measurement of a firm's international orientation, it is necessary to penetrate an MNC's boundary to obtain the information required to measure variables relating to its management and organization. Consequently, four of the five hypothesized moderating variables are conceptualized as multi-item measures for which the required data is obtained from the questionnaire survey. Only the organizational slack variable is measured objectively using secondary data from companies' annual reports. Details of the definition and measurement of the hypothesized moderating variables are provided below.

Configuration of the value chain (CONFIG):

While Ramaswamy generally recognizes the potentially moderating role of a firm's value chain configuration in the relationship between internationalization and performance, he limits his empirical examination to exploring the role of configuration as it relates to manufacturing activities. However, benefits arising from economies of scale or the arbitrage of national differences in factor, product, or capital markets are not confined to an MNC's manufacturing function. Therefore, this dissertation develops a value chain configuration construct (CONFIG), which encompasses nine value activities of an MNC – manufacturing, procurement, R&D, product distribution, marketing, human resources, finance and accounting, information technology, as well as government and public

³²³ See questions A1-A4 in the questionnaire provided in Appendix C.

³²⁴ Perlmutter (1969), p. 11.

relations. In this way, the configuration construct captures the four types of activities (primary, secondary, upstream and downstream) that Porter uses to completely describe a firm's value chain, as illustrated in Figure 9.

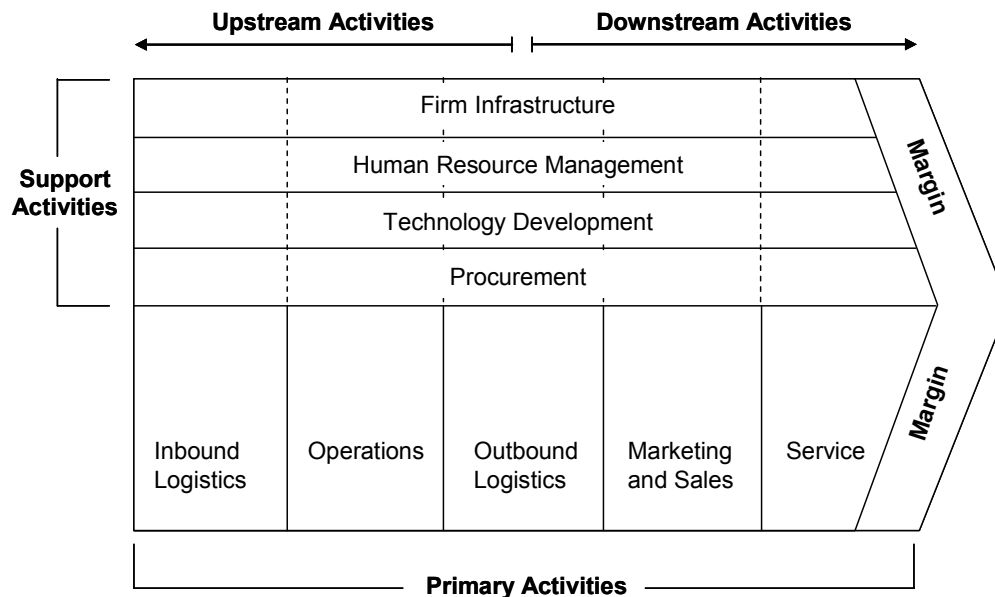


Figure 9: The Value Chain (Source: Porter (1986b), p. 14/16)

For example, the manufacturing, marketing, and product distribution functions of an MNC represent *primary* activities, which are those involved in the physical creation of the product or service and its subsequent delivery and marketing to the buyer. In contrast, the procurement, R&D or human resource functions of MNCs represent *secondary* activities, which provide the inputs or infrastructure that allow the primary activities to take place on an ongoing basis. Moreover, the nine value activities encompassed in this dissertation's value chain configuration construct also involve upstream and downstream activities. *Downstream* activities are those value activities that are more related to the buyer and, thus, are usually tied to where the buyer is located. Conversely, *upstream* activities can at least conceptually be decoupled from where the buyer is located. Thus, the marketing and product distribution functions of MNCs represent downstream activities, whereas the remaining 7 of the nine value activities included in the configuration construct represent upstream activities.³²⁵ Based on these considerations, it can be expected that the configuration construct (CONFIG) used in this study captures the total meaning of a firm's value chain.

³²⁵ Cf. Porter (1986b), pp. 13-16.

As discussed in chapter 4, the configuration of a specific value chain activity encompasses two dimensions – the number of locations in which the activity is performed (concentration) and where in the world the activity is performed (geographic dispersion). Hence, the value chain configuration construct (CONFIG) needs to measure both dimensions for each of the nine value activities identified. Because few studies have focused on the configuration of two or more value activities simultaneously, this dissertation relies on adapting a measure developed by Roth and Roth et al.³²⁶, which aggregates the responses of an individual firm across its functional activities to create an overall index value. In particular, the sample MNCs in this study were asked to indicate whether each of the nine activities identified was performed "in only one location for the entire company" (scored 3), "in multiple (a few) locations for the entire company" (scored 2), or "in each subsidiary individually" (scored 1). In this way, the level of concentration for each activity is measured.³²⁷ In addition, the sample companies were also asked to indicate whether each of the nine activities was performed "only in the home country of headquarters (domestically)" (scored 1), "in only one foreign country" (scored 2), or "in multiple foreign countries" (scored 3).³²⁸ The latter questions are used to evaluate the level of geographic dispersion for each value activity. Because CONFIG seeks to measure the configuration of an MNC's complete value chain, two steps will be taken to create an overall index from the information obtained by the above two measures. First, the information on the level of concentration and geographic dispersion is combined for each value activity separately. Second, the combined scores are aggregated across all of the nine value activities in the construct.³²⁹ In summary, the configuration of a firm's value chain (CONFIG) is defined as a multidimensional, multi-item measure that uses the configurations of nine specific value activities as indicators of the total value chain configuration. The configuration of an individual value activity in turn is measured by the level of its concentration and geographic dispersion.

Intra-Company Knowledge Flows (KNOW):

As discussed in the previous chapter, intra-company knowledge flows may present an important source of value to MNCs because they contribute to an organization's collective learning capability. This collective learning capability is a major component of a firm's

³²⁶ Cf. Roth (1992), p. 537; Roth, Schweiger, and Morrison (1991), p. 396.

³²⁷ See questions H2a - H2i in the questionnaire provided in Appendix C.

³²⁸ See questions H3a – H3i in the questionnaire provided in Appendix C.

³²⁹ Details of the index construction procedure are provided in connection with the operationalization and validation of the construct in chapter 6.3.2.

core competencies, which in turn are essential for the generation of a sustained competitive advantage. Moreover, it has been argued that such intra-company knowledge flows can occur along multiple directions and that companies employing both vertical and lateral knowledge flows are expected to benefit most from their international presence.³³⁰ Therefore, it is important that the knowledge flow construct (KNOW) employed by this dissertation captures the different directions of knowledge flows in MNCs in order to appropriately measure the extent to which a sample company engages in knowledge transfers. This was achieved by adapting a multi-item measure used by Harzing and Noorderhaven as well as Gupta and Govindarajan³³¹. In particular, survey respondents were asked to indicate the extent to which foreign subsidiaries of their company engaged in the transfer of knowledge and skills in each of the following four directions: (1) provide knowledge and skills to headquarters, (2) provide knowledge and skills to other (sister) subsidiaries, (3) receive knowledge and skills from headquarters, (4) receive knowledge and skills from other (sister) subsidiaries. While directions (1) and (3) represent vertical knowledge flows, directions (2) and (4) constitute lateral knowledge flows.

Moreover, intra-company knowledge flows may transfer different types of knowledge. Procedural types of knowledge include for example, product designs, distribution know-how, management systems and practices, whereas declarative types of knowledge largely refer to operational information such as monthly financial data. This study focuses on the transfer of procedural types of knowledge, i.e. on knowledge that exists in the form of "know-how", because this knowledge is rather tacit in nature. This approach is justified on the grounds that tacit knowledge is especially important to MNCs because it is difficult to imitate.³³² As discussed, resources that are difficult to imitate not only represent a source of sustained competitive advantage but also have a lower risk of misappropriation when transferred internationally. Consequently, survey respondent were asked to indicate the extent to which subsidiaries of their company engaged in the transfer of knowledge as it relates to marketing and distribution know-how, product design, or management systems.³³³

³³⁰ See chapter 4.1.4.2.

³³¹ See Harzing and Noorderhaven (2006a), p. 9; Gupta and Govindarajan (2000), p. 483.

³³² Cf. Welge and Holtbrügge (2001), p. 183.

³³³ See section D of the questionnaire provided in Appendix C.

Social Control Mechanisms (SOCON):

Social control mechanisms can generally be grouped into three categories using a biological analogy. The first category comprises finer and subtler tools for shaping the *organizational anatomy*. Such microstructural tools/arrangements include task forces, inter-unit committees, or project teams, which cut across the formal lines of macro structure, thereby allowing managers to fine-tune the decision-making processes and the distribution of responsibility. When implemented effectively, these forums provide a good way to incorporate diverse management perspectives into the corporate decision-making and to offset the mainstream allocation of responsibility and authority. The second category of social control mechanisms relates to an *organization's physiology* and is mostly concerned with the creation of informal communication channels through personal contacts and relationships. Elements in this category include, for example, the direct and informal communication among managers from different foreign locations via telephone or email, or the fostering of personal relationships among managers through business trips. Such informal communication channels supplement the formal information system and improve the communication process. The latter is of great importance to MNCs because formal systems alone cannot support the huge information-processing requirements in an integrated network of foreign operations.³³⁴ The third category of social control mechanisms relates to the *organizational psychology* and aims at developing a set of shared values and beliefs. The mechanisms in this category facilitate this process and encompass the establishment of a shared understanding of the company's mission and objectives among managers, management development processes that move high-potentials between headquarters and subsidiaries, and education and training programs in which managers from different international locations and headquarters are brought together. Such mechanisms can be especially relevant to MNCs, because a shared management understanding is often a much more powerful coordinating tool than either structure or systems when managers are separated by distance and time.³³⁵

As illustrated, each category of social control mechanisms can contribute in a unique way to the building of multidimensional strategic capabilities and the managing of the complexity involved in MNCs' organizational structures. Therefore, this dissertation conceptualizes social control as a multidimensional construct, which measures the degree

³³⁴ Cf. Bartlett and Ghoshal (2002), p. 287.

³³⁵ Cf. Bartlett and Ghoshal (2002), pp. 286-290; Martinez and Jarillo (1989), pp. 507-508.

to which sample companies make use of social control mechanisms from each of the above described categories. In particular, survey respondents are asked to indicate the extent to which their company makes use of (1) temporary task forces, (2) inter-unit committees to facilitate joint decision-making of managers from different international locations and corporate functions, (3) permanent teams to coordinate actions among subsidiaries. These three items represent microstructural tools used to shape the organizational anatomy. In a second set of questions, survey participants are also asked to indicate the frequency with which each of the following events that foster personal contacts and relationships take place in their company: (1) informal communication via telephone or e-mail among managers from different subsidiaries and/or headquarters, (2) business trips of subsidiary managers to headquarters, (3) visits of headquarters-based manager to foreign subsidiaries for the purpose of integrating subsidiaries into the organization. Because informal communication takes place through personal contacts and relationships rather than through more formalized channels, the latter three items represent social control mechanisms that are part of the organizational physiology category. Finally, three questions/items are used to assess the sample companies' use of social control mechanisms that belong to the organizational psychology category. The latter set of questions asks survey respondents to indicate the extent to which (1) subsidiary managers in their company are aware of and act according to the goals and values of top management at headquarters; (2) top managers and high-potentials are moved between headquarters and different international locations during their development process; and (3) their company makes use of international training programs in which executives from different subsidiaries and headquarters participate simultaneously.³³⁶

Thus, the social control construct (SOCON) used in this study is measured by a total of nine individual items/questions. These items or questions were developed based on existing empirical studies by O'Donnell, Harzing and Noorderhaven, Harzing and Sorge, as well as Ghoshal and Bartlett.³³⁷ In this way, the measurement of the SOCON construct is based on items that have previously been used and thus have demonstrated their

³³⁶ See sections E, F, and G of the questionnaire provided in Appendix C.

³³⁷ Cf. O'Donnell (2000), pp. 547-548; Harzing and Noorderhaven (2006b), pp. 181-183; Harzing and Sorge (2003), pp. 209-211; Ghoshal and Bartlett (1988), pp. 374-375.

appropriateness. Moreover, as discussed above, these items are expected to capture the relevant content domain of social control mechanisms.³³⁸

Subsidiary Autonomy (AUTO):

The hypothesized moderating role of subsidiary autonomy in the internationalization-performance relationship is based on the argument that subsidiary autonomy largely determines an MNC's ability to respond to local market needs. Therefore, subsidiary autonomy (AUTO) is conceptualized as the level of decision-making authority and leeway that MNCs' headquarters grant their foreign subsidiaries in order to tailor the company's operations (e.g., its products and services) to the unique local requirements of individual host countries. Consequently, the measure employed in this study asks survey participants to indicate the level of influence that subsidiaries in their organization would typically have on seven distinct decisions, viz., (1) the development and introduction of new products for the local market, (2) the customization/modification of existing products for local needs, (3) price changes for products sold on the local market, (4) the design of the advertising/marketing for company products sold on the local market, (5) the modification of a production process, (6) the restructuring of the subsidiary organization involving the creation or abolition of departments, and (7) entering new markets.³³⁹

The above decision items are a cross-section of the items used in previous empirical studies to measure subsidiary autonomy.³⁴⁰ However, attention was not only paid to employing decision items that have already been deemed appropriate by other researchers, but also to including *both strategic and operational decisions* in the measurement of the subsidiary autonomy construct. Based on the classification provided by Ghoshal and Bartlett³⁴¹, the development and introduction of new products, the modification of a production process, the restructuring of the subsidiary organization, and the entering of new markets all can be regarded as *strategic decisions*, whereas the remaining three decision items are considered *operational decisions*. The inclusion of both types of decisions in the measurement of the construct is important, because O'Donnell defines subsidiary autonomy also as the extent to which the foreign subsidiary has operational and

³³⁸ In this context, O'Donnell (2000) also distinguishes between vertical and lateral integration that can be achieved through social control mechanisms. These two dimensions are also captured by the nine items used in this study.

³³⁹ See section C of the questionnaire provided in Appendix C.

³⁴⁰ Cf. Harzing and Noorderhaven (2006b), p. 181; Ghoshal and Bartlett (1988), p. 375; Nohria and Gulati (1996), p. 1255; O'Donnell (2000), p. 547.

³⁴¹ See Ghoshal and Bartlett (1988), p. 387.

strategic decision-making authority across its entire product line.³⁴² Thus, based on the existing literature, the defined multi-item measure of the subsidiary autonomy construct appears to be appropriate in the sense that the constituting items have not only been used in the past but also are comprehensive, i.e., they capture the relevant content domain of the construct.

Organizational Slack (TSLACK):

Because there is no obvious and direct measure of organizational slack, researchers traditionally followed two different approaches to measuring organizational slack. The first approach focuses on determining the conditions under which slack resources are likely to be available to an organization. By relying on standard financial data reported for a firm as a whole, it uses antecedents of slack as indicators.³⁴³ However, this approach is not very suited for empirical studies trying to measure slack at the subunit level because financial data for organizational subunits is mostly not available. Therefore, the second approach uses subjective measures of slack asking organizational members such questions as:

"Assume that due to some sudden development, 10% of the time of all people working in your department has to be spent on work totally unconnected with the tasks and responsibilities of your department. How seriously will your output be affected over the next year?"³⁴⁴ While the second approach alleviates the data availability problem associated with using objective measurements of slack in studies focusing on organizational subunits, it is associated with two other critical problems. As Bourgeois notes, it is questionable whether individuals can accurately assess how much they would be affected by a sudden change and, even if they could, they may not be enthusiastic about making such a revelation. The latter may be especially the case in studies looking for some sort of relationship between slack and performance. Perhaps more critical, however, the second approach represents a measure of individual phenomena, not organizational. Therefore it is not clear that it would always indicate the presence of some amount of deployable organizational resources.³⁴⁵

To avoid these latter problems, this dissertation chooses to employ an objective measure of slack. This choice is also justified on the grounds that the units of analysis in this study are MNCs as a whole, which a priori allows for the use of standard financial data in measuring

³⁴² Cf. O'Donnell (2000), p. 535.

³⁴³ See for example Bourgeois (1981), pp. 29-39.

³⁴⁴ Cf. Nohria and Gulati (1996), p. 1253.

³⁴⁵ Cf. Bourgeois (1981), p. 32.

slack. Moreover, all of the 66 empirical studies reviewed in the meta-analysis by Daniel et al. employ accounting-based measures of organizational slack.³⁴⁶ This finding corroborates the notion that most existing empirical efforts concentrate on the use of objective measures of slack.

In particular, this study develops a measure of slack based on the conceptualization proposed by Bourgeois and Singh. They conceive organizational slack as being composed of three interrelated but conceptually distinct dimensions: available slack, recoverable slack, and potential slack. These three dimensions differ in the ease or quickness with which the slack resource could be recovered for potential redeployment. Thus, available slack (ASLACK) consists of resources that are not yet assimilated into the technical design of the organization and are therefore readily available resources. For example, a firm's excess liquidity represents available slack resources. In contrast, recoverable slack (RSLACK) consists of resources that have already been absorbed into the system design as excess costs (e.g., excess overhead costs), but may be recovered in adverse times. Thus, it takes more time and effort to free up those resources for redeployment. Finally, potential slack (PSLACK) represents the capacity of the organization to generate extra resources from the environment, e.g., by raising additional debt or equity capital.³⁴⁷

These three dimensions of organizational slack are measured using indicators that are well-established in the literature. Available slack is measured by a firm's current ratio (current assets divided by current liabilities) which is a common measure of firm liquidity and therefore represents the existing capital that is available for immediate investment.

Recoverable slack is measured by a firm's selling, general, and administrative expenses divided by sales (SG&A/sales). Potential slack is assessed by the equity-to-debt ratio, which represents the extent to which a firm has not tapped into potential sources of leverage. Thus, the equity-to-debt ratio is a measure of a firm's unused borrowing capacity.³⁴⁸

The data required to compute the above ratios were obtained from the sample companies' annual reports and the Osiris database provided by Bureau van Dijk. It was collected for the time period from 2003 until 2005. However, in line with the general treatment of accounting data in this dissertation, a 3-year average is calculated for each of the three

³⁴⁶ Cf. Daniel et al. (2004), pp. 568-570.

³⁴⁷ Cf. Bourgeois and Singh (1983), p. 43.

³⁴⁸ Cf. Bromiley (1991), p. 46; Bergh and Lawless (1998), p. 93; Halebian and Finkelstein (1993), p. 854; Combs and Ketchen (1999), p. 877; Hambrick et al. (1996), p. 673; Bergh (1997), p. 722.

ratios in order to control for changes in exchange rates and short-term irregularities. Moreover, following Bourgeois and Singh, the 3-year averages of the ratios measuring a firm's available, recoverable, and potential slack will be combined to create a composite measure of a firm's total organizational slack (TSLACK).³⁴⁹ Thus, this dissertation conceptualizes organizational slack as a multidimensional, multi-item construct.

5.1.4. Control Variables

To avoid the potentially confounding effects of factors other than those covered by the defined independent and moderating variables, this study employs several control variables. Many researchers have indicated that variance in firm performance is partly explained by firm size which can be regarded as a proxy for general economies of scale.³⁵⁰ Hence, in the analyses of the data, it is necessary to control for firms size because otherwise the estimated parameters might be biased. Following standard practice, firm size (SIZE) is measured as the natural logarithm of a company's total sales.³⁵¹ Similar to firm size, intangible assets have previously been found to be associated with firm-specific advantage, which in turn may positively affect corporate performance, e.g. in terms of firm value³⁵². In addition, several researchers suggest that multinationality has no significant value unless the firm possesses firm-specific intangibles³⁵³. However, there are also a number of studies that reject this suggestion by showing that multinationality retains a significant positive association with firm profitability, even when the competing effect of proprietary intangible assets on firm performance is considered³⁵⁴. Thus, this study seeks to neutralize the potentially confounding effects of intangible assets by employing appropriate control variables. In line with the vast majority of existing empirical studies, these control variables relate to a firm's possession of technological and marketing-related assets (e.g., marketing expertise, consumer goodwill, brand loyalty etc.). The possession of technological assets is assessed using a firm's R&D intensity (R&D) which is defined as the ratio of its research and development expenditures to total sales. Similarly a firm's

³⁴⁹ The procedure used to construct the overall measure of organizational slack is described in chapter 6.3.2.

³⁵⁰ Cf. Kotabe et al. (2002), p. 84; Haar (1989), p. 6; Morck and Yeung (1991), p. 179.

³⁵¹ See for example: Grant (1987); Mathur et al (2001); Gomes and Ramaswamy (1999).

³⁵² Cf. Christophe and Lee (2005), p. 638.

³⁵³ Cf. Morck and Yeung (1991), p. 176; Mishra and Gobeli (1998), p. 591.

³⁵⁴ Cf. Delios and Beamish (1999), pp. 711-727.

possession of marketing-related assets is measured by the ratio of its marketing and sales expenditures to total sales (M&S).³⁵⁵

The data required to compute the three control variables (SIZE, R&D, and M&S) over the period 2003 to 2005 were obtained from the sample companies' annual report and the Osiris database provided by Bureau van Dijk. To eliminate the influence of short-term factors, each control variable was averaged over these three years.

In addition to the above three control variables, this study collects information on the type of subsidiary in which survey respondents³⁵⁶ were located. In contrast to the common usage of control variables, this information will not be used in the hypotheses testing procedures. Instead it will be used as one means in assessing the reliability of the moderating variables measured by questionnaire data.

Bartlett and Ghoshal note that, MNCs' subsidiaries may assume different roles and responsibilities within the corporate network depending on the importance of their national market to the firm's overall strategy and their competence in technology, production, marketing, or another area. Based on this consideration, they define three generic roles that country organizations can play in fulfilling the global objectives of the organization. First, subsidiaries with high internal competence located in strategically important markets are expected to assume the role of a "strategic leader" or "center of competence". These subsidiaries are legitimate partners of headquarters in developing and implementing broad strategic thrusts. Consequently, they also participate fully in analyzing the resulting threats and opportunities and developing appropriate organizational responses. Second, subsidiaries in which the internal competence is high but the strategic importance of the local market is limited are expected to assume the role of "contributors". This type of subsidiary exploits its unique resources and capabilities to the full extent by applying them to global rather than local tasks. For example, the Australian subsidiary of an MNC may possess such strong research and development capabilities that it is able to contribute to the development and implementation of new products and services on a global basis. Thus, the role of this particular subsidiary in developing new products for the company as a whole is more significant than its local market might suggest. Finally, some country organizations have just enough competence to maintain their local operations in a non-strategic market.

³⁵⁵ Marketing and sales expenditure was chosen over advertising expenditure as an indicator of a firm's possession of marketing-related intangible assets because of data availability problems.

³⁵⁶ As discussed in chapter 5.2.3.1, the questionnaire survey was targeted at managers of the country and regional organizations of the sample MNCs.

These subsidiaries are considered "implementers" because their fundamental task is to deliver the MNC's value added. Although these subsidiaries do not contribute much to the strategic knowledge of the firm, they are still important because they enable MNCs to capture economies of scale and scope.³⁵⁷ Similarly, several other researchers also distinguish between different roles that subsidiaries may play within MNCs. An overview and reconciliation of different subsidiary typologies is provided in Table 2.

Authors	Subsidiary roles			
	1	2	3	4
Bartlett and Ghoshal (2002), p. 121-128		Implementer <ul style="list-style-type: none"> Implement strategies developed elsewhere as efficiently as possible in own market "Deliverers" of the company's value added; act as "pipeline of products and strategies" 	Contributors <ul style="list-style-type: none"> High internal competence but limited strategic importance of the local market Capture the benefits of certain local facilities or capabilities and apply them to the broader worldwide operations 	Strategic Leaders <ul style="list-style-type: none"> High internal competence located in strategically important market Partners of headquarters in developing and implementing broad strategic thrusts Take on strategic tasks (e.g. development of a new product line) and act as "centers of competence"
Gupta and Govindarajan (1991, 1994)	Local Innovator <ul style="list-style-type: none"> Self-standing subsidiaries Almost complete local responsibility for the creation of relevant know-how in all functional areas Knowledge is not transferred to other subsidiaries 	Implementor <ul style="list-style-type: none"> Do not engage in extensive knowledge creation on its own Rely heavily on knowledge inflows from either headquarters or other subsidiaries 	Integrated Player <ul style="list-style-type: none"> Responsible for the creation of knowledge that can be utilized by other subsidiaries Not self-sufficient in the fulfillment of their own knowledge needs, i.e. they also receive knowledge from outside 	Global Innovator <ul style="list-style-type: none"> Fountainhead of knowledge for other organizational units Center of excellence for specific product lines
Ghoshal and Bartlett (1988)	Group 1 <ul style="list-style-type: none"> Create innovations but do not adopt or diffuse any 		Group 3 <ul style="list-style-type: none"> Create, adopt, and diffuse innovations 	
Birkinshaw and Morrison (1995)	Local Implementer <ul style="list-style-type: none"> Adapt the company's global products and marketing strategies to the needs of the local market Frequently represent "miniature replica" subsidiaries, i.e. the entire range of value-adding activities are located in that subsidiary 		Specialized Contributor <ul style="list-style-type: none"> Considerable expertise in certain specific functions or activities However, activities are tightly coordinated with the activities of other subsidiaries 	World Mandate <ul style="list-style-type: none"> Worldwide or regional responsibility for a product line or entire business Unconstrained product scope and broad value-added scope Work with headquarters to develop and implement strategy

Table 2: Overview of Different Subsidiary Roles within Multinational Corporations
(Source: own illustration)

³⁵⁷ Cf. Bartlett and Ghoshal (2002), pp. 121-126.

However, it is important to note that the different generic roles of subsidiaries described above are not expected to appear in MNCs with the same frequency. Rather, as Bartlett and Ghoshal note, the majority of national units play the role of implementers.³⁵⁸

From the multiple subsidiary typologies presented in Table 2, the *implementer*, *local innovator*, and *center of competence* roles were selected to categorize survey respondents based on the type of subsidiary they are located in. This choice was made, because the characteristics of these three roles are most clearly distinguishable. Thus, survey respondents were asked to indicate which of the following statements best describes the role of their subsidiary within the total corporate network: (1) the subsidiary's main function is to deliver company products and to carry out strategies and concepts developed at headquarters (*implementer role*); (2) the subsidiary can adequately be described as an independent, stand-alone national subunit which adapts the company's products and marketing to local needs and further creates its own innovations (*local innovator role*); (3) the subsidiary acts as a "center of competence" by performing strategic and operational tasks with global reach (*center of competence role*); (4) none of the previous statements adequately describes the role of the subsidiary within the total corporate network.³⁵⁹

Collecting this kind of information from survey respondents is necessary because some empirical studies find that the three types of subsidiaries differ in the level of autonomy they are granted by headquarters, the level of control by socialization they experience, and the extent to which they engage in knowledge in- and outflows from and to the rest of the organization, respectively.³⁶⁰ Thus, although survey respondents were explicitly asked to provide information on the total company, their responses regarding several of the hypothesized moderating variables may have been biased by their experiences from the particular type of subsidiary in which they are located. It is therefore prudent to test whether the different types of subsidiaries included in the sample exert an inadvertent influence on the study results³⁶¹.

³⁵⁸ Bartlett and Ghoshal (2002), p. 125. According to the authors, the implementer role is characteristic of many subsidiaries in Africa, Latin America, Asia, Canada, and smaller European countries.

³⁵⁹ See section B of the questionnaire provided in Appendix C.

³⁶⁰ Cf. Harzing and Noorderhaven (2006a), pp. 1-20; Gupta and Govindarajan (1991), pp. 768-792.

³⁶¹ See chapter 6.4.

5.2 Data Collection

Having provided a detailed definition of the variables that will be examined in the statistical analyses as well as the corresponding data sources, the discussion now focuses on other operational aspects such as the research site, the sampling process, and the questionnaire survey.

5.2.1 Research Site

As discussed in chapter 3.3, the divergent findings of previous empirical studies can at least partly be ascribed to fact that the majority of these studies were large-scale cross-sectional in nature. This type of empirical study does not account for the possibility that companies in different industries as well as from different geographic origins may encounter divergent internationalization-performance relationships. Thus, in order to allow for meaningful analyses of the internationalization-performance relationship by industry, this dissertation limits the research site to multinational corporations in two very distinct industries – the pharmaceutical industry and the food & beverage industry.

The primary reason for selecting the pharmaceutical and food & beverage industries to constitute the study sample was that the relative strength of the forces for global integration and local responsiveness in these two industries is traditionally expected to differ significantly. Because the competitive structure of industries may lead firms to pursue idiosyncratic strategic actions, it is then reasonable to expect that pharmaceutical and food & beverage companies also differ in the types of strategies and organizational models they employ. To illustrate, the products manufactured by the pharmaceutical industry are mostly considered sufficiently universalistic or standardized to support a "global strategy", which involves the integration of activities on a global scale in order to achieve economies of scale and scope. This notion is corroborated by Ramaswamy who finds that relatively centralized production networks are beneficial to the performance of pharmaceutical MNCs.³⁶² A critical factor driving the need for global integration in the pharmaceutical industry can be found in its high research and development intensity³⁶³. As Hout et al. note, worldwide volume is particularly advantageous in supporting high levels of

³⁶² Cf. Ramaswamy (1995), p. 248.

³⁶³ According to the European Federation of Pharmaceutical Industries and Associations (EFPIA), the ratio of R&D investment to net sales in the pharmaceutical industry is 14.9%, whereas the average R&D investment of all 36 industry sectors included in the industrial classification benchmark (ICB) set up by FTSE and Dow Jones is 3.6% of net sales. Moreover, this analysis reveals that food producers only invest 1.7% of their net sales in research and development. (EFPIA (2007), p. 7.)

investment in research and development. Therefore, many industries requiring high levels of R&D, such as pharmaceuticals, are "global".³⁶⁴ Similarly, Ruigrok and Wagner confess that a major goal of internationalization for companies operating in the pharmaceutical industry has been the redemption of high research and development costs.³⁶⁵ This goal may become even more important to pharmaceutical companies, since R&D expenditures at the industry level have continuously increased at high rates over the last two decades. While in 1990 the global R&D expenditure of the pharmaceutical industry amounted to 15.9 billion Euros, it had already increased to 54.5 billion Euros by the year 2005.³⁶⁶ Thus, over a time period of 15 years, R&D expenditure grew by about 8.6% a year, and there are no signs that this trend will end in the near future. Festing et al. note that besides the increasing costs for research and development, increasing pressures on prices stemming from cost containment programs of national authorities and generic competition also force innovative pharmaceutical companies to operate their key business processes globally to ensure an effective utilization of their resources and fast market penetration.³⁶⁷ While forces for global integration are obviously well pronounced in the pharmaceutical industry, this does not imply that forces for local responsiveness do not exist. In fact, pharmaceutical companies have to satisfy diverse national and state regulations regarding, for example, the admission of new drugs or the manufacturing standards. However, the benefits of global integration in the pharmaceutical industry appear to outweigh the costs, as reflected in the index of cross-border integration provided by Kobrin. With an index value of 0.212, the pharmaceutical industry ranks among the top 30% of the 56 industries analyzed suggesting that it generates returns to global integration.³⁶⁸ Overall, there are sufficient indications supporting the view that the pharmaceutical industry traditionally tends to be a "global industry".

In contrast, the products manufactured by the food & beverage industry are by far less universalistic and standardized as those produced by the pharmaceutical industry. As Anastassopoulos and Rama note, although diets tend to some degree toward homogeneity, especially in North America and Western Europe, peculiarities of national consumption

³⁶⁴ Cf. Hout et al. (1982), p. 99.

³⁶⁵ Cf. Ruigrok and Wangner (2003a), p. 31.

³⁶⁶ Cf. EFPIA (2007), p. 4. Global R&D expenditure is based on the pharmaceutical R&D expenditure in Europe, USA, and Japan stated in Euros at current exchange rates. As the figures have been converted into a common currency, they are to some extent influenced by exchange rate movements.

³⁶⁷ Cf. Festing et al. (2007), p. 124.

³⁶⁸ See Kobrin (1991), p. 22.

remain substantial.³⁶⁹ Thus, MNCs in the food & beverage industry may be inclined to pursue "multinational strategies" which put less emphasis on global integration than on decentralizing assets and capabilities to allow foreign subsidiaries to respond to differences that distinguish national markets. For example, the success of Unilever has frequently been attributed to its strategy of high national responsiveness and low economic integration. As Rugman notes, "selling to consumers from diverse cultures with different local tastes requires a locally-driven strategy that addresses the unique characteristics of the buyers."³⁷⁰ Therefore, consumer product firms (e.g., packaged foods) may be driven to localize production in each market in order to meet customer demands effectively (e.g., Unilever and Nestlé both have a wide array of localized production plants spread around the world).³⁷¹ The greater strength of the forces for local responsiveness in the food & beverage industry is also reflected in Kobrin's index of global integration. With index values between 0.07 and 0.09, the food & beverage industry ranks among the least integrated industries in the sample. Kobrin notes that these industries (e.g., paper boxes, leather products, and a variety of food products) appear to be those one would expect to be nationally responsive.³⁷² The above considerations do not imply that global integration may not be beneficial to MNCs in the food & beverage industry at all. Rather, the strategic capability of being locally responsive appears to be relatively more important to these companies, especially because the adaptation of their products is easier and less costly than for global products such as drugs or computers.³⁷³ Overall, the preceding discussion illustrates why the food & beverage industry traditionally has been characterized as a "multinational industry".

The described differences in the relative strengths of the forces for global integration and local responsiveness in the pharmaceutical and food & beverage industries are also reflected in the industry-globalization matrix. This matrix is based on the integration-responsiveness framework³⁷⁴ and classifies industries according to their need for economic integration and national (local) responsiveness, as illustrated in Figure 10.

³⁶⁹ Cf. Anastassopoulos and Rama (2005), p. 74.

³⁷⁰ Rugman and Hodgetts (2001), p. 340.

³⁷¹ Cf. Ramaswamy (1995), p. 249.

³⁷² Cf. Kobrin (1991), pp. 21-22.

³⁷³ Cf. Harzing (2000), p. 108.

³⁷⁴ See chapter 4.1.1.

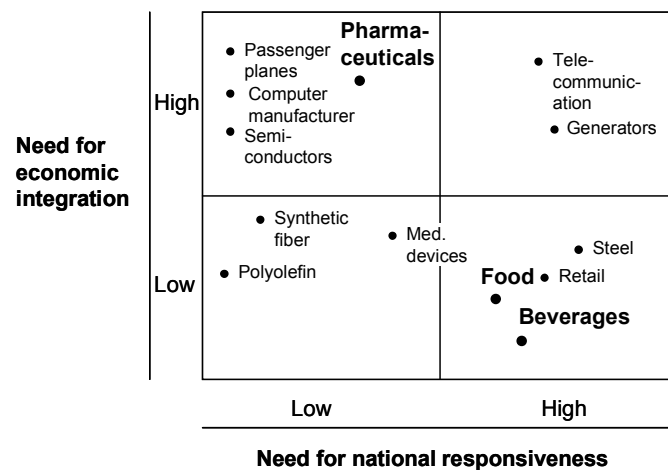


Figure 10: Industry Globalization Matrix (Source: Rall (1986), p.160)

Two other aspects favored the selection of the pharmaceutical and food & beverage industries as the research site of this dissertation. Even the largest MNCs in both industries considerably limit their endeavor to their specific industry so that there are not many highly product-diversified companies in the sample. For example, the world's 100 largest food and beverage multinationals on average have about 90% of their total sales in their core business.³⁷⁵ Consequently, choosing these two industries can overcome the potential problem of related vs. unrelated business diversification in the analyses of the internationalization-performance relationship. Moreover, both industries have been in existence for a reasonably long period of time so that many firms in these industries have had the opportunity to expand overseas.

In order to test the effects of companies' geographic origins on the relationship between corporate internationalization and performance, the study sample is also designed to contain a significant share of both European and North American MNCs. European and North American companies were selected because 85 out of the world's top 100 non-financial multinational companies originate from these two regions.³⁷⁶ Moreover, companies from these two regions differ significantly in the size of their home markets. As illustrated in Figure 11, the U.S. is the largest single market in both the pharmaceutical and the food & beverage industry. The United States alone accounts for 20% of global sales in the food & beverage industry, whereas the numerous markets in Western and Eastern

³⁷⁵ Cf. Ramaswamy (1990), p. 52; Anastassopoulos and Rama (2005), p. 75 and 87.

³⁷⁶ Cf. UNCTAD (2006), pp. 280-282.

Europe together make up 38%. This disparity is even more pronounced in the pharmaceutical industry. Here, the U.S. accounts for 42% of global industry sales while the markets in Western and Eastern Europe together generate 28% of global sales.

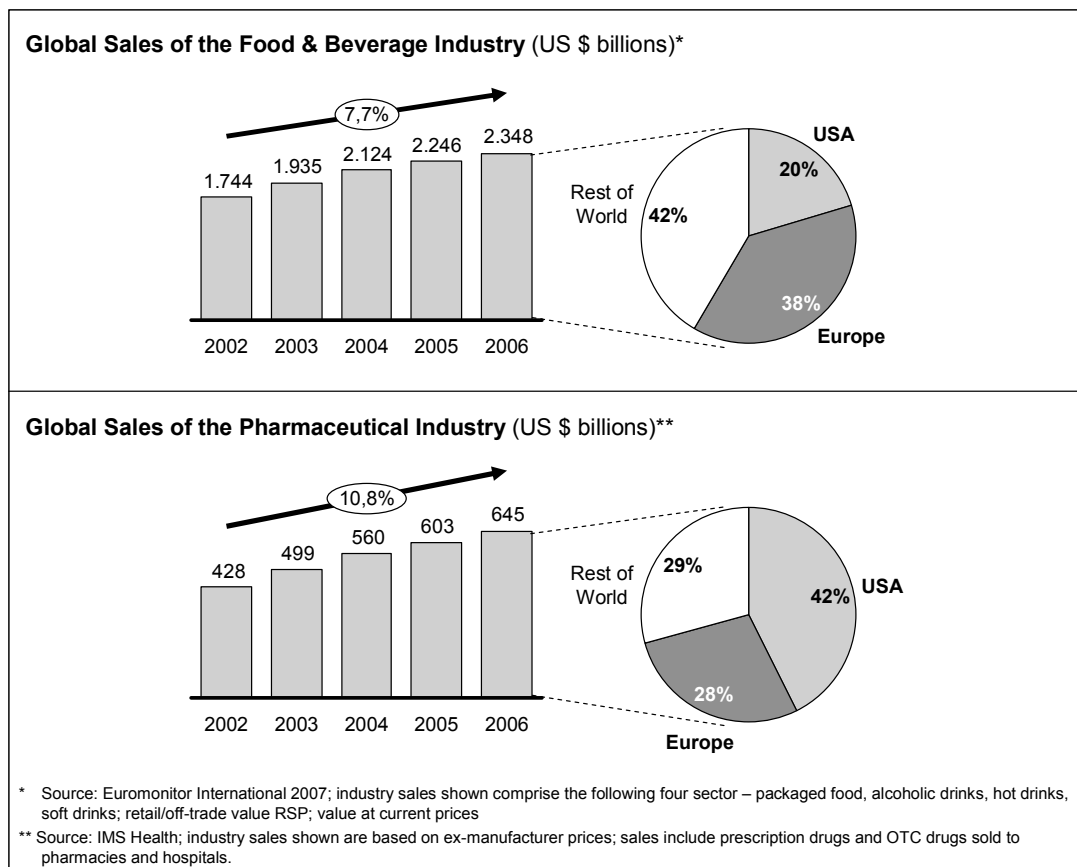


Figure 11: Sales and Market Sizes of the Pharmaceutical and Food & Beverage Industries (Source: own illustration)

As discussed previously, different home market sizes may affect the internationalization experience of companies and the scope of their international expansion activities, which both may lead to divergent internationalization-performance relationships. For example, due to the relatively small size of their home markets, European companies are expected to move outside of their home country early on in order to take advantage of economies of scale. Thus, compared to their U.S. counterparts, they should be able to draw on greater internationalization experience and knowledge, which eventually may lead to more successful foreign expansion. Moreover, European and U.S. MNCs may have different predispositions regarding the choice of the organizational model and control mechanisms employed.³⁷⁷

³⁷⁷ See chapter 4.2.2.

Based on the above considerations, the inclusion of North American and European MNCs in the study sample should allow for meaningful analyses of the hypothesized moderating effects of companies' geographic origins on the internationalization-performance relationship.

Defining the research site in the described way provides two major advantages. First, it is possible to test whether the internationalization-performance relationship differs by industry or the geographic origin of companies. The possibility to analyze the relationship by subgroups distinguishes the present study from previous empirical studies that were cross-sectional in nature. Second, it is also possible to test the moderating effects of the hypothesized organizational and managerial variables on a complete sample consisting of companies in two very distinct industries that originate from two different geographic regions. The latter contributes significantly to the generalizability of the results obtained for these variables.

5.2.2 Sampling Process

Based on the above definition of the research site, the Osiris database provided by Bureau van Dijk was used to generate a list of the 200 largest North American and European companies – split evenly between the pharmaceutical and the food & beverage industries. The selection criteria included the 3-digit SIC code³⁷⁸, the country of origin, and the companies' total sales volume in 2005. Subsequently, two steps were performed to select those companies from the list of 200 MNCs that fulfilled the requirements imposed by this study. First, non-publicly traded companies were excluded. Second, for the remaining set of companies, the availability of the financial (secondary) data required to compute the defined measures of corporate performance, degree of internationalization, and organizational slack was verified. This was done primarily by analyzing the consolidated financial statements and segment reports provided in their annual reports. Companies that did not provide the required information were also excluded from the sample. This procedure reduced the initial sample from 200 to 100 multinational corporations.

³⁷⁸ Pharmaceutical companies were identified based on SIC code 283 (drugs). The search for food & beverage companies was based on SIC codes 201-209 (meat products; dairy products; canned, frozen, and preserved fruits, vegetables, and food special; grain mill products; bakery products; sugar and confectionery products; fats and oils; beverages; miscellaneous food preparations and kindred products).

Of the 100 MNCs, however, not all were included in the final sample. A complete set of both secondary *and* primary data for each sample company was necessary in order to empirically test all of the developed hypotheses, and collecting primary data from all 100 MNCs was not possible. As will be described in detail in the next section, 29 companies either refused to participate in the survey or their responses were deemed non-reliable. Therefore, the final sample consisted of 71 MNCs whose distribution across industries and geographic regions is provided in the table below.

	Pharmaceutical Industry	Food & Beverage Industry	Total
USA	14	10	24
Europe	22	25	47
Total	36	35	71

Table 3: Final Distribution of Sample Companies across Industries and Regions
(Source: own illustration)

5.2.3 Survey

The following outlines the questionnaire survey that was used to collect the primary data required to measure variables that relate to the inner workings of an MNC. In particular, this section provides details of the survey design and the survey process. Moreover, it gives statistical information on the survey responses, which is also used to assess the suitability of the responses for the subsequent analysis of the internationalization-performance relationship.

5.2.3.1 Survey Design

As already described in chapter 5.1, penetrating the organization's boundary and collecting information directly from its managers is necessary to measure a company's international orientation, its use of intra-company knowledge flows and social control mechanisms, as well as the level of autonomy that it grants to its subsidiaries. Therefore, the survey's target audience was designed to include the key managers of the country and regional organizations of the sample MNCs (e.g., the chief executive officer or the director of sales and marketing). This group of people appears to be well qualified for answering questions on the above phenomena because they are sufficiently acquainted with both their company's processes and strategy in general and the interactions between their company's subsidiaries and corporate headquarters. Moreover, the key managers in the country and

regional organizations of MNCs can mostly build on a rather long work experience, which contributes positively to the reliability and representativeness of their responses.

The survey is based on a six page questionnaire which contains a total of 63 individual questions that are to be answered by the above defined target audience.³⁷⁹ The individual questions are grouped according to their larger topic into nine sets of questions. Each set of questions is introduced by a short explanation of the problem and instructions necessary for survey participants. In this connection, special attention was paid to making the unit of analysis clear to the respondents, i.e. survey respondents were told and reminded that they were expected to provide answers not on the level of their own organizational subunit but on the total company level. The questionnaire makes almost exclusive use of closed-ended questions in order to facilitate both the provision of appropriate answers and their subsequent interpretation. Moreover, responses on questionnaire items used to measure variables that will subsequently be employed in the analysis of the internationalization-performance relationship and hypotheses tests are to be given on a 7-point, bipolar Likert scale.³⁸⁰ The advantage of employing this kind of response scale is that, under the assumption of equidistant response categories, the generated dataset can be regarded as quasi-metric.³⁸¹

To ensure the clarity and comprehensibility of the developed questions, the initial questionnaire was pilot-tested in a focus group consisting of three postgraduate students and two business practitioners. All members of this focus group had significant experience with questionnaire surveys and were well acquainted with the operations of multinational corporations. The pilot test focused on both content and questionnaire design. After modification, the questionnaire was pre-tested again by two subsidiary executives in two different multinational pharmaceutical companies. The latter involved personal telephone interviews to discuss the individual questions and assess their clarity and

³⁷⁹ The complete questionnaire is provided in Appendix C.

³⁸⁰ The only exceptions are the questions included in section H of the questionnaire that are used to measure the value chain configuration of the sample companies. These questions are based on a measure previously developed by Roth, Schweiger, and Morrison (1991) and ask respondents to indicate the number of locations and the number of foreign countries in which particular value activities of their company are performed. Therefore, these questions are not based on a rating scale such as the Likert scale. However, as demonstrated by Roth et al., the data generated from these questions can be used in normal theory statistics such as ANOVA or regression.

³⁸¹ Cf. Zinnbauer and Eberl (2004), p. 3; Backhaus et al. (2005), p. 5. Empirical research in the social sciences mostly analyzes data generated from rating scales as if it were interval-scaled. However, strictly speaking, the data needs to be regarded as ordinal-scaled as long as the assumption of equal distances between data points on the scale is not confirmed. Yet, in line with most empirical work, this dissertation still assumes equidistant response categories.

comprehensibility. After the final pilot-test, minor changes to the wording and terminology were made.

The survey was primarily designed as an online survey. Therefore, an online version of the final questionnaire was developed, as illustrated in Figure 12. However, survey participants were still offered to receive a hardcopy of the questionnaire either by fax or mail.

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25% 50% 75% 100%

C: How much influence would subsidiaries in your organization typically have on the following types of decisions?
(Please mark one for each decision)

	1 - Low (HQ mostly decides)	2	3	4 - Both equally	5	6	7 - High (subsidiary mostly decides)
Development and introduction of new products for the local market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Customization/modification of existing products for local needs (e.g., changes in product design)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pricing of products sold on the local market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Design of advertising/marketing for company products sold on the local market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modification of a production process or changing to a new manufacturing process	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restructuring of the subsidiary organization involving the creation or abolition of departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entering new foreign markets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

D: To what extent do subsidiaries of your company engage in the exchange of knowledge and skills, e.g., in areas

Figure 12: Example Screen of Online Questionnaire (Source: own illustration)

The internet was chosen as the preferred medium to collect primary data because of its ability to create global reach and its efficiency in both conducting and administering a large-scale international survey. However, this method of collecting data is also associated with further advantages:³⁸²

- Survey respondents have to adhere to the sequence of questions defined by the researcher.
- Questions in an online survey can be made mandatory, i.e. the survey participant has to respond to a particular question before moving on to the next. This feature may contribute significantly to the completeness of the returned questionnaires.

³⁸² Cf. Pirovsky and Komarek (2001), p. 29; Dillman (2000), pp. 352-353.

- Online surveys can be conducted at lower costs than traditional mail (paper-based) surveys because they avoid the costs incurred through postage, printing, data entry etc.
- Interim-analyses can be performed at any time.

The most frequently mentioned disadvantage of online surveys relates to the lack of representativeness of the survey participants. In general, representativeness in online surveys can only be achieved with respect to internet users as a whole, or with respect to specific groups of internet users as the target group of the study. Thus, online survey instruments are generally self-selective in nature because they are limited to the internet community, which also has a different sociodemographic composition than the total population.³⁸³ This problem, however, does not concern this study for several reasons. First of all, the online survey conducted in the course of this dissertation has a predefined target group consisting of key managers/executives in the country and regional organizations of the sample MNCs. Second, in today's business world, this group of people can be well expected to have access to both internet and email. Finally, the survey participants were recruited offline via telephone.³⁸⁴ The latter forms part of the survey process that will be described next.

5.2.3.2 Survey Process

Based on the above definition of the survey's target audience, it was first necessary to identify potential survey respondents in the country and regional organizations of the 100 sample MNCs that were publicly listed and for which a complete set of the required secondary data was available³⁸⁵. For this purpose, a list including 10 subsidiaries from each of these 100 MNCs was generated from the companies' annual reports and web pages. To avoid any upfront bias, the 10 subsidiaries per MNC were selected to represent subsidiaries of different size and from different countries/geographic regions.³⁸⁶ The key managers and executives of the 1000 subsidiaries resulting from the above procedure were identified by a search on the companies' web pages and several databases including the *Directory of Corporate Affiliations*, *The Major Companies Database*, *The Foreign*

³⁸³ Cf. Pirovsky and Komarek (2001); Kenway (1996), pp. 218-219; Dillman (2000), pp. 355-357.

³⁸⁴ Cf. Bogner and Mayer (2000).

³⁸⁵ See chapter 5.2.2.

³⁸⁶ Selecting subsidiaries in a variety of geographic regions was not always possible because the operations of some smaller MNCs were geographically rather concentrated focusing for example on North and Latin America or Western and Eastern Europe.

Companies in Emerging Markets Yearbook, and *Hoppenstedt Firmenprofile*. The search primarily aimed at identifying the managing director (CEO) of the particular subsidiaries but also involved the identification of other key managers of the subsidiary organizations such as the director of finance or the director of sales & marketing. In this way, the names of 539 subsidiary managers and executives representing all of the previously mentioned 100 sample MNCs could be obtained.

The survey was conducted from the beginning of September 2006 until the end of November 2006. During this period of time, the identified 539 subsidiary managers were contacted by phone in order to introduce and explain the research project as well as to encourage their participation. As Harzing notes, pre-contacts play an important role in increasing the response rates in international surveys because they make the relationship between the respondents and the researcher more personal and interactive.³⁸⁷ The offline recruiting of potential survey participants resulted in the identification of 351 subsidiary managers who expressed their interest in the survey and provided their contact details including their personal email addresses. 348 managers preferred to complete the survey online and consequently were sent a personalized accompanying letter³⁸⁸ by email that included the hypertext link to the online questionnaire. The accompanying letter not only explained the purpose of the study but also provided assurances regarding the anonymity of the respondents and the confidentiality of the collected data. The assurance of anonymity and confidentiality was considered important for dealing with possible concerns of the identified persons that could eventually prevent them from completing the questionnaire. Moreover, the accompanying letter offered survey participants to receive a copy of the study results and provided an email address and phone number to contact if the participant had any questions.³⁸⁹ The 3 subsidiary managers who preferred to complete the survey offline were sent the same personalized accompanying letters but without a link plus a hardcopy of the questionnaire by fax.

Following Dillman, a follow-up effort to the original survey distribution was made.³⁹⁰ In particular, two weeks after the first accompanying letter and questionnaire were sent to a particular subsidiary manager, the survey database was checked to determine whether he

³⁸⁷ Cf. Harzing (1997), pp. 641-665.

³⁸⁸ An example accompanying letter is provided in Appendix D.

³⁸⁹ For the design of the accompanying letter, see the recommendations by Dillman (1978), pp. 165-172 and Dillman (2000), pp. 158-170.

³⁹⁰ Cf. Dillman (2000), pp. 156-188 and pp. 367-368.

had already responded. If the subsidiary manager had not yet responded, he was sent a polite personalized reminder email which also contained a second hypertext link to the online questionnaire in case the previous email had been deleted. In case the non-respondent had preferred to answer the survey offline, he was contacted by phone to remind him about the survey and encourage his participation. Subsidiary managers who had not responded one week after they had received the first reminder were contacted a last time by telephone. Although some researchers suggest a shorter period of time between the initial distribution and follow-ups in online surveys³⁹¹, this study keeps to the conventional period of two weeks between the original distribution and the first follow-up used in mail surveys. This was considered appropriate in order to not excessively bother the high-level managers (executives) included in the survey's target group.

Of the 351 questionnaires sent to potential respondents, a total of 154 were returned after the initial distribution and follow-up contacts, which constitutes a response rate of 44%.

5.2.3.3 Survey Response Analysis

The response rate of 44% compares very favorably with the response rates previously documented for survey-based research studies in the international management arena. For example, Harzing and Noorderhaven report a response rate of 8% for their large-scale mail survey in the subsidiaries of 82 MNCs.³⁹² Moreover, Harzing notes that "for regular mail surveys without telephone follow-up/pre-contact, response rates typically vary between 6% and 16%."³⁹³ This finding provides strong support for the effectiveness of the measures taken to increase the response rate in this survey (pre-contacts, personalized accompanying letters, follow-ups, etc.) and the appropriateness of using online survey designs in international settings. The latter is corroborated by the fact that only 3 of the 154 completed questionnaires were answered offline and returned by fax. The large share of questionnaires answered online may be attributed to the user-friendliness of this data collection technique and also indicates the acceptance of the internet as a medium in scientific research.

³⁹¹ For example, Kittleson (1997) suggests a follow-up to non-respondents from four to seven days following the original survey distribution.

³⁹² Cf. Harzing and Noorderhaven (2006a), p. 9.

³⁹³ Harzing (1997), p. 643.

Because the response rate is below 100%, it is prudent to test for a potential non-response bias in the primary data obtained from the survey. Previous research suggests that one way to test for non-response bias is to compare early and late respondents.³⁹⁴ This approach draws on the work of Armstrong and Overton, who argued that the profile of late respondents is similar to that of non-respondents.³⁹⁵ Out of the 154 survey respondents, 131 responded early (after the initial survey distribution) while 25 completed the questionnaire late (after the first or second reminder). The large share of early respondents (85%) clearly indicates that pre-contacts, personalized accompanying letters, and the online survey design contributed by far more to the comparatively high survey response rate than follow-ups. Early and late respondents were compared by testing for mean differences in their responses on all of the questionnaire items that are used to measure the variables employed in subsequent statistical analyses. One common method for comparing the means of two distributions is the independent samples t-test. One of the underlying assumptions of the t-test, however, is that the distributions being compared represent samples from normally distributed populations. Because this assumption was regularly violated in the set of primary data obtained from the survey³⁹⁶, non-parametric tests were used to assess non-response bias. In particular, the Mann-Whitney-U test was employed as the non-parametric counterpart of the independent t-test.³⁹⁷ While this test does not assume normality of the distributions being compared, it does assume that the distributions have the same variance. However, for 11 of the 45 questionnaire items to be examined for non-response bias, the Levene's test showed a statistically significant difference of the variances in the two distributions/groups (early and late respondents). Consequently, non-response bias for these 11 items was assessed using the Kolmogorov-Smirnov-Z test, which is sensitive to differences in both the locations (mean) and shapes of two distributions. It is therefore well suited if the variances of two distributions are different.³⁹⁸ For the 34 questionnaire items with equal variances, non-response bias was still assessed using the Mann-Whitney-U test because this test is generally more powerful. Moreover, because the number of non-respondents is rather small, exact significances of both tests were calculated. The results are presented in Table 4.

³⁹⁴ Cf. O'Donnell (2000), p. 534; Zinnbauer and Eberl (2004), p. 3.

³⁹⁵ Cf. Armstrong and Overton (1977), p. 397.

³⁹⁶ Both the Kolmogorov-Smirnov and Shapiro-Wilk test revealed that the distribution of the primary data obtained for each questionnaire item deviated significantly from normality.

³⁹⁷ Cf. Field (2005), p. 306.

³⁹⁸ Cf. Baumgartner et al. (1998), p. 1129.

Mann-Whitney Test								Kolmogorov-Smirnov-Z - Test		
	Mann-Whitney-U	Z	Exact Significance (two-sided)		Mann-Whitney-U	Z	Exact Significance (two-sided)		Kolmogorov-Smirnov-Z	Exact Significance (two-sided)
A1	895,00	-1,402	0,163	F2	963,50	-0,957	0,342	A3	0,677	0,326
A2	954,00	-1,017	0,313	F3	1072,00	-0,247	0,808	A4	0,771	0,257
B2	932,50	-1,104	0,273	G1	968,00	-0,970	0,336	B1	0,972	0,148
B3	1050,50	-0,133	0,897	G2	1101,50	-0,055	0,958	C7	0,677	0,334
C1	982,00	-0,829	0,411	G3	1021,50	-0,577	0,567	E3	0,775	0,290
C2	1102,00	-0,052	0,960	H2a	1095,00	-0,145	1,000	H2f	0,564	0,334
C3	843,50	-1,750	0,081	H2b	1052,50	-0,452	0,659	H3a	0,313	0,471
C4	1081,50	-0,186	0,856	H2c	1089,00	-0,171	0,929	H3c	0,849	0,107
C5	1085,00	-0,166	0,871	H2d	1055,00	-0,447	0,767	H3d	0,408	0,268
C6	1026,50	-0,546	0,587	H2e	1044,50	-0,514	0,612	H3e	0,490	0,185
D1	1055,00	-0,359	0,723	H2g	1026,00	-0,636	0,570	H3f	0,790	0,062
D2	1100,50	-0,062	0,952	H2h	1099,50	-0,072	0,977			
D3	963,00	-0,963	0,339	H2i	1041,00	-0,503	0,615			
D4	1103,50	-0,042	0,968	H3b	1084,50	-0,280	0,951			
E1	1073,50	-0,239	0,814	H3g	995,50	-1,151	0,301			
E2	1038,00	-0,470	0,642	H3h	1043,50	-0,523	0,643			
F1	976,00	-0,880	0,383	H3i	1082,50	-0,238	0,886			

Table 4: Evaluation of Non-Response Bias (Source: own illustration)

As shown in Table 4, no significant differences (at the 0.05 level) were found between the two sets of respondents for any of the examined questionnaire items. Thus, the analysis suggests that non-respondents did not differ from respondents. Consequently, non-response bias does not appear to be a problem in this study.

In addition, the survey managed to create global reach and to represent a large variety of the environments in which subsidiaries of MNCs operate. As illustrated in Table 5, the 154 survey respondents were located in 36 different countries on six continents. The sales markets of these countries not only differ in their size but can also be expected to be of different importance to an MNC's overall strategy. Moreover, the number of responses per country ranged from 1 to 12, with only one country being represented by more than ten responses. Thus, due to the broad geographic distribution of the survey responses, it is unlikely that the characteristics of a particular subsidiary environment have biased the results of the study.

Americas		Europe		Asia-Pacific		Africa		Total
<i>North America</i>		<i>Western Europe</i>		<i>Asia</i>		<i>South Africa</i>		
Canada	2	Austria	2	China	3		6	
USA	7	Belgium	6	Hong Kong	1			
		Denmark	7	Singapore	4			
		Finland	3	Taiwan	2			
		France	5					
		Germany	12					
		Greece	5					
		Ireland	4					
		Italy	3					
		Netherlands	6					
		Norway	4					
		Portugal	2					
		Spain	7					
		Sweden	9					
		Switzerland	6					
		UK	9					
	9		90		10		6	
<i>Latin America</i>		<i>Eastern Europe</i>		<i>Oceania</i>				
Brazil	3	Bulgaria	1	Australia	5			
Mexico	2	Czech Republic	5					
		Estonia	2					
		Hungary	7					
		Latvia	1					
		Lithuania	2					
		Poland	6					
		Romania	1					
		Slovak Republic	3					
		Slovenia	1					
	5		29		5			
	14		119		15		6	154

Table 5: Geographic Distribution of Survey Responses (Source: own illustration)

The respondents also very well represented the intended target group of the survey. As illustrated in Figure 13, the vast majority of them were chief executive officers of subsidiaries (60%). The next most frequently held positions were director of sales and marketing (7%), regional director (6%), chief financial officer (5%), and commercial director (5%). The remaining 17% of respondents were spread relatively evenly over a variety of other key managerial positions in subsidiaries of the sample MNCs.³⁹⁹ Moreover, 123 respondents were willing to provide information on their work experience. These respondents on average had a total work experience of 18.8 years and had spent 3.5 years outside of their home country. The comparatively long work experience of survey respondents corroborates that they held key managerial positions in their subsidiaries and therefore were capable of providing reliable information on the organizational and managerial aspects contained in the questionnaire.

³⁹⁹ The 26 respondents held one of the following positions: chief operating officer, director of human resources, business unit director, head of strategy, director of business development, head of research and development, vice president marketing and sales, head of in-house consulting, head of regulatory affairs,

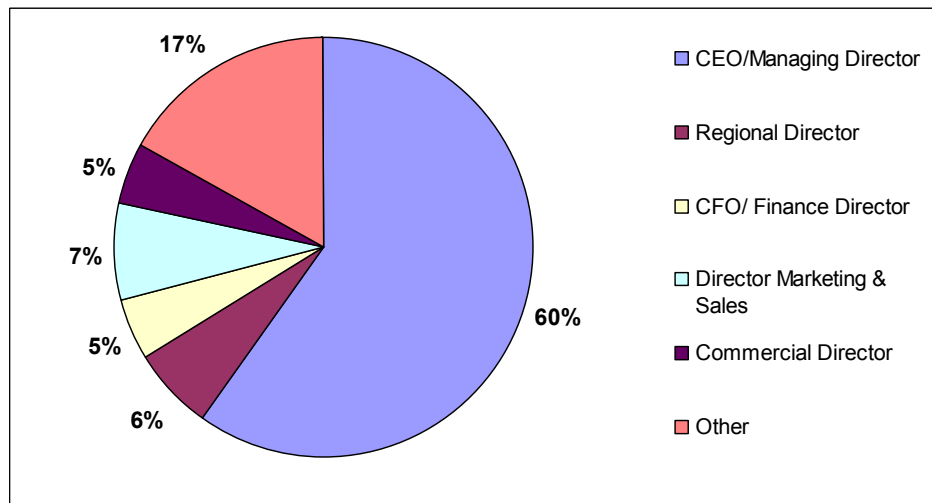


Figure 13: Distribution of Respondents across Management Groups
(Source: own illustration)

All of the 154 returned questionnaires provided a complete set of answers on the questions used to measure the defined variables in this study. However, as shown in Table 6, the answers provided in the 154 questionnaires only represented 83 of the 100 MNCs for which secondary data were available. The survey process therefore limited the number of sample companies with a complete set of primary and secondary data, which is required for further statistical analyses, to 83 MNCs.

Number of Respondents per Company	Number of Companies	Number of Respondents
1	22	22
2	53	106
3	6	18
4	2	8
	83	154

Table 6: Overview of Responses per Sample Company (Source: own illustration)

Moreover, the number of responses per company varied from 1 to 4 with the majority of the 83 sample MNCs being represented by two or more respondents. Having multiple informants (respondents) has been advocated by several researchers to increase the validity and reliability of reports.⁴⁰⁰ However, because only one response per company could be used in the analysis of the internationalization-performance relationship and hypotheses tests, multiple responses from a single company needed to be combined into one

⁴⁰⁰ Cf. Kumar et al. (1993), p. 1634.

organizational response. As James points out, perceptual agreement between informants needs to be demonstrated before measurements taken from them can be aggregated.⁴⁰¹ Therefore, this dissertation calculated intraclass correlation coefficients (ICC) to assess the inter-rater agreement in each of the sample MNCs that were represented by two or more respondents.

Inter-rater agreement was assessed using intraclass correlation coefficients rather than Pearson product moment correlations of the responses provided by two or more informants from the same company because the latter statistic does not directly assess agreement. Although the product moment correlation describes the degree to which the scores produced by each rater vary systematically when compared to scores produced by another rater, it says nothing about the degree to which the scores themselves are identical. Thus, ratings that show a similar profile of variation will produce high pairwise correlations even if the actual scores differ systematically by several points.⁴⁰²

In addition, intraclass correlations were not calculated across all questionnaire items but across the higher order latent variables that these items measure. Thus, composite scores of the items measuring a specific latent variable were built before intraclass correlation coefficients were computed.⁴⁰³ This approach was chosen because it is the higher order latent variables (e.g., KNOW, AUTO, etc.) that will be used in the subsequent analyses of the internationalization-performance relationship and tests of the developed hypotheses. As Jones et al. note, "when observations of specific events are summed or transformed, it is not the properties of the individual events that are of concern, but rather the interpretability, meaning, and applicability of the scores that actually will be used. In fact, it may be inappropriate or misleading to calculate indices of interrater agreement for the raw data if the primary use of such ratings is to form a basis for item composites or transformed scores."⁴⁰⁴

Table 7 summarizes the assessment of inter-rater agreement in each of the 61 MNCs with multiple survey responses by grouping these companies according to the size of the intraclass correlation coefficient that was calculated for the responses provided by their subsidiary managers.

⁴⁰¹ Cf. James (1982).

⁴⁰² Cf. Jones et al. (1983), p. 511.

⁴⁰³ In chapter 6.3 the procedure used to combine items into a composite score will be described for the latent variables that were previously conceptualized as a multi-item measure.

⁴⁰⁴ Jones et al. (1983), p. 517.

Intraclass Correlation Coefficients (ICC) for Companies with Multiple Respondents ^a			
ICC			
Range	Number of Companies	Cumulative	
0,90 - 0,99	26	26	
0,80 - 0,89	23	49	
0,70 - 0,79	9	58	
0,60 - 0,69	2	60	
0,50 - 0,59	1	61	
0,40 - 0,49			
0,30 - 0,39			
0,20 - 0,29			
0,10 - 0,19			
≤ 0,10			

^a ICCs based on two-way mixed models using absolute agreement; results for "single measure intraclass correlation" are shown.

Table 7: Assessment of Inter-Rater Agreement (Source: own illustration)

The average ICC across all 61 MNCs was 0.84, which compares favorably with the minimum acceptable ICC value of 0.80 proposed by Shrout and Fleiss.⁴⁰⁵ Thus, the overall level of inter-rater agreement can be regarded as satisfying. However, a satisfying overall level of inter-rater agreement is not sufficient in this particular case. As explained above, in order to aggregate multiple responses from a single company, perceptual agreement between the informants from this particular company should exist. However, as shown in Table 7, 12 of the 61 MNCs with multiple responses had an ICC below the required threshold level of 0.80. Therefore, the responses of these companies had to be deemed unreliable. Following the approach taken by Chatterjee et al., unreliable responses were discarded and the 12 affected MNCs were excluded from further analysis.⁴⁰⁶ For each of the remaining 49 MNCs, a single organizational response was created by averaging the responses (scores) of their subsidiary managers for each questionnaire item. Using unweighted averages to aggregate the responses of multiple informants is a commonly accepted and valid approach in organizational studies.⁴⁰⁷

The assessment of inter-rater agreement thus reduced the final sample of MNCs with a complete set of secondary and primary data from initially 83 to 71 companies. It consisted of 49 MNCs with multiple responses and 22 with single responses.⁴⁰⁸ The data obtained for the 71 companies in the final sample built the basis for the subsequent statistical analyses and tests of hypotheses.

⁴⁰⁵ Cf. Shrout and Fleiss (1979), p. 426.

⁴⁰⁶ Cf. Chatterjee et al. (1992), p. 324.

⁴⁰⁷ Cf. Tsui (1990), p. 471; Kumar et al (1993), pp. 1636-1637.

⁴⁰⁸ In total, 130 of the 154 originally returned questionnaires were used to obtain primary data for the 71 companies in the final sample.

6 VALIDATION AND OPERATIONALIZATION OF CONSTRUCTS

Before turning to the actual tests of the developed hypotheses, the reliability and validity of the latent variable constructs measured using multiple indicators (items) need to be assessed. In this context, it is necessary to differentiate between reflective and formative measurement specifications because the measurement perspective adopted for a particular multi-item construct determines the procedures used to assess its reliability and validity. Moreover, the choice between reflective and formative measurement specifications also substantially affects the decision as to which statistical procedures to use in the subsequent analysis of the relationships between the exogenous and endogenous variables in a multivariate model of the internationalization-performance relationship.

The chapter is organized as follows: First it describes the conceptual and procedural differences between formative and reflective constructs. Second, the appropriate specification for each multi-item construct used in the study is determined. Finally, the results of the tests employed to assess their reliability and validity are presented.

6.1 Conceptual Differences between Reflective and Formative Constructs

A reflective measurement perspective considers the latent variable construct as an underlying factor that gives rise to something that is observed. Therefore, changes in the underlying latent construct are assumed to cause simultaneous changes in the observable indicators. Hence, these indicators are commonly referred to as "reflective" or "effect" indicators.⁴⁰⁹ As a consequence, the direction of causality in reflective constructs is from the construct to the indicators, as illustrated in the left column of Figure 14.

Reflective indicators are expected to be correlated because they are all influenced by the same underlying factor or latent variable construct. Moreover, because reflective indicators should be internally consistent, their intercorrelations should be rather high.⁴¹⁰ Finally, because all the indicators of a reflective construct are assumed to be equally valid measures of the underlying construct, any two indicators that are equally reliable are interchangeable.⁴¹¹ Thus, the validity of a reflective construct is unchanged when a single indicator is removed, because all facets of the unidimensional construct should be

⁴⁰⁹ Cf. Jarvis et al. (2003), p. 200; Bollen (1989), p. 65; Diamantopoulos and Siguaw (2006), p. 263; Fornell and Bookstein (1982), p. 442.

⁴¹⁰ Cf. Jarvis et al (2003), p. 200; Zinnbauer and Eberl (2004), p. 4 and 6.

⁴¹¹ Cf. Bollen and Lennox (1991), p. 308; Jarvis et al. (2003), p. 200.

adequately represented by the remaining indicators.⁴¹² The above considerations are reflected in the standard scale development procedure used for reflective indicators. Accordingly, indicators with low item-to-total correlations should successively be dropped until a satisfying level of internal consistency reliability (measured by Cronbach's alpha) is achieved.⁴¹³

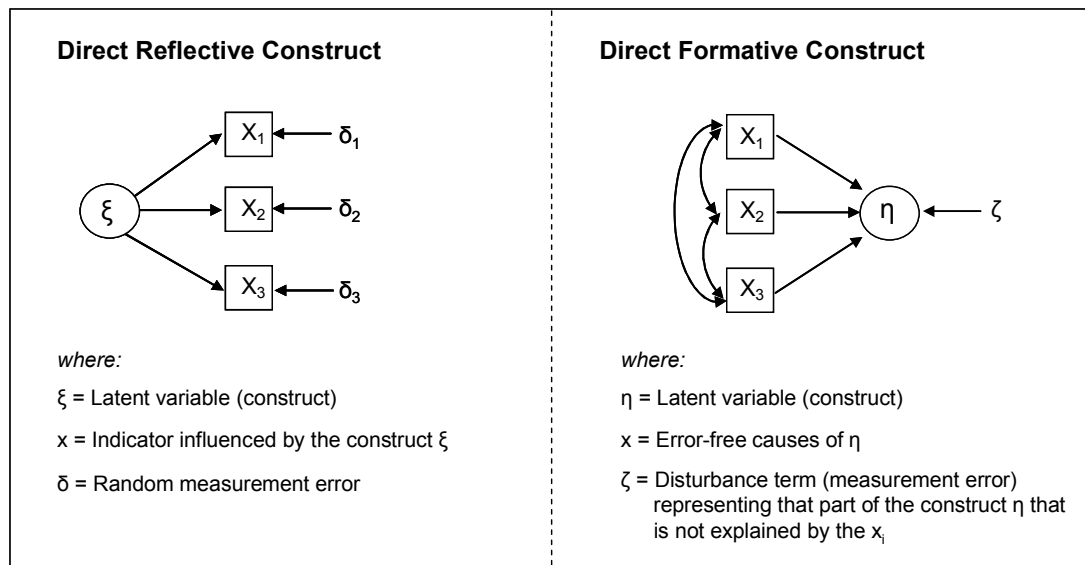


Figure 14: Conceptual Difference between Reflective and Formative Latent Variable Constructs (Source: own illustration based on Edwards and Bagozzi (2000), pp. 161-162; Bollen (1989), p. 65)

In contrast, a formative measurement perspective does not assume that the indicators are all caused by a single underlying latent variable construct. Rather, it assumes that the indicators all have an impact on (or cause) a single construct. Therefore, the direction of causality in a formative construct flows from the indicators to the latent construct, as illustrated in the right column of Figure 14. Because the indicators of a formative construct jointly determine the conceptual and empirical meaning of the construct, they are commonly referred to as "cause" or "formative" indicators.⁴¹⁴

Because formative indicators are assumed to influence – rather than being influenced by – the latent construct, they may be correlated, but the measurement specification does

⁴¹² Cf. Jarvis et al (2003), p. 200.

⁴¹³ Cf. Churchill (1979), pp. 64-73.

⁴¹⁴ Cf. MacCallum and Browne (1993), p. 533; Jarvis et al. (2003), p. 201; Bollen (1989), p. 65.

explicitly assume or require this.⁴¹⁵ As Diamantopoulos and Winklhofer point out, "there is no reason that a specific pattern of signs (i.e., positive versus negative) or magnitude (i.e., high versus moderate versus low) should characterize the correlations among formative indicators. Indeed, internal consistency is of minimal importance because two variables that might even be negatively related can both serve as meaningful indicators of a construct."⁴¹⁶

The described characteristics of formative constructs have important implications for the assessment of construct reliability and validity as well as for the scale development. As noted by several authors, traditional assessments of reliability and validity based on classical test theory are not appropriate for constructs where the direction of causality is posited to flow from the indicators to the constructs (formative specification).⁴¹⁷ In particular, "factorial unity in factor analysis and internal consistency, as indicated by coefficient alpha, are not relevant" under the formative measurement perspective, because indicators are potentially multidimensional and uncorrelated.⁴¹⁸ Moreover, the consequences of dropping one of the indicators of a formative construct are potentially quite serious. While reflective indicators are essentially interchangeable, dropping a formative indicator may omit a unique part of the composite latent construct and change the meaning of the variable.⁴¹⁹ This is due to the fact that the formative indicators, as a group, jointly determine the conceptual and empirical meaning of the construct. Thus, a formative construct does not follow the domain sampling model, which means that indicators are not interchangeable and therefore cannot be added or deleted from the scale.⁴²⁰ Overall, the above comments imply that alternative approaches need to be followed to evaluate the quality of measures that are based in formative indicators.

Explicit consideration of the appropriate measurement specification has been widely neglected in empirical studies. As Diamantopoulos and Siguaw point out, latent variables are widely utilized by organizational researchers in studies of intra- and inter-organizational relationships and, in nearly all cases, these latent variables are measured using reflective (effect) indicators. However, there are very few instances in which the

⁴¹⁵ Cf. Jarvis et al. (2003), pp. 201-202.

⁴¹⁶ Diamantopoulos and Winklhofer (2001), p. 271.

⁴¹⁷ See for example Bollen (1989), p. 222.

⁴¹⁸ Rossiter (2002), p. 315.

⁴¹⁹ Cf. Bollen and Lennox (1991), p. 308; Jarvis et al (2003), p. 202.

⁴²⁰ Cf. Rossiter (2002), p. 315.

choice of measurement perspective is explicitly defended.⁴²¹ Indeed, some authors speak of an "almost automatic acceptance of reflective indicators in the minds of researchers" caused by the sheer availability of software for covariance structure analysis (e.g., LISREL, EQS, AMOS).⁴²² In this context, Albers and Hildebrandt use the term "Cronbach's alpha - LISREL - Paradigm" to describe the prevailing statistical procedures used to analyze the relationships between latent variable constructs based on classical test theory. In this paradigm, the assumption that indicators of a latent variable construct are reflective indicators is typically not questioned.⁴²³ This situation is unfortunate not only because in many cases work utilizing formative measures may better inform organization theory but also because some potentially serious consequences of measurement misspecification exist. According to a recent meta-analysis, most of the errors in measurement specification resulted from the use of a reflective measurement model for constructs that should have been formatively modeled.⁴²⁴ However, such a specification error can "bias parameter estimators and lead to incorrect assessments of the relationships between variables."⁴²⁵ Similarly, Albers and Hildebrandt find that by wrongly treating indicators as reflective rather than formative, important aspects of the latent construct may be neglected which in turn may lead, content-wise, to different results.⁴²⁶ An example especially relevant to this dissertation is given by Diamantopoulos and Siguaw. They show that "export coordination" (measured by communication, common understanding, team work, organizational culture etc.) is a latent variable construct that should be specified formatively rather than reflective as done in some previous empirical studies. Moreover, their results also indicate that the adoption (erroneous) of a reflective perspective would have resulted in an underestimation of the links between export coordination and export performance. Thus, their example illustrates that an inaccurate assessment of the relationship between the focal construct (coordination) and important outcomes (performance) may result from making the wrong choice between a formative and a reflective measurement specification.⁴²⁷ Taken together, the above findings lend support to the recommendation that "researchers should not automatically confine themselves to the unidimensional classical test model. Causal indicator models, multidimensional models,

⁴²¹ Cf. Diamantopoulos and Siguaw (2006), pp. 263-266.

⁴²² Cf. Diamantopoulos and Winklhofer (2001), p. 274.

⁴²³ Cf. Albers and Hildebrandt (2006), p. 3.

⁴²⁴ Cf. Jarvis et al. (2003), p. 207.

⁴²⁵ Bollen and Ting (2000), p. 4.

⁴²⁶ Cf. Albers and Hildebrandt (2006), p. 2 and 29.

⁴²⁷ Cf. Diamantopoulos and Siguaw (2006), pp. 263-282.

and other alternative specifications are in some cases more suitable."⁴²⁸ Therefore, this dissertation explicitly considers the potential applicability of both reflective and formative measurement perspectives and carefully determines the appropriate specification for each multi-item construct used in the study.

The choice of measurement perspective (and, hence, the use of reflective versus formative indicators) should always be based on theoretical considerations regarding the nature and direction of the links between the construct and its indicators. To help researchers determine what the appropriate relationship between their indicators and their constructs is, a comprehensive set of criteria in the form of questions has been proposed. These criteria are summarized in Table 8.

Questions	Formative Construct	Reflective Construct	Authors
1. Direction of causality What is the direction of causality (causal priority) between the construct and the measures implied by the conceptual definition?	Direction of causality is from indicators to construct	Direction of causality is from construct to items	Jarvis et al. (2003), p. 203; Bollen (1989), p.65; MacCallum and Browne (1993), p. 533
Are the indicators (a) defining characteristics or (b) manifestations of the construct ?	Indicators are defining characteristics of the construct Construct is defined as the outcome of its indicators (facets); indicators are the components of the (multidimensional) construct	Indicators are manifestations of the construct Construct is the common factor behind different indicators (facets); indicators are different manifestations of the (multidimensional) construct	Jarvis et al. (2003), p. 203 Law and Wong (1999), pp. 144-146
Would changes in the indicators cause changes in the construct or not?	Changes in one of the indicators should cause changes in the construct	Changes in the indicators should not cause changes in the construct	Jarvis et al. (2003), p. 203; Chin (1998), p. 9
Would changes in the construct cause changes in the indicators?	Changes in the construct do not imply changes in the indicators	Changes in the construct do cause changes in the indicators	Jarvis et al. (2003), p. 203; Chin (1998), p. 9
2. Covariance among the indicators "Is it necessarily true that if one of the items (assuming all coded in the same direction) were to suddenly change in a particular direction, the others will change in a similar manner?"	Not necessarily	Yes	Chin (1998), p. 9; Jarvis et al. (2003), p. 203
3. Interchangeability of the indicators Should the indicators have the same or similar content? Do the indicators share a common theme?	Indicators need not have the same or similar content/indicators need not share a common theme	Indicators should have the same or similar content/indicators should share a common theme	Jarvis et al. (2003), p. 203
Would dropping one of the indicators alter the conceptual domain of the construct?	Dropping an indicators may alter the conceptual domain of the construct	Dropping an indicators should not alter the conceptual domain of the construct	Jarvis et al. (2003), p. 203

Table 8: Decision Rules for Determining Whether a Construct is Formative or Reflective (Source: own illustration)

⁴²⁸ Bollen and Lennox (1991), p. 312.

6.1.1 Procedures Used for Assessing the Reliability and Validity of Reflective Constructs

The reliability and validity assessment of a reflective construct followed a standard approach, which was based on classical test theory and conventional scale development procedures. This approach consists of several steps that are outlined below.⁴²⁹

The *first step* examines the *internal consistency reliability* of the set of reflective indicators that was previously defined to measure the latent variable construct. It is assessed by calculating Cronbach's alpha (coefficient alpha), which is by far the most frequently used reliability coefficient.⁴³⁰ Moreover, Churchill notes that "coefficient alpha absolutely should be the first measure one calculates to assess the quality of the instrument."⁴³¹ Cronbach's alpha can take values between 0 and 1 with higher values indicating higher reliability. Thus, low values of Cronbach's alpha indicate that the set of indicators performs poorly in capturing the construct that it is supposed to measure. Following the most common recommendation in the literature, this dissertation requires a minimum value of 0.7 for the set of reflective indicators to be deemed reliable.⁴³²

In addition, item-to-total correlations were calculated for the indicators making up the latent construct. The item-to-total correlation of an individual indicator is generally defined as its correlation with the total score of all the indicators that are measuring the same latent variable construct. Compared to indicators with relatively low correlations with total scores, those that have higher correlations with total scores have more variance relating to the common factor among the indicators and add more to the internal consistency reliability. Therefore, it is advisable to use item-to-total correlations as a criterion to identify indicators that should be eliminated.⁴³³ Consequently, as long as Cronbach's alpha does not fulfill the minimum value, the indicator with the lowest item-to-total correlation is successively dropped until the internal consistency reliability reaches a satisfying level.⁴³⁴ As stated previously, eliminating a reflective indicator is defensible because reflective indicators are essentially interchangeable. Moreover, according to Bearden et al, each indicator should have an item-to-total correlation above 0.5.⁴³⁵

⁴²⁹ Cf. Zinnbauer and Eberl (2004), pp. 15-17.

⁴³⁰ Cf. Homburg and Giering (1996), p. 8.

⁴³¹ Churchill (1979), p. 68.

⁴³² Cf. Nunnally (1978), p. 245.

⁴³³ Cf. Homburg and Giering (1996), p. 8.

⁴³⁴ This approach is based on the recommendations by Churchill (1979), p. 68.

⁴³⁵ Bearden et al. (1989), p. 475.

Subsequently, an *exploratory factor analysis (EFA)* of the purified set of indicators is conducted to ensure that these indicators are linked to a single underlying factor. This *second step* is necessary because a reflective measurement perspective initially only assumes that the indicators of the latent variable construct are all influenced by the sample underlying factor. The number of factors to be extracted is determined by the Kaiser criterion, which recommends retaining all factors with eigenvalues greater than 1. This criterion is based on the idea that the eigenvalue represents the amount of variation explained by a factor and that an eigenvalue below 1 would indicate that the whole factor explains less variance than a single indicator.⁴³⁶ A single common factor resulting from the analysis does not only confirm the construct's *unidimensionality* but also indicates *convergent validity*.⁴³⁷ However, it is commonly required that the extracted factor explains at least 50% of the total variance in the indicators. Moreover, the communality of each indicator should be above 0.16.⁴³⁸

Cronbach's alpha, item-to-total correlations, and exploratory factor analysis are all considered first generation criteria for assessing construct reliability and validity. These criteria were calculated using SPSS software version 14.0. However, several researchers suggest supplementing the first generation criteria with those of the second generation because the latter are expected to be more powerful.⁴³⁹

Therefore, the *third step* is a *confirmatory factor analysis (CFA)* of the purified set of reflective indicators. The confirmatory factor analysis was performed using the AMOS software package and – based on the results of the exploratory factor analysis – assumes a one factorial structure. AMOS provides several methods for estimating the parameters (factor loadings) of the one-factor model that represents the reflective latent variable construct. The most widely used estimation method is the Maximum Likelihood (ML) estimator which requires that the observed indicators have a multivariate normal distribution.⁴⁴⁰ However, previous examination of the indicators used to measure the latent variables in this study revealed that the vast majority did not follow a normal distribution.⁴⁴¹ Therefore, the parameters (factor loadings) of the one-factor model are

⁴³⁶ Cf. Backhaus et al. (2005), p. 295; Field (2005), p. 633.

⁴³⁷ Cf. Cadieux et al. (2006), p. 416; Zinnbauer and Eberl (2004), p. 7.

⁴³⁸ Cf. Zinnbauer and Eberl (2004), p. 7.

⁴³⁹ Cf. Fornell (1987), pp. 407-449; Homburg and Giering (1996), p. 8.

⁴⁴⁰ Cf. Bollen (1989), p. 107; Backhaus et al. (2005), pp. 369-370.

⁴⁴¹ See chapter 5.2.3.3.

estimated using the Unweighted Least Squares (ULS) estimator, which does not assume a particular distribution of the observed indicators.⁴⁴² To obtain a comprehensive impression of the model fit, information on the Goodness-of-Fit Index (GFI) and the Adjusted GFI (AGFI) were obtained from the results of the confirmatory factor analysis. These two indices represent global fit criteria, and the value of both should be greater than or equal to 0.9.⁴⁴³ More importantly, however, the results of the CFA are used to calculate three local fit criteria: individual item reliability, composite reliability, and average variance extracted (AVE). These local fit criteria primarily assess the degree to which the measurement of the latent variable through its assigned indicators is reliable and valid.⁴⁴⁴ By definition the individual item reliability is concerned with the measurement reliability of a single indicator and is calculated using the following formula⁴⁴⁵:

$$rel(x_i) = \frac{\lambda_{ij}^2 \phi_{jj}}{\lambda_{ij}^2 \phi_{jj} + \theta_{ii}} \quad (\text{Eq.2})$$

where λ_{ij} = estimated factor loading; ϕ_{jj} = estimated variance of the latent variable ξ_j ; and θ_{ii} = estimated variance of the measurement error in the indicator variable. In contrast to the individual item reliability, composite reliability and the average variance extracted indicate how well the latent variable (factor) is measured by the composite of its indicators. Therefore, these two criteria can be used to assess the *convergent validity* of the indicators.⁴⁴⁶ Composite reliability and AVE are calculated using the following formulas:

$$rel(\xi_j) = \frac{\left(\sum_{i=1}^k \lambda_{ij} \right)^2 \phi_{jj}}{\left(\sum_{i=1}^k \lambda_{ij} \right)^2 \phi_{jj} + \sum_{i=1}^k \theta_{ii}} \quad (\text{Eq.3}) \quad \text{and} \quad AVE(\xi_j) = \frac{\sum_{i=1}^k \lambda_{ij}^2 \phi_{jj}}{\sum_{i=1}^k \lambda_{ij}^2 \phi_{jj} + \sum_{i=1}^k \theta_{ii}} \quad (\text{Eq.4})$$

where the summation is over the k indicators comprising the focal latent variable ξ_j .⁴⁴⁷ The three local fit criteria generally can take values between 0 and 1. However, the

⁴⁴² Cf. Bollen (1989), p. 112; Backhaus et al. (2005), pp. 369-371.

⁴⁴³ Cf. Homburg and Baumgartner (1995), p. 172.

⁴⁴⁴ Cf. Homburg and Baumgartner (1995), p. 170.

⁴⁴⁵ Cf. Backhaus et al. (2005), p. 378; Zinnbauer and Eberl (2004), p. 7.

⁴⁴⁶ Cf. Homburg and Giering (1996), p. 11.

⁴⁴⁷ Cf. Bagozzi and Yi (1988), p. 80; Zinnbauer and Eberl (2004), p. 7.

literature commonly suggests minimum values of 0.4 for the individual item reliability, 0.6 for the composite reliability, and 0.5 for the average variance extracted.⁴⁴⁸

As a result of the first three steps, each reflective construct contains a set of indicators for which reliability and convergent validity has been shown. To complete the construct validation process, the *fourth step* examines the *discriminant validity* between two or more constructs. Discriminant validity refers to the extent to which indicators of a given construct differ from indicators of other constructs in the same model.⁴⁴⁹ That is, discriminant validity is the degree to which constructs that should not be related theoretically are, in fact, not interrelated in reality. The discriminant validity of reflective constructs is assessed using the Fornell/Larcker criterion, which states that the average variance extracted (AVE) in a construct measurement scale should be greater than the squared correlation of that construct with every other construct in the model.⁴⁵⁰

Table 9 provides a summary of the various criteria discussed above.

	Criteria	Minimum Value	Source
Local Goodness-of-Fit	Internal Consistency Reliability		
	Cronbach's Alpha	≥ 0,7	Nunnally (1978), p. 245
	Item-to-Total Correlation	≥ 0,5	Bearden et al. (1989), p. 475
	Exploratory Factor Analysis		
	Percentage of Variance Explained	≥ 0,5	Zinnbauer and Eberl (2004), p. 7
	Communalities (<i>in case of a one-factor solution</i>)	≥ 0,16	Zinnbauer and Eberl (2004), p. 7
	Confirmatory Factor Analysis		
	Individual Item Reliability	≥ 0,4	Homburg and Baumgartner (1995), p. 172
	Composite Reliability	≥ 0,6	Bagozzi and Yi (1988), p. 82
	Average Variance Extracted (AVE)	≥ 0,5	Bagozzi and Yi (1988), p. 82
	Discriminant Validity		
	Fornell/Larcker criterion	$AVE(\xi_i), AVE(\xi_j) > r^2(\xi_i, \xi_j)$	Fornell and Larcker (1981), p. 46
Global Goodness-of-Fit	GFI	≥ 0,9	Homburg and Baumgartner (1995), p. 172
	AGFI	≥ 0,9	Homburg and Baumgartner (1995), p. 172

Table 9: Overview of Criteria Used for Assessing the Reliability and Validity of Reflective Constructs (Source: own illustration)

⁴⁴⁸ Cf. Homburg and Baumgartner (1995), p. 172; Bagozzi and Yi (1988), p. 82.

⁴⁴⁹ Cf. Hulland (1999), p. 199.

⁴⁵⁰ Cf. Fornell and Larcker (1981), p. 46.

6.1.2 Procedures Used for Assessing the Reliability and Validity of Formative Constructs

Although traditional methods for assessing construct reliability and validity are not appropriate for formative constructs, "it is bad practice to... claim that one's measures are formative, and do nothing more."⁴⁵¹ Therefore, this dissertation uses some of the procedures recently suggested by Diamantopoulos and Winklhofer, which should assist researchers in evaluating latent variable constructs with formative indicators.⁴⁵²

According to Diamantopoulos and Winklhofer, the first critical issue, when adopting a formative measurement perspective, is the *content specification* of the latent construct. Content specification relates to the definition of the scope of the latent variable, i.e., the domain of content that the construct is intended to capture. Breadth of definition is extremely important under formative measurement because failure to consider all facets of the construct will lead to an exclusion of relevant indicators (and thus exclude part of the construct itself).⁴⁵³ Thus, for a formative construct to be reliable and valid, its defined content domain needs to include all possible dimensions.⁴⁵⁴

Because under formative measurement the latent variable is determined by its indicators rather than vice versa, content specification is inextricably linked with *indicator specification*. Proper indicator specification requires that the formative indicators used to measure the construct cover the entire scope (dimensions) of the latent variable as described under the content specification. Thus, the selected indicators need to fully capture the construct's content domain. However, instead of requiring a census⁴⁵⁵ of indicators, this dissertation follows Rossiter's recommendation to only include the construct's main indicators. The aim of using a census of indicators (i.e., every possible indicator) is practically not possible because it would lead to an infinite search for low-incidence indicators that most raters would not include in the construct definition.⁴⁵⁶ However, the main indicators selected to measure the latent construct still need to fully capture the construct's content domain, i.e. all of its dimensions.

⁴⁵¹ Edwards and Bagozzi (2000), p. 171.

⁴⁵² Cf. Diamantopoulos and Winklhofer (2001), pp. 269-277.

⁴⁵³ See the conceptual differences between reflective and formative constructs outlined in chapter 6.1.

⁴⁵⁴ Cf. Diamantopoulos and Winklhofer (2001), p. 271.

⁴⁵⁵ Cf. Bollen and Lennox (1991), p. 308; Diamantopoulos and Winklhofer (2001), p. 271.

⁴⁵⁶ Cf. Rossiter (2002), pp. 314-315.

A potential issue also relates to the collinearity among formative indicators. As previously discussed, formative indicators jointly determine the conceptual and empirical meaning of the construct, with each indicator contributing a unique facet. Thus, although the formative measurement perspective does not explicitly assume or require a specific pattern of signs or magnitude of the indicator correlations⁴⁵⁷, formative indicators should tend to show rather low intercorrelations.⁴⁵⁸ In contrast, excessive collinearity among formative indicators would make it difficult to separate the distinct influence of the individual indicators (x_s) on the latent variable. Moreover, if a particular formative indicator (x_i) turns out to be almost an exact linear combination of the other indicators (x_s), it is likely to provide redundant information and is therefore less critical.⁴⁵⁹ Therefore, it is prudent to examine *indicator collinearity* when assessing the reliability and validity of formative constructs. Following the suggestion by Diamantopoulos and Winklhofer, collinearity among the indicators of a formative construct is assessed by calculating variance inflation factors (VIF) using the SPSS software package. In line with literature, this dissertation uses a maximum VIF greater than 10 as cut-off threshold for high (multi)collinearity among formative indicators.⁴⁶⁰ While low collinearity among formative indicators is certainly desirable, it is important to note that high collinearity alone does not justify the elimination of individual indicators. Under formative measurement, conceptual considerations play a dominant role because failing to include or dropping one indicator may change the meaning of the latent variable. Therefore, Albers and Hildebrandt suggest treating multicollinearity among formative indicators by constructing indices rather than eliminating individual indicators.⁴⁶¹

In order to further validate formatively specified constructs, Diamantopoulos and Winklhofer suggest including some reflective indicators and estimating a multiple indicators and multiple causes (MIMIC) model. In this model, the formative indicators (x_i) act as direct causes of the latent variable, which is indicated by one or more reflective measures.⁴⁶² However, this approach has been criticized for its limited practicability and

⁴⁵⁷ Indeed, the correlations among formative indicators can take all values within the permitted interval $[-1; +1]$, (Eberl (2006), p. 652).

⁴⁵⁸ Cf. Eberl (2006), pp. 661-662; Rossiter (2002), p. 315.

⁴⁵⁹ Cf. Bollen and Lennox (1991), p. 308.

⁴⁶⁰ Cf. Diamantopoulos and Winklhofer (2001), p. 272; Mason and Perreault (1991), p. 270; Belsley (1991), p. 28.

⁴⁶¹ Cf. Albers and Hildebrandt (2006), p. 13.

⁴⁶² Cf. Diamantopoulos and Winklhofer (2001), pp. 272-273.

its intention to delete indicators from formative scales.⁴⁶³ Therefore, this dissertation conducts a *confirmatory tetrad analysis (CTA)* to validate the formative specification of latent variable constructs. A "tetrad" refers to the difference between the product of a pair of covariances and the product of another pair among four random variables.⁴⁶⁴ Thus, for a latent variable construct with four indicator variables, the six covariances between the indicators can be arranged into three tetrads: $\tau_{1234} = \sigma_{12}\sigma_{34} - \sigma_{13}\sigma_{24}$, $\tau_{1342} = \sigma_{13}\sigma_{42} - \sigma_{14}\sigma_{32}$, and $\tau_{1423} = \sigma_{14}\sigma_{23} - \sigma_{12}\sigma_{43}$.

Moreover, Bollen and Ting show that a reflective measurement specification implies that all tetrads equal zero. Thus, in the case of a reflective construct with four indicators $\tau_{1234} = \tau_{1342} = \tau_{1423} = 0$. In the case of formative indicators, however, the products of the pairs of covariances do not all have to be of equal value because the indicators are exogenous. Therefore, the tetrads of a formative construct do not all have to equal zero, i.e., they do not all have to "vanish".⁴⁶⁵ The CTA developed by Bollen and Ting provides a simultaneous test of the model implied vanishing tetrads against the null hypothesis that the tetrad values equal zero ($H_0: \tau = 0$). Therefore, it simultaneously provides a statistical test for the validation of a latent construct's measurement specification (H_0 : »construct is reflective«). Thus, if the CTA test statistic is significant (p-value < 0.05), it lends support to a formative specification of a latent variable construct.⁴⁶⁶ Because the CTA test is able to validate the formative specification of latent variable constructs, it replaces the first three steps of the traditional reliability and validity analysis used for reflective latent variables (internal consistency reliability, unidimensionality, convergent validity).⁴⁶⁷

The CTA test statistic asymptotically follows a chi-square distribution under the null hypothesis. However, Bollen and Ting find that the test statistic can deviate significantly from its asymptotic distribution with sample sizes that are small to moderate and with models that have a large number of parameters (indicators).⁴⁶⁸ This usually causes the tetrad test to be conservative. To remedy this problem, Bollen and Ting propose a nonparametric bootstrap tetrad test, which "generally is more accurate than using the chi-square distribution to compute the p-value of the test statistic in small to moderate sample

⁴⁶³ Cf. Eberl (2004), p. 9; Albers and Hildebrandt (2006), p. 25; Rossiter (2002), p. 315.

⁴⁶⁴ Cf. Bollen and Ting (1993), p. 147; Bollen and Ting (2000), p. 5.

⁴⁶⁵ Cf. Bollen and Ting (2000), p. 7; Eberl (2006), p. 660.

⁴⁶⁶ Cf. Bollen and Ting (2000), pp. 13-15.

⁴⁶⁷ Cf. Cadieux et al. (2006), pp. 417.

⁴⁶⁸ Cf. Bollen and Ting (1998), pp. 77-102.

sizes."⁴⁶⁹ Because the size of the sample available in this study meets Bollen and Ting's definition of small to moderate sample sizes, this dissertation chooses to conduct the *confirmatory tetrad analysis (CTA)* by applying a *nonparametric bootstrap tetrad test* that was developed by Johnson and Bodner.⁴⁷⁰ This test is a modified version of the original bootstrap tetrad test and offers several advantages. First, for a given number of indicators, it is more powerful than the original bootstrap test statistic. Second, in contrast to the original version, the modified bootstrap tetrad test increases in power with an increase in the number of indicators. Third, the modified bootstrap tetrad test is computationally more feasible.⁴⁷¹ The Johnson and Bodner bootstrap tetrad test is implemented using the Ox software version 4.1⁴⁷², selecting 1,000 bootstrap replications. In addition, the results of the CTA are supplemented with the results of the Bollen-Stine bootstrap test available in AMOS.⁴⁷³ The Bollen-Stine bootstrap test is employed to assess the fit of a reflectively specified one-factor model of the latent variable constructs used in this study. Thus, a significant p-value ($p < 0.05$) of the Bollen-Stine test statistic indicates that a reflective specification does not fit the data well and therefore leads to the rejection of a reflective construct specification in favor of a formative one.

Although traditional approaches to assessing construct reliability and validity generally do not apply to formative constructs, some researchers maintain that *discriminant validity* still needs to be demonstrated.⁴⁷⁴ This step is necessary to ensure that the formative latent constructs are sufficiently different from each other to be considered legitimate. However, in the case of formative indicators, discriminant validity between two variables cannot be assessed using their latent form. That is, it is not possible to compute the average variance shared between the constructs and their respective indicators (AVE) and use the Fornell/Larcker criterion to assess the discriminant validity between the latent variables.⁴⁷⁵ Thus, prior to assessing the discriminant validity between formative latent constructs, composite scores of their respective indicators need to be calculated in order to create new "observed" variables.⁴⁷⁶ The actual assessment of discriminant validity then comes down to examining the correlation between all pairs of these composite variables. In line with

⁴⁶⁹ Bollen and Ting (1998), p. 77.

⁴⁷⁰ See Johnson and Bodner (2007), pp. 113-124.

⁴⁷¹ Cf. Johnson and Bodner (2007), p. 121.

⁴⁷² See Doornik (2002).

⁴⁷³ Cf. Bollen and Stine (1992), pp. 205-229.

⁴⁷⁴ Cf. Cadieux et al. (2006), p. 417.

⁴⁷⁵ See chapter 6.1.1.

⁴⁷⁶ Cf. Cadieux et al. (2006), p. 417.

literature, this study considers correlation coefficients below 0.8 as indicative of the absence of strong linear associations between the composite formative variables, thus suggesting a sufficient level of discriminant validity.⁴⁷⁷

6.2 Specification of Constructs

The first latent construct that was examined regarding its appropriate measurement specification was the international orientation (INTOR) of the sample companies. As can be seen in Table 10, INTOR is labeled as a *second order* latent variable because it plays no direct role in the analysis of the internationalization-performance relationship. Instead, the values obtained for the international orientation of a particular sample MNC are used as one of the indicators measuring its degree of internationalization (DOI). Application of the comprehensive set of guidelines outlined in Table 8 shows, that INTOR needs to be specified as a *reflective* construct. In particular, the direction of causality clearly flows from the construct to its indicators. That is, the deployment of expatriate managers, the international assignment experience of executives, and the creation of an integrating worldwide company culture are manifestations of a company's international orientation. Moreover, a change in the international orientation of a company (the latent construct) is expected to cause changes in the above mentioned indicators.

Construct	Type of Latent Variable	Model Specification
INTOR	second order	reflective
DOI	first order	formative
AUTO	first order	formative
KNOW	first order	formative
SOCON	first order	formative
CONFIG	first order	formative
TSLACK	first order	formative

Table 10: Overview of Construct Specifications (Source: own illustration)

The remaining multi-item constructs are all *first order* latent variables. That is, the values obtained for these variables will be directly used to test the developed hypotheses in a multivariate model of the internationalization-performance relationship. Moreover, based on the guidelines presented in Table 8, all of these latent constructs need to be *formatively* specified. For example, FSTS, FATA, OSTS, PDIO, and INTOR are the constituting components of the degree of internationalization (DOI). Thus, the latent construct (DOI) is

⁴⁷⁷ Cf. Farrar and Glauber (1967), p. 98; Mason and Perreault (1991), p. 270.

defined as the outcome of its indicators and the direction of causality flows from the indicators to the latent construct. Moreover, a change in one of the indicators of DOI does not imply a similar change in the other indicators. For example, an increase in the FSTS ratio of a particular company does not imply a simultaneous increase in its FATA ratio, because the increase in foreign sales may be caused by higher export sales, which are not necessarily supported by increased foreign production. In addition, DOI has been defined as a multidimensional construct. Therefore, dropping one of its indicators may change the meaning (conceptual domain) of the construct. Together, these considerations provide a compelling reason for a formative specification of the DOI construct.

The above line of argument also applies to the remaining set of formative constructs. This can be demonstrated using several examples:

- A foreign subsidiary that has a high level of autonomy regarding the decision to restructure its own organization does not necessarily have the same level of autonomy in setting the prices for the products sold on the local market.
- A company that scores high on the use of vertical intra-company knowledge flows does not have to simultaneously score high on the use of lateral intra-company knowledge flows.
- A credible case can be made that the use of social control mechanisms is *made up* of using task forces, informal communication, international management trainings, etc., since an increase (decrease) in any of these constituents would positively (negatively) impact the degree to which a company makes use of social control mechanisms.
- A company's value chain configuration is clearly defined as the outcome of the configuration of its various value activities. Thus, dropping one of the indicators (value activities) would change the meaning of the construct because it would no longer capture the configuration of a company's complete value chain. Moreover, a change in the configuration of an MNC's manufacturing function, for example, does not imply a change in the configuration of its human resource function.
- By definition, total organizational slack is comprised of the company's available, recoverable, and potential slack. Therefore, the direction of causality flows from the indicators to the latent construct. Moreover, by dropping one of the indicators (ASLACK, RSLACK, PSLACK), a unique part/dimension of the composite latent construct would be omitted, which in turn would change the meaning of the slack variable.

Overall, applying the criteria outlined in chapter 6.1 provides compelling reasons to *formatively* specify the first order latent constructs used in this study (DOI, AUTO, KNOW, SOCON, CONFIG, and TSLACK). The results of the construct specification process are summarized in Table 10.

6.3 Validation and Operationalization of Multi-Item Constructs Used in the Study

The following sections present the results of the statistical tests used to assess the reliability and validity of the multi-item constructs used in this study. Moreover, they describe the procedures that were subsequently used to create composite scores of the latent variables. Following the approach taken by Chatterjee et al, the statistical tests only considered those survey responses that were previously deemed reliable⁴⁷⁸ Furthermore, the statistics were calculated from single organizational responses.⁴⁷⁹ Thus, the presented results are based on the final sample of N=71.

6.3.1 Validation and Operationalization of Reflective Constructs

Before assessing the reliability and validity of the construct measuring the international orientation (INTOR) of the sample companies, indicator A1 was reverse coded in order to assure that all indicators of the construct were coded in the same conceptual direction. Subsequently, the previously outlined tetrad and Bollen-Stine bootstrap tests were performed to examine the appropriateness of the reflective measurement specification adopted for the international orientation construct.

Construct	Indicators	Tetrad Test		Bollen-Stine Bootstrap Test
		T1 statistic	p-value	p-value
INTOR	A1 A2 A3 A4	0,017	0,567	0,595

Table 11: Test of Model Specification - INTOR (Source: own illustration)

As can be seen in Table 11, even without scale purification to increase the correlation among the indicators, the p-values for both statistics were statistically insignificant ($p > 0.05$). This result strongly supports the reflective specification of the construct. Therefore,

⁴⁷⁸ Cf. Chatterjee et al. (1992), p. 326.

⁴⁷⁹ See chapter 5.2.3.3.

the study proceeded with the standard process used for assessing the reliability and validity of reflective constructs.

The initial calculation of Cronbach's alpha for the four indicators A1-A4 yielded an unsatisfying value of 0.58, which is below the required minimum value of 0.7⁴⁸⁰.

Therefore, the indicator with the lowest item-to-total correlation, in this case A1, was deleted from the scale in order to improve the internal consistency reliability.⁴⁸¹

Subsequent recalculation of Cronbach's alpha showed a satisfying level of internal consistency reliability with the value of alpha amounting to 0.72. In addition, the item-to-total correlations of the three indicators (A2-A4) were well above or very close to the recommended value of 0.5 (see Table 12).

Exploratory factor analysis of the purified set of indicators showed a single-factor solution, which confirms the construct's unidimensionality and further indicates convergent validity.⁴⁸² The extracted factor explained 65% of the total variance in the indicators, which is well above the common threshold level of 50%. Moreover, the communalities of the three indicators were all above 0.16 (see Table 12). Therefore, the conditions for conducting a confirmatory factor analysis were met.⁴⁸³

Items	Item-to-Total Correlation	Cronbach's Alpha	Communalities	Individual Item Reliability	Composite Reliability	AVE
A2	0,522	0,719	0,630	0,423	0,751	0,514
A3	0,641		0,745	0,795		
A4	0,479		0,574	0,362		

Table 12: Results of Reliability and Validity Tests – INTOR (Source: own illustration)

⁴⁸⁰ See the overview of the minimum (threshold) values required for the various reliability and validity criteria, which is presented in Table 9.

⁴⁸¹ Cf. Churchill (1979), p. 68.

⁴⁸² The conditions justifying the application of factor analysis were met. In particular, Bartlett's test of sphericity was highly significant (53.74, $p < 0.000$), rejecting the null hypothesis that the correlation matrix is an identity matrix. Moreover, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.68, which is considered acceptable for the application of factor analysis (cf. Harzing and Sorge (2003), p. 198; Ordóñez de Pablos (2004), p. 479; Backhaus et al. (2005), pp. 274-276.)

⁴⁸³ The sample size of $N=71$ was sufficiently large for a one-factor model with three indicators. Frequently, the literature considers a sample size of 5 times the number of free parameters to be estimated as acceptable (cf. Bagozzi and Yi (1988), p. 82; Backhaus et al. (2005), p. 370). In the present case, this criterion would lead to a required sample size of $5 * 6 = 30$, which is far below the available sample size of $N=71$.

The local fit criteria calculated from the results of the confirmatory factor analysis are shown in the last three columns of Table 12.⁴⁸⁴ As can be seen, the values obtained for the composite reliability and the average variance extracted (AVE) both exceeded the required values of 0.6 and 0.5, respectively. This result does not only indicate a satisfying level of reliability but also of convergent validity.⁴⁸⁵ Except for indicator A4, the individual item reliabilities also were above the recommended minimum value of 0.4.

Overall, the purified latent construct measuring the international orientation (INTOR) of the sample MNCs exhibits a satisfying level of reliability and validity. Cronbach's alpha, exploratory factor analysis, composite reliability, and the average variance extracted all met the requirements posited in the literature. Only the item-to-total correlation and the individual item reliability of indicator A4 were slightly below the recommended minimum of 0.5 and 0.4, respectively. However, because the discrepancies are small, they are not expected to negatively affect the reliability and validity of the total construct.⁴⁸⁶ This notion is corroborated by Bagozzi and Yi who note that "individual item reliabilities will be lower than the composite, but it is not possible to suggest even loose rules-of-thumb as to adequate size."⁴⁸⁷ Moreover, the question how well the latent construct (factor) is measured by the composite of its indicators is much more important than the question how well a single indicator is able to measure the underlying construct (factor).⁴⁸⁸ That is, composite reliability and average variance extracted should be given more weight than the item-to-total correlations and individual item reliabilities. Consequently, the results of the statistical tests presented above provide sufficient confidence to deem the measurement of the sample companies' international orientation (INTOR) as reliable and valid.⁴⁸⁹

The scores on the three indicators A2-A4 were summed to yield a single composite measure of INTOR for each sample company, which in turn will be used as one of the

⁴⁸⁴ Global fit criteria based on the GFI and AGFI could not be obtained for the one-factor model with three indicators because the model is "just-identified" and therefore has zero degrees of freedom. However, a one-factor model with the four indicators A1-A4 showed a satisfying model fit with values of the GFI and AGFI amounting to 0.98 and 0.96, respectively. Because there is no reason to believe that the model comprised of the purified set of indicators fits worse, it is reasonable to expect that the one-factor model comprised of the three indicators A2-A4 also fitted the data well.

⁴⁸⁵ Cf. Homburg and Giering (1996), p. 11.

⁴⁸⁶ In a comparable case, Homburg and Baumgartner (1995), p. 173 still consider the reliability and validity of the total construct as satisfying.

⁴⁸⁷ Bagozzi and Yi (1988), p. 80.

⁴⁸⁸ Cf. Homburg and Baumgartner (1995), p. 170; Homburg and Giering (1996), p. 10.

⁴⁸⁹ Discriminant validity was not assessed at this stage because there was only one reflective construct. Consequently, the Fornell/Larcker criterion, which is commonly used to examine the discriminant validity between reflective constructs, could not be applied (cf. chapter 6.1.1).

indicators that determine the company's degree of internationalization (DOI). Originally, the composite score of INTOR could take values between 3 and 21. However, because the other indicators of DOI (FSTS, FATA, OSTs, PDIO) are all defined as ratio variables, the composite scores of INTOR were normalized to a scale of 0 to 1. In this way, all of the indicators measuring a firm's degree of internationalization are on the same scale.

6.3.2 Validation and Operationalization of Formative Constructs

As described in chapter 5.1, great care has been taken to include all facets (dimensions) of the latent variables under investigation in the definition of the constructs' content domain. Indeed, all of the formatively specified constructs are conceptualized as multidimensional (see Table 13). For example, the construct measuring a firm's degree of internationalization (DOI) comprises the performance, structural, and attitudinal attributes of corporate internationalization.

Construct	Construct dimensions / Scope of content domain
DOI	Performance, structural, and attitudinal attributes of corporate internationalization
AUTO	Degree of subsidiary autonomy in strategic and operational decisions
KNOW	Lateral and vertical intra-company knowledge flows
SOCON	Microstructural tools (organizational anatomy), informal communication channels (organizational physiology), development of shared values and beliefs (organizational psychology)
CONFIG	Concentration (number of locations) and geographic dispersion (where in the world) of nine value activities comprising the entire value chain
TSLACK	Available slack, recoverable slack, and potential slack

Table 13: Dimensions of Formative Constructs (Source: own illustration)

The indicators used to measure each of the above latent constructs do not only fully capture the defined content domain of the respective construct but – due to their history in the international management literature– also appear to be reliable and suitable for the purpose of this study. Thus, the formative constructs fulfill the requirements regarding adequate content and indicator specification that are stipulated by Diamantopoulos and Winklhofer.⁴⁹⁰ In other words, the formative constructs used in this study appear to have adequate levels of *content* and *face validity*.

⁴⁹⁰ See chapter 6.1.2.

Two steps were taken prior to performing the statistical tests to further validate the formative constructs used in this study. Because the three indicators used to measure total organizational slack (ASLACK, RSLACK, and PSLACK) were on different scales, the scores on these three slack measures were normalized to a scale to 0 to 1. As stated previously, the configuration of a firm's value chain is made up of the individual configurations of its value activities. Thus, the individual configurations of a firm's value activities function as indicators of the firm's total value chain configuration. However, the configuration of a particular value activity is measured by its degree of concentration (number of locations in which the activity is performed) and its geographic dispersion (i.e. where in the world the activity is performed). Thus, in order to obtain a single value per indicator, it was necessary to combine these two sets of information for each of the nine value activities that are analyzed for each sample MNC. This was done by multiplying the score obtained for the concentration of a particular value activity by the score obtained for its geographic dispersion. Multiplication of the two scores was chosen over simple algebraic summation because MNCs need to score high on both dimensions (concentration and geographic dispersion of their value activities) in order to simultaneously benefit from economies of scale and the arbitrage of national differences in factor, product, or capital markets.⁴⁹¹ The possible configurations of an individual value activity that may result from the described procedure are illustrated in Figure 15.

Configuration options	Concentration of value activity, i.e., number of locations in which activity is performed	Geographic dispersion of value activity, i.e., number of countries in which activity is performed	Score
①	• In only one location for the entire company (scored 3)	• Only domestically/ in the home country of headquarters (scored 1)	3
②	• In only one location for the entire company (scored 3)	• In only one foreign country (scored 2)	6
③	• In multiple/a few locations (scored 2)	• Only domestically/ in the home country of headquarters (scored 1)	2
④	• In multiple/a few locations (scored 2)	• In only one foreign country (scored 2)	4
⑤	• In multiple/a few locations (scored 2)	• In multiple foreign countries (scored 3)	6
⑥	• In each subsidiary individually (scored 1)	• In multiple foreign countries (scored 3)	3

Figure 15: Possible Configurations of Individual Value Activities Captured by the Value Chain Construct (Source: own illustration)

⁴⁹¹ Compare the recommendations made by Albers and Hildebrandt (2006), p. 13 and the approach taken by Homburg et al. (2002), p. 94.

As can be seen, the configuration options with the highest scores are those that simultaneously allow for the realization of economies of scale and the exploitation of arbitrage opportunities (options 2 and 5). This is also illustrated in Figure 16, which classifies the possible configuration options according to their potential to realize these two distinct benefits of corporate internationalization in a 2x2 matrix. Because the combined scores used to measure the individual configurations of a firm's value activities are obviously aligned with the hypothesis developed in chapter 4⁴⁹², they can subsequently be used as indicators of the firm's total value chain configuration.

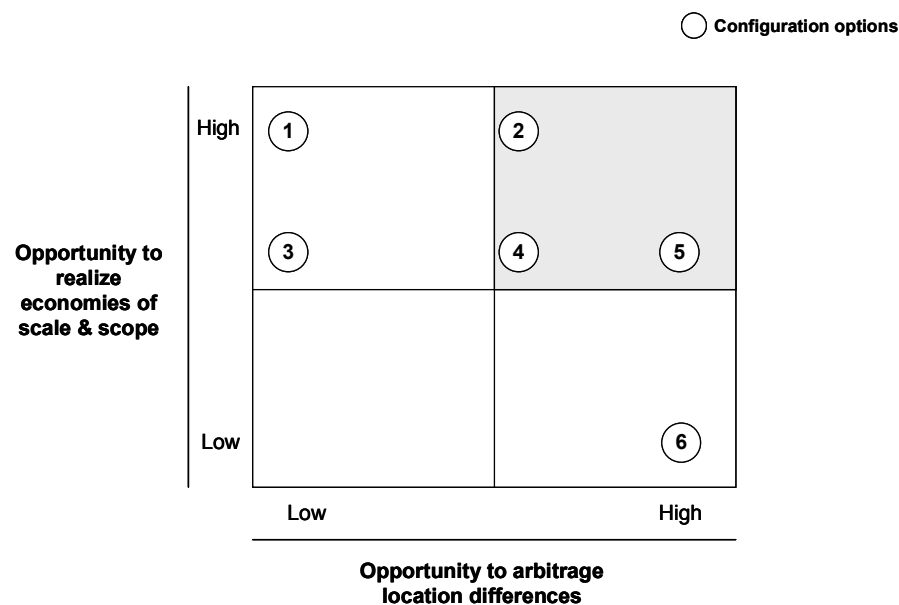


Figure 16: Reflection of the Benefits of Corporate Internationalization in the Possible Configurations of Individual Value Activities (Source: own illustration)

The results of the statistical tests used to further assess the validity of the formative constructs employed by this study are presented in Table 14. As can be seen, for each of the constructs the maximum VIF of the indicators is far below the commonly used threshold value of 10. This result does not only indicate that there is no concern about indicator collinearity but also lends support to the notion that each formative indicator contributes a unique facet to the total meaning of its respective latent construct. Thus, based on the assessment of the collinearity among their indicators, the formative constructs under investigation appear to be reliable and valid. Moreover, except for the construct measuring total organizational slack (TSALCK), all test statistics obtained from the

⁴⁹² See chapter 4.1.4.1

nonparametric bootstrap tetrad test and the Bollen-Stine bootstrap test are statistically significant (p-values < 0.05). This finding also provides strong support for the validity of the formative specification chosen for the five constructs measuring DOI, AUTO, KNOW, SOCON, and CONFIG.⁴⁹³

Construct	Indicators	VIF	Tetrad Test		Bollen-Stine Bootstrap Test
			T1 statistic	p-value	p-value
DOI	FSTS	1,772	0,641	0,001	0,001
	FATA	1,623			
	OSTS	1,491			
	PDIO	1,409			
	INTOR	1,225			
AUTO	C1	2,275	1,872	0,040	0,048
	C2	2,335			
	C3	1,373			
	C4	1,544			
	C5	2,101			
	C6	1,201			
	C7	1,412			
KNOW	D1	1,296	0,123	0,024	0,009
	D2	3,472			
	D3	1,237			
	D4	3,349			
SOCON	E1	1,580	7,382	0,002	0,007
	E2	2,849			
	E3	2,219			
	F1	1,732			
	F2	1,380			
	F3	1,465			
	G1	1,240			
	G2	1,736			
CONFIG	G3	1,829	5,283	0,042	0,031
	Ha	1,186			
	Hb	1,184			
	Hc	1,196			
	Hd	1,510			
	He	1,307			
	Hf	1,456			
	Hg	1,914			
TSLACK	Hh	1,464	n/a	n/a	n/a
	Hi	1,413			
	ASLACK	1,654			
	RSLACK	1,015			
	PSLACK	1,635			

Table 14: Results of Reliability and Validity Tests – Formative Constructs
(Source: own illustration)

Because the slack construct is comprised of only three indicators, neither the bootstrap tetrad test nor the Bollen-Stine bootstrap test could be performed.⁴⁹⁴ Therefore, the validation of the slack construct largely has to rely on conceptual considerations. At this juncture, the prevailing conceptualization of organizational slack provides valuable

⁴⁹³ See chapter 6.1.2.

⁴⁹⁴ Taking a fourth indicator from another latent variable as suggested by Bollen and Ting (2000), p.10 was also no feasible strategy in this particular case because this indicator should come from the same nomological network as the construct under investigation and, within the pool of indicators used in this empirical study, no such indicator was available.

insights. Bourgeois and Singh conceive organizational slack as being composed of three interrelated but conceptually distinct dimension (available slack, recoverable slack, and potential slack) which differ in the ease or quickness with which the slack resource could be recovered for potential redeployment. Thus, failing to include one of these dimensions, i.e. dropping on of the three indicators used in this study, would significantly change the conceptual and empirical meaning of the latent construct. Along the same lines, Bourgeois and Singh propose to create an overall measure of organizational slack by summing the measures obtained for a firm's available, recoverable, and potential slack.⁴⁹⁵ Together with the low VIFs found for the three indicators of total organizational slack (see Table 14), these considerations provide sufficient confidence to also deem the formative specification of the slack construct as reliable and valid.

As described in chapter 6.1.2, discriminant validity between formative constructs can only be assessed using their composite scores. Composite scores (indices) of the formative latent constructs used in this empirical study were calculated by summing the scores obtained for their respective indicators. For example, a single composite score (index) of a firm's total value chain configuration (CONFIG) was calculated by summing the scores obtained for the individual configurations of its value activities⁴⁹⁶ (see Figure 17).

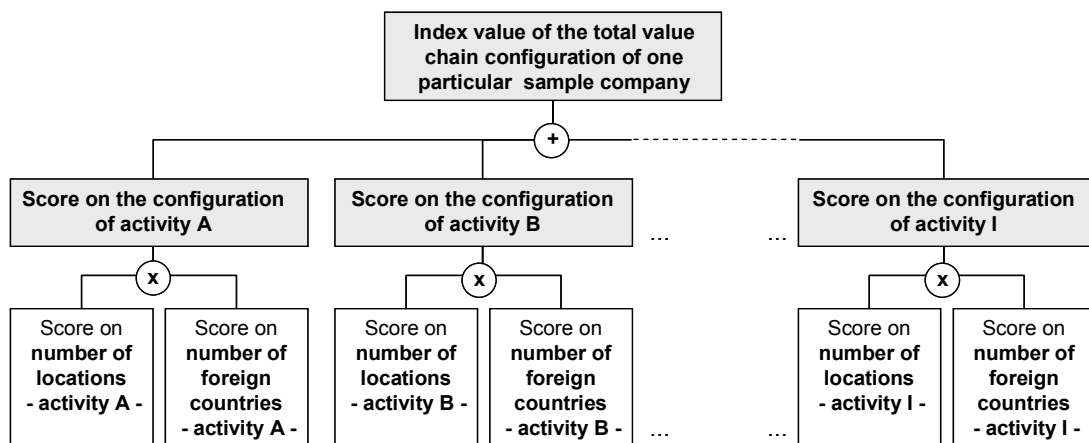


Figure 17: Construction of the Index Measuring a Firm's Total Value Chain Configuration (Source: own illustration)

The procedure used to create composite scores (indices) of the formative constructs used in this study follows the recommendations of Rossiter and Albers & Hildebrandt for the

⁴⁹⁵ Cf. Bourgeois and Singh (1983), pp. 43-44.

⁴⁹⁶ For each sample company the configurations of nine particular value activities are examined. These value activities are able to describe the complete value chain of a company because they encompass upstream and downstream as well as primary and secondary activities (see chapter 5.1.3).

treatment of formative indicators.⁴⁹⁷ Moreover, "the summated rating scale is one of the most frequently used tools in the social sciences."⁴⁹⁸ Thus, once items have been selected following reliability and validity tests, "it is common practice to combine them to generate overall (i.e., aggregate) measures of the construct(s) of interest."⁴⁹⁹

To assess the discriminant validity of the formative constructs under investigation, Pearson correlations between their composite scores were calculated. As can be seen in Table 15, the correlation coefficients between all pairs of formative constructs are far below the suggested threshold level of 0.8. This result clearly indicates the absence of strong linear associations between the constructs and therefore provides strong support for their discriminant validity. That is, the formative constructs employed by this study are sufficiently different from each other to be considered legitimate.

Pearson Correlations of Latent Variable Constructs						
	DOI	AUTO	KNOW	SOCON	CONFIG	TSLACK
DOI	1,000					
AUTO	-0,097	1,000				
KNOW	0,009	0,163	1,000			
SOCON	0,126	-0,053	0,455	1,000		
CONFIG	-0,001	-0,245	-0,045	0,047	1,000	
TSLACK	-0,170	-0,240	-0,035	0,017	0,029	1,000

Table 15: Assessment of Discriminant Validity between Multi-Item Constructs
(Source: own illustration)

Overall, the conceptual considerations and results of statistical tests presented in this section provide sufficient support to deem the formative latent constructs used in this empirical study as reliable and valid. Therefore, their composite scores can be readily used in the subsequent analysis of the internationalization-performance relationship and tests of the developed hypotheses.

⁴⁹⁷ Cf. Rossiter (2002), p. 315; Albers and Hildebrandt (2006), p. 13 and pp. 25-29.

⁴⁹⁸ Spector (1992), p. 1.

⁴⁹⁹ Diamantopoulos and Siguaw (2006), p. 273.

6.4 Test for Potential Bias Introduced by Different Subsidiary Types Included in the Survey

A final reliability test was to assess whether the different types of subsidiaries in which the survey respondents were located may exert an inadvertent influence on the study results.⁵⁰⁰ For this purpose, each of the 130 survey participants, whose responses were used to obtain the primary data for the 71 MNCs in the final sample, was assigned to one of the different subsidiary types described in chapter 5.1.4. The assignment was based on the survey participants' responses to the questions provided in section B of the questionnaire.⁵⁰¹ Moreover, for each latent variable that is measured using primary data, the mean value by subsidiary type was calculated. The results of this process are depicted in Table 16.

Subsidiary Type	N	Mean Value of Variables				
		INTOR	AUTO	KNOW	SOCON	CONFIG
Implementer (IM)	46	18,50	27,15	16,98	40,61	38,37
Local Innovator (LI)	64	17,25	29,59	17,95	41,89	37,64
Center of Competence (CC)	14	17,79	31,86	18,64	44,29	39,71
Unidentified (U)	6	18,75	30,25	19,00	40,00	36,50

Table 16: Distribution of Survey Respondents across Different Types of Subsidiaries (Source: own illustration)

As can be derived from the table, the majority of the subsidiaries in which the survey participants were located are local innovators (64), followed by implementers (46), and centers of competence (14). Moreover, 6 respondents indicated that their subsidiary does not assume any of the above subsidiary roles. The distribution of survey respondents across the different types of subsidiaries is consistent with theoretical expectations. That is, local innovators and implementers are by far more common than centers of competence.⁵⁰² In addition, Table 16 reveals slight differences in the mean values of the variables across the different types of subsidiaries. For example, the level of subsidiary autonomy found in centers of competence and local innovators appears to be higher than in implementer subsidiaries. Therefore, it is important to test whether the apparent differences in the latent variables across the different types of subsidiaries are statistically significant. To this end, a Kruskal-Wallis test which is a non-parametric method to simultaneously tests for

⁵⁰⁰ See chapter 5.1.4.

⁵⁰¹ See Appendix C.

⁵⁰² Cf. Bartlett and Ghoshal (2002), pp. 121-130.

differences across the four groups of subsidiaries (implementers, local innovators, centers of competence, and unidentified) was conducted.⁵⁰³ The Kruskal-Wallis test is an extension of the non-parametric Mann-Whitney-U test⁵⁰⁴ to three or more groups. It was chosen because running several Mann-Whitney-U tests to examine the differences between the four groups of subsidiaries would have inflated the Type I error rate.⁵⁰⁵ The results of the test are presented in Table 17.

	INTOR	AUTO	KNOW	SOCON	CONFIG
Chi-Square	2,502	4,186	2,533	2,656	0,808
df	3	3	3	3	3
Asymptotic Significance	0,475	0,242	0,469	0,448	0,848
Monte-Carlo-Significance ^a	0,480	0,244	0,478	0,463	0,850
99% Confidence Interval					
Lower Bound	0,467	0,233	0,465	0,451	0,841
Upper Bound	0,492	0,255	0,491	0,476	0,860

^a Based on 10000 sampled tables with starting seed 2000000

Table 17: Results of the Kruskal-Wallis Test for Differences in the Latent Variables across Subsidiary Types (Source: own illustration)

As can be seen, for each of the latent variables analyzed, the test result is statistically insignificant. This finding indicates that there is no severe difference in the values of these variables across the four different types of subsidiaries. Thus, the variance in the latent variables measured using primary data is more likely to be caused by the different companies than by the different types of subsidiaries in which the survey respondents were located. In other words, the responses obtained from a particular survey participant appear to be representative for the total company, as intended. The results of the above analysis therefore suggest that the different types of subsidiaries in which the survey participants were located do not exert an inadvertent influence on the overall results of this dissertation.

⁵⁰³ A non-parametric test was chosen because exploratory analysis (Kolmogorov-Smirnov and Shapiro-Wilk tests) revealed that the variables of interest did not follow a normal distribution within each group of subsidiaries.

⁵⁰⁴ See chapter 5.2.3.3.

⁵⁰⁵ Cf. Field (2005), p. 550.

7 TEST OF HYPOTHESES

This chapter presents the results of the empirical examination of the internationalization-performance relationship in the sample of multinational corporations collected for this study. It first describes the methodological approach and the multivariate models that were used to test the previously developed hypotheses. Subsequently, the results of the statistical analyses are presented and examined as to whether they support the hypothesized moderating effects of organizational and managerial as well as contextual variables. The chapter concludes with an overview of the study's empirical findings.

7.1 Methodology

As discussed in the previous chapter, a formative measurement specification has been chosen and confirmed for all of the first order latent variables used in this study. Therefore, this dissertation chooses to test the developed hypotheses using multiple regression analysis. This methodological approach is in line with the recommendations of Albers and Hildebrandt who suggest that researchers should return to using regression analysis when exclusively employing formative measurement scales (indicators).⁵⁰⁶ Moreover, regression analysis is capable of incorporating nonlinearities. This capability is particularly important to this study because several researchers suggest a curvilinear relationship between corporate internationalization and firm performance.⁵⁰⁷ The details of the multiple regression approach used in this study are provided below.

7.1.1 Procedures Used for Evaluating Multiple Regression Models

The multiple regression models defined in this study were estimated using the standard Ordinary Least Squares (OLS) method. This method obtains estimates of the parameters of a multiple regression model by minimizing the sum of squared residuals and was implemented using SPSS for Windows version 14.0. However, for the statistical findings to be reliable and valid, the estimated multiple regression models have to meet the specific theoretical assumptions and requirements of OLS regression analysis.

⁵⁰⁶ Cf. Albers and Hildebrandt (2006), p. 2

⁵⁰⁷ See chapter 3.2.

The first requirement relates to the correct specification of the regression model. That is, the model needs to be linear in the parameters β_0, \dots, β_k , it needs to include all relevant explanatory (independent) variables, and the number of parameters to be estimated needs to be smaller than the number of observations.⁵⁰⁸ If all relevant variables are included in the regression model, the error term (u) only represents random deviations of the estimated values from the actual (observed) values. Therefore, the conditional mean of the error term (u) is assumed to be equal to zero. That is, the error (u) has an expected value of zero, given any values of the independent variables. In other words, $E(u|x_1, x_2, \dots, x_k) = 0$.⁵⁰⁹ The zero-conditional-mean assumption guarantees that two conditions necessary for deriving OLS estimators are satisfied. It leads to zero mean of the error term and zero covariance between the error term and the independent variables.

However, the assumption can fail, if a relevant explanatory variable is omitted or excluded from the regression model. In this case, the OLS estimators can be biased and inconsistent. Yet, omitted-variable bias occurs only when the omitted variable actually belongs in the true population model (i.e., it has a non-zero marginal effect on the dependent variable) *and* when it is correlated with any of the explanatory variables (x_1, x_2, \dots, x_k) included in the estimated model.⁵¹⁰ Moreover, Wooldridge notes that the zero-conditional-mean assumption can also fail, if the functional relationship between the explained and explanatory variables is misspecified in the estimated regression model. Functional form misspecification occurs, for example, when important nonlinearities are neglected, i.e., when quadratic (or cubic) terms of some of the explanatory variables are not included in the estimated model.⁵¹¹

To statistically test whether the employed multiple regression models are correctly specified, this dissertation performs Ramsey's regression specification error test (RESET).⁵¹² The RESET test is an F-Test of the difference in R^2 between the originally estimated regression model and an augmented model that includes power functions of the predicted values (i.e. their squares and cubes) obtained from the original model. The general philosophy of the RESET test is that if the original model can be significantly improved by artificially including powers of the predictions of the model, then the original

⁵⁰⁸ Cf. Backhaus et al. (2005), p. 79.

⁵⁰⁹ Cf. Backhaus et al. (2005), pp. 83-84; Wooldridge (2003), p. 85.

⁵¹⁰ At this point, it should be noted that in any application there are always factors that the researcher will not be able to include, due to data limitations or ignorance.

⁵¹¹ Cf. Wooldridge (2003), pp. 89-94.

⁵¹² See Ramsey (1969), pp. 350-371.

model must have been inadequate. Thus, a significant F-statistic ($p < 0.05$) implies that the original model is inadequate and can be improved. In contrast, an insignificant F-statistic ($p > 0.05$) suggests that the test has not been able to detect any misspecification. This, in turn, implies that the original regression model has been correctly specified. Ramsey proposed the RESET test as a general misspecification test designed to detect both omitted variables and inappropriate functional form.⁵¹³ However, the RESET test does not technically test for omitted variables. Therefore, several researchers argue that "RESET is a functional form test, and nothing more."⁵¹⁴ Consequently, this dissertation interprets the results of the RESET test primarily as indicative of the presence or absence of functional form misspecification.

A second requirement is that the variance of the error term (u), conditional on the explanatory variables, is the same for all combinations of outcomes of the explanatory variables. This condition is known as the homoscedasticity or "constant variance" assumption.⁵¹⁵ If this assumption fails, then the regression model exhibits heteroscedasticity. While heteroscedasticity does not cause bias or inconsistency in the OLS estimators, it distorts the OLS standard errors. Consequently, the OLS standard errors are no longer valid for constructing confidence intervals and t-statistics.⁵¹⁶ Thus, the statistics used to test hypotheses in a multiple regression model are not valid in the presence of heteroscedasticity. To test for the presence of heteroscedasticity in the employed regression models, this study conducts Breusch-Pagan tests.⁵¹⁷ The Breusch-Pagan test is a test against the null hypothesis of homoscedasticity. Thus, a statistically insignificant test statistic ($p > 0.05$) leads to the acceptance of the null hypothesis and indicates the absence of heteroscedasticity in the examined regression model.

Moreover, it is required that none of the independent variables in the regression model is constant, and there are no *exact* linear relationships among the independent variables. That is, no *perfect* multicollinearity among the independent (explanatory) variables in the multiple regression model should exist.⁵¹⁸ While *perfect* multicollinearity can practically

⁵¹³ Cf. Ramsey (1969), p. 369.

⁵¹⁴ Wooldridge (2003), p. 294.

⁵¹⁵ Cf. Wooldridge (2003), p. 95.

⁵¹⁶ Cf. Backhaus et al. (2005), pp. 85-86.

⁵¹⁷ Cf. Breusch and Pagan (1979), pp. 1287-1294; Wooldridge (2003), pp. 266-267.

⁵¹⁸ Cf. Backhaus et al. (2005), p. 70; Wooldridge (2003), p. 86.

be ruled out through correct specification of the regression model⁵¹⁹, some level of multicollinearity will always be present, particularly in complex models. However, high (but not perfect) multicollinearity among the independent variables can have detrimental effects on the results of the regression analysis. With high levels of multicollinearity it may be difficult to identify the specific contribution of each explanatory variable, because the OLS estimators may be unstable. That is, the estimators (regression coefficients) can be sensitive to the deletion or addition of explanatory variables. Moreover, high multicollinearity causes the estimators to be less efficient, i.e., they possess larger standard errors and wider confidence intervals.⁵²⁰ One way to assess the level of multicollinearity in the employed regression models is to examine the bivariate (pairwise) correlations between the independent variables. Commonly, the presence of bivariate correlations above 0.8 is considered indicative of the presence of strong linear associations, suggesting that multicollinearity may be a problem.⁵²¹ However, the absence of high bivariate correlations does not imply lack of collinearity because the correlation matrix may not reveal collinear relationships involving more than two variables. Therefore, this dissertation examines the level of multicollinearity in the employed multiple regression models by calculating variance inflation factors (VIFs).⁵²² In line with literature, a maximum VIF greater than 10 is used as cut-off threshold for high (harmful) multicollinearity.⁵²³ It is important to note that the "multicollinearity problem" is not really well-defined, since multicollinearity does not violate a regression assumption. Therefore, it is ultimately up to each researcher individually to determine how serious the multicollinearity problem is, and how the problem should be treated.⁵²⁴

If the above requirements (assumptions) are fulfilled, the OLS estimators obtained from the multiple regression analysis are unbiased and efficient.⁵²⁵ However, in order to perform statistical inference, the unobserved error needs to be normally distributed. Thus, prior to testing hypotheses using F-tests and t-tests, the normality of the residuals needs to be

⁵¹⁹ Perfect multicollinearity mostly results from model misspecification, e.g., by including the same variable twice. Note that the inclusion of a nonlinear function of an independent variable (e.g., by including a squared term of the variable) does not violate the assumption of no perfect multicollinearity. Even though the squared term is an exact function of the respective independent variable, it is not an *exact linear* function of the variable (Cf. Wooldridge (2003), p. 87).

⁵²⁰ Cf. Backhaus et al. (2005), p. 90.

⁵²¹ Cf. Farrar and Glauber (1967), p. 98; Mason and Perreault (1991), p. 270.

⁵²² Cf. Backhaus et al. (2005), p. 91.

⁵²³ Cf. Belsley (1991), p. 28; Mason and Perreault (1991), p. 270.

⁵²⁴ Cf. Wooldridge (2003), p. 97; Backhaus et al. (2005), p. 92.

⁵²⁵ The assumption of no serial correlation (autocorrelation) has been neglected because it is only relevant in regressions using time series or panel data. This is not the case in this dissertation.

demonstrated. For this purpose, the study performs Kolmogorov-Smirnov and Shapiro-Wilk tests on the standardized residuals obtained from the estimated regression models.⁵²⁶ In both cases, a significant test statistic ($p < 0.05$) indicates a significant deviation from normality. In contrast, insignificant test results ($p > 0.05$) provide support for the normality of the residuals, which in turn implies that the conditions for performing statistical inferences are met.

In addition to testing whether the general assumptions and requirements of OLS regression analysis have been met, the goodness-of-fit of the estimated regression models needs to be assessed. For this purpose, three global goodness-of-fit statistics are used that indicate how well the estimated regression model explains the dependent variable. First, the coefficient of determination (R^2) provides the fraction of the sample variation in the dependent variable that is explained by the independent (explanatory) variables. The value of R^2 is always between zero and one with higher values indicating greater model fit. Thus, an R^2 -value of one indicates that the estimated regression model provides a perfect fit to the data. However, because the explanatory power of an independent variable is at worst zero, the coefficient of determination (R^2) never decreases when a new independent variable is added to the regression model.⁵²⁷ Therefore, a second statistic called the adjusted coefficient of determination (adjusted R^2) is calculated. The adjusted R^2 statistic depends explicitly on the number of independent variables (k) and therefore imposes a penalty for adding additional independent variables to a model. Thus, in contrast to R^2 , adjusted R^2 can go up or down when a new independent variable is added to a regression.

There is no general guideline requiring R^2 or adjusted R^2 to be above any particular value. As Backhaus et al. note, the evaluation of the obtained R^2 (adjusted R^2) largely depends on the individual research setting.⁵²⁸ Indeed, low values of R^2 in regression equations are not uncommon in the social sciences. Moreover, "a seemingly low R^2 does not necessarily mean that an OLS regression equation is useless."⁵²⁹ Thus, it is not possible to a priori determine the level of R^2 (adjusted R^2) that indicates a satisfying fit of the regression models employed by this study. Consequently, the main purpose of these two statistics is to compare the different regression models estimated in this study based on their ability to explain the variance in the dependent variable. In addition, the (adjusted) R^2 values provide

⁵²⁶ Cf. Field (2005), p. 205.

⁵²⁷ Cf. Wooldridge (2003), pp. 197-198.

⁵²⁸ Cf. Backhaus et al. (2005), p. 97.

⁵²⁹ Wooldridge (2003), p. 41.

a basis for comparing the fit of the analyzed regression models with the fit of the models employed by previous empirical studies on the internationalization-performance relationship.

Because the evaluation of regression models should not put too much weight on the size of (adjusted) R^2 ,⁵³⁰ an important role is assigned to the third global goodness-of-fit statistic. The F-statistic for the overall significance of a regression model tests the null hypothesis that none of the explanatory variables has an effect on the dependent variable. Thus, if the F-statistic fails to reject the null hypothesis, then there is no evidence that any of the independent variables help to explain the dependent variable. This is the case, when the p-value of the F-statistic is greater than 0.05. In contrast, a statistically significant F-statistic ($p < 0.05$) indicates that all independent variables are jointly significant in explaining the variations in the dependent variable. As Wooldridge demonstrates, even a seemingly small R^2 may result in a highly significant F-statistic, which indicates that the regression model still has explanatory power.⁵³¹ Thus, the F-statistic for overall significance is an important measure of the quality of the multiple regression models employed by this study.

Once the overall significance of the estimated regression models has been established, it is possible to proceed with the assessment of the individual regression coefficients. In multiple regression analysis, the regression coefficient for a particular independent variable measures the partial effect of the independent variable on the dependent variable after controlling for all other independent variables included in the model.⁵³² To assess the strength of the partial effect of each independent variable analyzed in the multiple regression models, this dissertation computes a t-statistic for the regression coefficient of each variable. The t-statistic is used to test the null hypothesis that the regression coefficient equals zero, which would indicate that the independent variable has no effect on the dependent variable.⁵³³ A significant t-statistic ($p < 0.05$) therefore leads to the rejection of the null hypothesis and indicates that the independent variable contributes significantly to explaining the variation in the dependent variable. Thus, the t-statistics of the regression coefficients are used to identify what variables in the regression models have significant explanatory power. Consequently, calculating t-statistics is one of the main methods of testing the hypotheses developed in chapter 4.

⁵³⁰ Cf. Wooldridge (2003), p. 41.

⁵³¹ Cf. Wooldridge (2003), p. 153.

⁵³² Cf. Wooldridge (2003), p. 120.

⁵³³ Cf. Backhaus et al. (2005), p. 74.

Table 18 summarizes the various criteria and test statistics used to evaluate the multiple regression models employed by this study.

	Criteria	Test Statistic	Requirement
Regression Assumptions	Correctly specified regression model - Linear in parameters $\beta_0, \beta_1, \dots, \beta_k$ - Inclusion of all relevant variables - Number of parameters (k+1) smaller than the number of observations (n)	RESET Test	$p > 0,05$ $n > (k+1)$
	Homoskedasticity	Breusch-Pagan Test	$p > 0,05$
	No perfect multicollinearity	Variance Inflation Factor (VIF)	$VIF(\max) < 10$
	Normal distribution of the standardized residuals	Kolmogorov-Smirnov Test Shapiro-Wilk Test	$p > 0,05$ $p > 0,05$
Global Goodness-of-Fit Statistics	Coefficient of determination	R^2	Highest values possible
	Adjusted coefficient of determination	Adj. R^2	Highest values possible
	Overall significance of the regression	F-Test	$p \leq 0,05$
Local Goodness-of-Fit Statistics	Significance of the regression coefficients	T-Test	$p \leq 0,05$

Table 18: Criteria Used to Assess the Goodness-of-Fit of Regression Models
(Source: own illustration)

7.1.2 Regression Strategy Used to Test the Moderating Effects of Organizational and Managerial Variables

The test of the moderating effects of organizational and managerial variables proceeds in several steps. First, a baseline model that does not yet include the hypothesized moderating effects is estimated. This "main effect" model is expressed by equation (5).⁵³⁴

$$Perf = \beta_0 + \beta_1 INDUSTRY + \beta_2 REGION + \beta_3 SIZE + \beta_4 DOI + \beta_5 AUTO + \beta_6 KNOW + \beta_7 SOCON + \beta_8 CONFIG + \beta_9 TSLACK + u \quad (\text{Eq.5})$$

Because the hypotheses made on the effects of organizational and managerial variables equally apply to MNCs in different industries as well as from different geographical regions, equation (5) is estimated using the complete sample of multinational corporations (N = 71). This approach has the advantage of increasing the degrees of freedom (df)

⁵³⁴ Note that all regression equations presented in this study are written in their population form, which contains less clutter (cf. Wooldridge (2003), p. 85).

available in the regression analysis. Moreover, it also contributes to the generalizability of the results.

However, when data from different industries (regions) is pooled, it is necessary to control for the industry (region) to avoid biased inferences about the impact of multinationality on corporate performance.⁵³⁵ This requirement is illustrated in Figure 18.

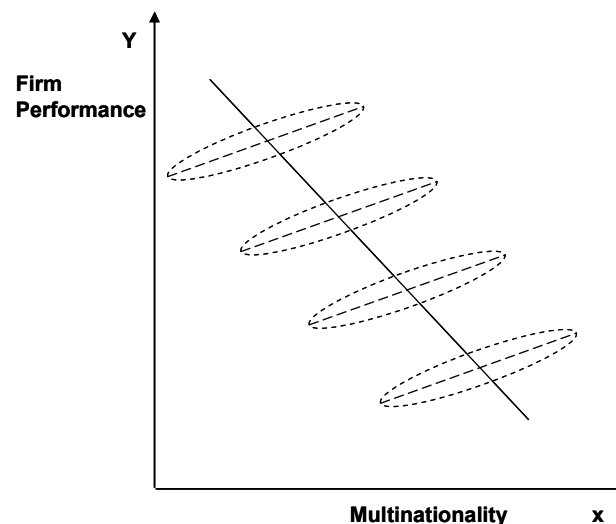


Figure 18: Mistaken Interpretation of the Internationalization-Performance-Relationship when the Heterogeneity in the Intercept is not Accounted for (Source: Kotabe et al. (2002), p. 85)

In the above figure, the broken-line ellipses represent the point scatter for individual industries, and the broken straight lines represent the individual regressions for the different industries. The solid line represents the least-squares regression using the data points for all industries. As is illustrated by the solid line, even if the two variables (multinationality and performance) are positively related, aggregating the data (without accounting for differences in the intercepts across industries) and estimating an aggregate model might lead to wrongly conclude that the two variables are negatively related. The same problem might occur when pooling data from companies originating from different geographical regions. Several empirical studies report that unexplained mean performance differences between U.S. and European firms exist.⁵³⁶ For example, Geringer et al. find that U.S. MNCs on average have a higher return on sales (ROS) and return on assets

⁵³⁵ Cf. Kotabe et al. (2002), pp. 85-86.

⁵³⁶ See for example Rugman (1983), pp. 4-14.

(ROA) than their European counterparts.⁵³⁷ However, systematic differences in the performance of companies from different geographic regions can lead to differences in the regression intercepts across regions. Therefore, they have the potential for confounding the results of the statistical analysis of the internationalization-performance relationship (see Figure 18).

To take account of variations across industries and regions, the main effect model given by equation (5) contains two dummy variables: an industry dummy variable (0 = food & beverage companies, 1 = pharmaceutical companies) and a region dummy variable (0 = European MNCs, 1 = North American MNCs).

However, the inclusion of the two dummy variables in the regression model caused problems with some of the originally proposed control variables.⁵³⁸ As can be seen in the correlation matrix provided in Appendix E, industry membership and the level of R&D spending are highly correlated ($r = 0.81$). The high correlation between these two variables is in line with prior research, which shows that research and advertising intensities are important influences on inter-industry performance differentials.⁵³⁹ However, it also indicates that the two variables contain largely redundant information. Therefore, it was decided to not include R&D as a control variable in the main effect model given by equation (5). This decision was based on the grounds that the industry dummy variable picks up a major part of the influence of the R&D variable *together* with the influence of other market structure variables (e.g., industry growth, seller concentration, and entry barriers). Thus, the industry dummy variable was expected to capture a broader range of content. Similarly, a high correlation exists between the level of marketing & sales spending (M&S) and total organizational slack (TSLACK).⁵⁴⁰ The high correlation between these two variables ($r = 0.6$) is not surprising, since one of the components of a firm's total organizational slack is the firm's selling, general, and administrative expenses (SG&A). However, to avoid redundant information and potential problems caused by increased multicollinearity, it was also decided to not include M&S in equation (5). Not controlling for the sample companies' intangible assets by employing variables measuring their R&D and M&S expenditures appears to be defensible because several other

⁵³⁷ Cf. Geringer et al. (1989), p. 114. The findings of Geringer et al. are consistent with the sample data used in this study. Initial inspection of the descriptive statistics provided in Appendix E reveals that the mean ROS of U.S. MNCs in this study is 15.5%, whereas the mean ROS of European MNCs is 12.6%.

⁵³⁸ See chapter 5.1.4 for the originally proposed control variables.

⁵³⁹ Cf. Grant (1987), p. 83.

⁵⁴⁰ See correlation matrix provided in Appendix E.

independent variables (e.g., KNOW, SOCON) represent intangible organizational assets and capabilities.

In a second step, the moderated regression model is analyzed. As Jaccard and Turrissi note, moderated relationships can be conceptualized in terms of interaction effects.⁵⁴¹ An interaction effect is defined as "the differing effect of one independent variable on the dependent variable, depending on the particular level of another independent variable [called the moderator variable]."⁵⁴² The most common approach to analyze interaction effects in multiple regression involves forming simple product terms of the respective independent variables. Therefore, the moderated model is formed by multiplying DOI by each of the hypothesized moderating variables individually and then adding these product terms to equation (5), which yields

$$\begin{aligned} Perf = & \beta_0 + \beta_1 INDUSTRY + \beta_2 REGION + \beta_3 SIZE + \beta_4 DOI + \beta_5 AUTO + \beta_6 KNOW \\ & + \beta_7 SOCON + \beta_8 CONFIG + \beta_9 TSLACK + \beta_{10} (DOI - \mu_{DOI}) \cdot (AUTO - \mu_{AUTO}) \\ & + \beta_{11} (DOI - \mu_{DOI}) \cdot (KNOW - \mu_{KNOW}) + \beta_{12} (DOI - \mu_{DOI}) \cdot (SOCON - \mu_{SOCON}) \\ & + \beta_{13} (DOI - \mu_{DOI}) \cdot (CONFIG - \mu_{CONFIG}) + \beta_{14} (DOI - \mu_{DOI}) \cdot (TSLACK - \mu_{TSLACK}) \\ & + u \end{aligned} \quad (Eq.6)$$

where μ_x is the mean value of the independent variable x .

As can be seen in equation (6), the moderated regression model has been reparameterized. That is, prior to creating the product terms, the means of the variables have been subtracted.⁵⁴³ Several researchers have demonstrated that "mean centering" the variables making up the product terms neither has an impact on the value of the change in R^2 caused by introducing the product terms into the regression and its associated F-statistic nor on the values of R^2 and F for the whole equation (moderated model). Also, the values and significance levels of the unstandardized regression coefficients associated with the product terms ($\beta_{10} \dots \beta_{14}$) are unaffected.⁵⁴⁴ However, mean centering has several important advantages. First, it enhances the interpretability of the simple (main) effects. In the above equation, β_4 measures the partial effect of DOI on corporate performance at the mean values of the moderating variables (AUTO, KNOW, SOCON, CONFIG, TSLACK). In contrast, without mean centering the variables, β_4 would measure the partial effect of

⁵⁴¹ Cf. Jaccard and Turrissi (2003), p. 3.

⁵⁴² Cozby (1997), p. 314.

⁵⁴³ Cf. Wooldridge (2003), pp. 194-195.

⁵⁴⁴ Cf. Jaccard and Turrissi (2003), p. 25; Govindarajan and Fisher (1990), p. 274.

DOI on performance when all moderating variables equal 0. Such a specification of the regression model would not have made substantive sense for two reasons. First, the majority of the hypothesized moderating variables are measured using Likert-type scales ranging from 1 to 7. Thus, most of the moderating variables actually cannot take the value zero. Moreover, investigating the effect of DOI on corporate performance when all moderating variables equal zero is not of great interest, since it is unrealistic that, for example, an MNC does not grant any decision-making autonomy to its subsidiaries or does not have any organizational slack at all. Thus, mean centering the variables making up the product terms in equation (6) significantly improves the interpretability of the regression results.⁵⁴⁵ A second major advantage of mean centering is that it helps to avoid problems with multicollinearity. Some researchers argue that multiplicative interaction models like equation (6) suffer from multicollinearity because the product terms are likely to be highly correlated with the terms that compose them.⁵⁴⁶ While such multicollinearity appears to be natural⁵⁴⁷, it can be significantly reduced or even completely eliminated by mean centering the variables prior to creating the product terms.⁵⁴⁸

To assess whether the moderated model provides a better fit to the data than the main effect model only, an incremental F-test is performed.⁵⁴⁹ The incremental F-test examines the significance of the increase in R^2 that is caused by introducing the moderating effects (product terms) into the main effect model given by equation (5). A significant test statistic ($p < 0.05$) indicates that the inclusion of the moderating effects significantly adds to the explanatory power of the model and that at least one of the individual product terms is significant and important to retain. A graphical representation of the hypothesized moderated model is provided in Figure 19.

⁵⁴⁵ See the remarks by Jaccard & Turrisi (2003), pp. 23-24 and Wooldridge (2003), pp. 194-195 on the interpretation of the regression coefficients measuring the simple (main) effects in moderated multiple regression models.

⁵⁴⁶ Cf. Dewar and Werbel (1979), p. 435.

⁵⁴⁷ Cf. Siddharthan and Lall (1982), p. 9.

⁵⁴⁸ Cf. Jaccard and Turrisi (2003), pp. 27-28; Southwood (1978), pp. 1154-1203.

⁵⁴⁹ Cf. Kotabe et al. (2002), p. 87; Jaccard and Turrisi (2003), pp. 11-12; Wooldridge (2003), p. 142-151.

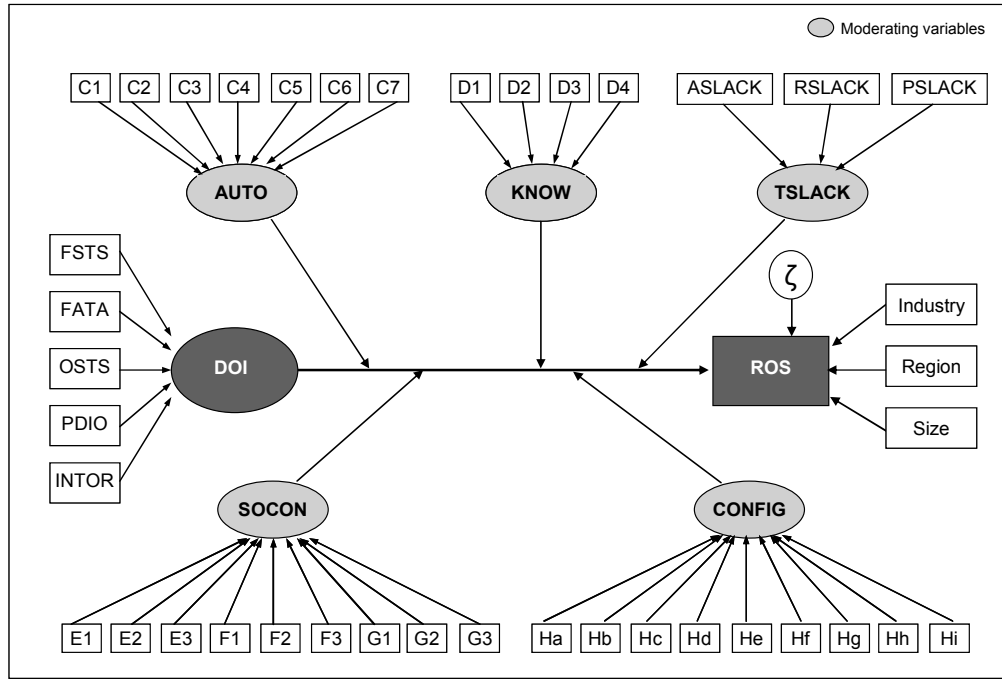


Figure 19: Hypothesized Moderated Model (for simplicity, covariances among indicators of formative constructs as well as direct effects of the moderating variables on the dependent variable are omitted).

As outlined in chapter 3, some of the previous empirical studies suggest that a curvilinear relationship between multinationality and corporate performance may exist. Therefore, the final step is to examine the hypothesized moderating effects of organizational and managerial variables in a nonlinear model of the internationalization-performance relationship. For this purpose, a squared term of DOI is added to equation (6), which yields

$$\begin{aligned}
 Perf = & \beta_0 + \beta_1 INDUSTRY + \beta_2 REGION + \beta_3 SIZE + \beta_4 DOI + \beta_5 AUTO + \beta_6 KNOW \\
 & + \beta_7 SOCON + \beta_8 CONFIG + \beta_9 TSLACK + \beta_{10} (DOI - \mu_{DOI}) \cdot (AUTO - \mu_{AUTO}) \\
 & + \beta_{11} (DOI - \mu_{DOI}) \cdot (KNOW - \mu_{KNOW}) + \beta_{12} (DOI - \mu_{DOI}) (SOCON - \mu_{SOCON}) \quad (Eq.7) \\
 & + \beta_{13} (DOI - \mu_{DOI}) \cdot (CONFIG - \mu_{CONFIG}) + \beta_{14} (DOI - \mu_{DOI}) (TSLACK - \mu_{TSLACK}) \\
 & + \beta_{15} (DOI - \mu_{DOI})^2 + u
 \end{aligned}$$

Analogous to the creation of the product (interaction) terms, DOI was mean centered before the squared term was calculated to avoid problems with multicollinearity. The procedure used to specify the above curvilinear, moderated model of the internationalization-performance relationship is generally consistent with the approach taken by Lu and Beamish.⁵⁵⁰ Moreover, a test for the presence of order effects revealed

⁵⁵⁰ Cf. Lu and Beamish (2004), pp. 598-609.

that the sequence with which the squared term of DOI enters the above regression equations does not affect the regression results.

7.1.3 Regression Strategy Used to Test the Moderating Effects of Contextual Variables

One way to test for the potential moderating effects of the two contextual variables "industry membership" and "geographic origin" would have been to include additional product terms in the above defined regression models. However, this approach would have led to a considerable increase in both the complexity of the regression models and the multicollinearity among the independent variables. To avoid these problems, an alternative analytical approach is chosen.

First, based on the companies' industry affiliations and geographic origins, the overall sample of MNCs is divided into four subsamples: pharmaceutical MNCs (N = 36), food & beverage MNCs (N = 35), North American MNCs (N = 24), and European MNCs (N= 47). Subsequently, the same regression models are estimated for each subsample separately, and the resulting regression coefficients are examined for group differences. That is, the regression results obtained for MNCs in the pharmaceutical industry are compared to those obtained for MNCs in the food & beverage industry. Similarly, the results obtained for European and North American MNCs are compared to each other. If the two comparisons reveal significant differences in sign or value between the regression coefficients for DOI or one of the product terms, then the internationalization-performance relationship is moderated by the two contextual variables "industry membership" and "geographic origin".

One concern about using subsample analysis in testing moderator effects is that useful information may be lost by splitting the overall sample. A loss of information occurs, if the subsamples are established based on a continuous variable for which an arbitrary cut-off point (e.g., the median) is defined.⁵⁵¹ However, in the present case, the industry and regional subsamples are created based on two categorical (dummy) variables that can only take the values 0 and 1. Therefore, the use of subsample analysis to test for the potential moderating effects of industry affiliation and geographic origin appears to be

⁵⁵¹ Cf. Jaccard and Turrisi (2003), p. 86; Coulton and Chow (1992), p. 193.

unproblematic. Moreover, as Cohen and Paternoster et al. note, comparing estimated regression coefficients among subsamples is a commonly employed strategy in examining moderating effects within a regression context.⁵⁵² Yet, it is bad practice to compare regression equations computed in one or more subgroups separately and then declare group differences without formally testing those differences.⁵⁵³ Therefore, this dissertation evaluates the statistical significance of the difference between each pair of regression coefficients using a two-sample Z-test described by Cohen and Paternoster et al.⁵⁵⁴ The Z-statistic for the difference between two unstandardized regression coefficients computed within two different subsamples is given by

$$Z = \frac{\beta_1 - \beta_2}{\sqrt{se(\beta_1)^2 + se(\beta_2)^2}} \quad (\text{Eq.8})$$

where β_j denotes the unstandardized regression coefficient in the j^{th} subsample and $se(\beta_j)$ denotes the associated standard error.

The Z-test defined above is a test against the null hypothesis that the regression coefficients are the same in both subsamples ($H_0: \beta_1 = \beta_2$). Thus, a significant Z-statistic ($p < 0.05$) indicates that the observed differences between two regression coefficients also withstands formal statistical testing. However, since the sizes of the four subsamples used in this study are less than 100, the Z-statistic does not adhere to a normal or t-distribution but to a Behrens-Fisher distribution.⁵⁵⁵ Therefore, the critical values necessary to determine the significance level of the Z-statistics are obtained using a computer program developed by Kim and Cohen, which calculates tail areas and percentage values of the Behrens-Fisher distribution.⁵⁵⁶

⁵⁵² Cf. Cohen (1983), p. 77; Paternoster et al. (1998), pp. 859-860.

⁵⁵³ Cf. Jaccard and Turissi (2003), p. 86.

⁵⁵⁴ Cf. Cohen (1983), p. 80; Paternoster et al. (1998), p. 862.

⁵⁵⁵ Cf. Cohen (1983), p. 80.

⁵⁵⁶ See Kim and Cohen (1998), pp. 356-377.

7.2 Empirical Results

The following sections present the results of the regression analyses described above and examine whether they provide support for the previously developed hypotheses. In particular, section 7.2.1 provides the results on the hypothesized moderating effects of organizational and managerial variables, whereas section 7.2.2 presents the findings on the influence of contextual variables on the internationalization-performance relationship.

7.2.1 Regression Results on the Moderating Effects of Organizational and Managerial Variables

Results of Regression Analysis - Dependent Variable ROS									
Independent Variables	Main Effect Model			Moderated Model			Mod. Model Curvilinear		
	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF
Intercept	-0,213	-1,836 *		-0,318	-2,794 ***		-0,302	-2,602 **	
Industry	0,017	0,845	1,743	0,008	0,449	1,881	0,006	0,330	1,918
Region	-0,010	-0,483	1,584	0,014	0,739	1,776	0,007	0,367	2,090
Size	0,022	2,741 ***	1,852	0,012	1,689 *	2,024	0,013	1,779 *	2,063
DOI	-0,008	-0,445	1,816	0,012	0,704	2,078	0,010	0,557	2,138
AUTO	-0,001	-0,978	1,718	-0,002	-1,549	1,883	-0,002	-1,720 *	2,092
KNOW	0,006	2,629 **	1,440	0,008	3,562 ***	1,551	0,008	3,639 ***	1,607
SOCON	0,001	1,028	1,373	0,002	1,629	1,428	0,002	1,629	1,428
CONFIG	0,001	0,505	1,233	0,003	2,253 **	1,620	0,003	2,162 **	1,634
TSLACK	0,048	2,139 **	1,435	0,028	1,290	1,729	0,029	1,331	1,735
DOI x AUTO				-0,003	-1,298	1,398	-0,003	-1,301	1,398
DOI x KNOW				0,012	2,716 ***	1,627	0,012	2,753 ***	1,634
DOI x SOCON				0,003	2,086 **	1,328	0,003	2,027 **	1,333
DOI x CONFIG				0,005	2,125 **	1,488	0,006	2,264 **	1,773
DOI x TSLACK				-0,031	-1,119	1,348	-0,037	-1,297	1,463
DOI ²							-0,019	-0,806	1,700
Global Goodness-of-Fit Measures									
	Main Effect Model			Moderated Model			Mod. Model Curvilinear		
R ²	0,385			0,558			0,563		
Adj. R ²	0,294			0,448			0,444		
ΔR ²				0,173 ***			0,005		
F-Test Overall Significance	4,240 ***			5,056 ***			4,733 ***		
Regression Assumptions									
	Main Effect Model			Moderated Model			Mod. Model Curvilinear		
RESET	2,268			1,008			0,977		
Breusch-Pagan	1,005			0,867			0,797		
Kolmogorov-Smirnov	0,068			0,072			0,062		
Shapiro-Wilk	0,989			0,986			0,988		
VIF (Max)	1,852			2,078			2,138		

Note: Unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 19: Multiple Regression Results for the Complete Sample Using Return on Sales (ROS) as the Dependent Variable (Source: own illustration)

Table 19 reports the results of the multiple regression analyses for the overall sample of MNCs using return on sales (ROS) as the dependent variable. As can be derived from the lower part of the table, the results of the Breusch-Pagan and RESET tests are both statistically insignificant, which indicates the absence of heteroscedasticity and functional form misspecification. Also, the Kolmogorov-Smirnov and Shapiro-Wilk tests yield insignificant results, suggesting that the residuals are normally distributed. Moreover, the maximum VIFs are far below the common threshold value of 10. Thus, there is no concern about harmful multicollinearity among the independent variables. Because, all three regression models satisfy the general assumptions and requirements of OLS regression analysis⁵⁵⁷, the statistical results provided in Table 19 can be deemed reliable and valid.

The R^2 and adjusted R^2 values of the three models compare very favorably to those reported by previous empirical studies. For example, Kotabe et al. report R^2 values of their moderated models of the internationalization-performance relationship that range from 0.213 to 0.225.⁵⁵⁸ Lu and Beamish also report poorer model fits. The adjusted R^2 values of their moderated models only reach values between 0.10 and 0.12.⁵⁵⁹ Moreover, the F-test for the overall significance of the regressions reveals, that all three models are highly significant. That is, their independent variables are jointly significant in explaining the variations in the return on sales (ROS) of the sample companies. Therefore, it is possible to proceed with the examination of the individual regression coefficients.

Hypotheses 1-5 were tested by adding interactions (product terms) between DOI and the individual moderating variables to the main effect model given by equation (5). The results for this moderated model of the internationalization-performance relationship are shown in the middle column of Table 19. As noted earlier, the coefficient for DOI measures the partial effect of corporate internationalization on performance (in this case ROS) at the mean values of the moderating variables.⁵⁶⁰ Thus, although being statistically insignificant, the positive value of the coefficient for DOI ($\beta_4 = 0.012$) first of all indicates that, on average, corporate internationalization is associated with higher firm performance. However, the coefficient for the interaction between the degree of internationalization and the configuration of the value chain is positive and significant (β_{13} for "DOI x CONFIG" = 0.005, $p < 0.05$). Thus, although corporate internationalization may be positively related to

⁵⁵⁷ See chapter 7.1.1.

⁵⁵⁸ Cf. Kotabe et al. (2002), p. 87.

⁵⁵⁹ Cf. Lu and Beamish (2004), p. 604.

⁵⁶⁰ See chapter 7.1.2.

performance outcomes (assuming *ceteris paribus* conditions), the strength of the relationship is significantly altered by the nature of the firms' value chain configuration. In particular, the positive sign of β_{13} indicates that the linkage between DOI and ROS becomes more positive for higher values of CONFIG. This result is consistent with hypothesis 1, which states that MNCs with a higher degree of both concentrated and geographically dispersed value activities are better able to reap the benefits of corporate internationalization. The results in Table 19 also provide support for hypotheses 2 and 3. More specifically, the positive and significant coefficient for the interaction between DOI and intra-company knowledge flows (β_{11} for "DOI x KNOW" = 0.012, $p < 0.01$) indicates that the ability of corporate internationalization to generate superior returns is accentuated, if MNCs make greater use of intra-company knowledge flows. Thus, the findings are consistent with hypothesis 2, which states that greater usage of vertical and lateral intra-company knowledge flows enhances an MNC's ability to benefit from corporate internationalization. Similarly, the significant positive coefficient for the interaction between DOI and the use of social control mechanisms (β_{12} for "DOI x SOCON" = 0.003, $p < 0.05$) provides support for hypothesis 3, stating that the use of social control mechanisms positively moderates the effects of internationalization on corporate performance.

However, the results in Table 19 provide no support for hypotheses 4 and 5. As described in chapter 4, higher levels of subsidiary autonomy may have positive as well as negative effects on the performance outcomes from corporate internationalization. While the positive effects arise from an increase in the local responsiveness of the MNC, the negative effects stem from increased agency problems in the headquarters-subsidiary relationship that cause higher monitoring costs.⁵⁶¹ The negative coefficient for the interaction between DOI and the level of subsidiary autonomy (β_{10} for "DOI x AUTO" = -0.003, $p > 0.1$) indicates that the negative effects caused by increased agency costs appear to dominate. However, these effects are statistically insignificant. Therefore, the results provide no support for hypothesis 4, stating that the relationship between corporate internationalization and performance is moderated by the level of subsidiary autonomy. Similarly, the negative but insignificant coefficient for the interaction between DOI and organizational slack (β_{14} for "DOI x TSLACK" = -0.031, $p > 0.1$) provides no support for hypothesis 5, which states that organizational slack positively moderates the relationship

⁵⁶¹ See chapter 4.1.4.4.

between corporate internationalization and performance. However, it is interesting to note that the coefficient for TSLACK in the main effect model, which is shown in the left column of Table 19, is positive and significant (β_9 for TSLACK = 0.048, $p < 0.05$). This nonhypothesized effect is consistent with prior empirical studies that find a positive relationship between organizational slack and firm performance.⁵⁶²

The presence of the above described moderating effects is confirmed by the fact that the increase in R^2 that is caused by adding the product terms to the main effect model is highly significant ($\Delta R^2 = 0.173$, $p < 0.01$). Thus, the addition of the moderating effects indeed increases the explanatory power of the model. This finding implies that the examination of the main effect (corporate internationalization \rightarrow performance) in isolation cannot predict performance outcomes reliably.⁵⁶³ Thus, failure to account for the moderating effects of the value chain configuration, intra-company knowledge flows, and social control mechanisms may have contributed to the divergent results of previous empirical studies on the internationalization-performance relationship. As Ramaswamy notes, divergent conclusions on the performance effect of multinationality "reflect the inherent instability of the incomplete linkage."⁵⁶⁴

In contrast, a nonlinear specification of the internationalization-performance relationship does not add to the explanatory power of the model. As can be derived from the right column of Table 19, the increase in R^2 that is caused by the addition of the squared term of DOI is small and insignificant ($\Delta R^2 = 0.005$, $p > 0.1$). Moreover, the regression coefficient for DOI² is also insignificant (β_{15} for DOI² = -0.019, $p > 0.1$). Thus, there is no evidence for a curvilinear relationship between corporate internationalization and performance. However, it is important to note that the moderating effects of the value chain configuration, intra-company knowledge flows, and social control mechanisms remain robust. That is, the regression coefficients for DOI x CONFIG, DOI x KNOW, and DOI x SOCON are consistently positive and significant across the two models. The fact that the moderating effects do not depend on whether a linear or nonlinear relationship between internationalization and performance is assumed further increases the confidence in the results provided above.

⁵⁶² Cf. Daniel et al. (2004), pp. 565-574.

⁵⁶³ See also the discussion on omitted variable bias in chapter 7.1.1.

⁵⁶⁴ Ramaswamy (1995), p. 247.

It is equally important that, in all regressions in Table 19, β_4 , which measures the direct (main) effect of corporate internationalization, is insignificant. This finding indicates that internationalization at the firm level per se does not yield superior returns. Rather, the positive performance effect of internationalization appears to depend on the appropriate configuration of the value chain, the use of intra-company knowledge flows, and the presence of social control mechanisms. As discussed in previous chapters, these variables not only allow MNCs to realize the specific benefits of corporate internationalization, but also help them to better manage the additional costs that are typically associated with international expansion.⁵⁶⁵

The following graphs were constructed to illustrate the moderating effects found by the multiple regression analyses presented in Table 19. Figure 20 depicts return on sales (ROS) as a function of the degree of internationalization and the use of intra-company knowledge flows. It is a graphical representation of equation (6), when all other moderating variables (AUTO, SOCON, CONFIG, TSLACK) are held constant at their average values. In contrast, DOI and KNOW may assume values that lie between their minimum and maximum values observed in the sample.

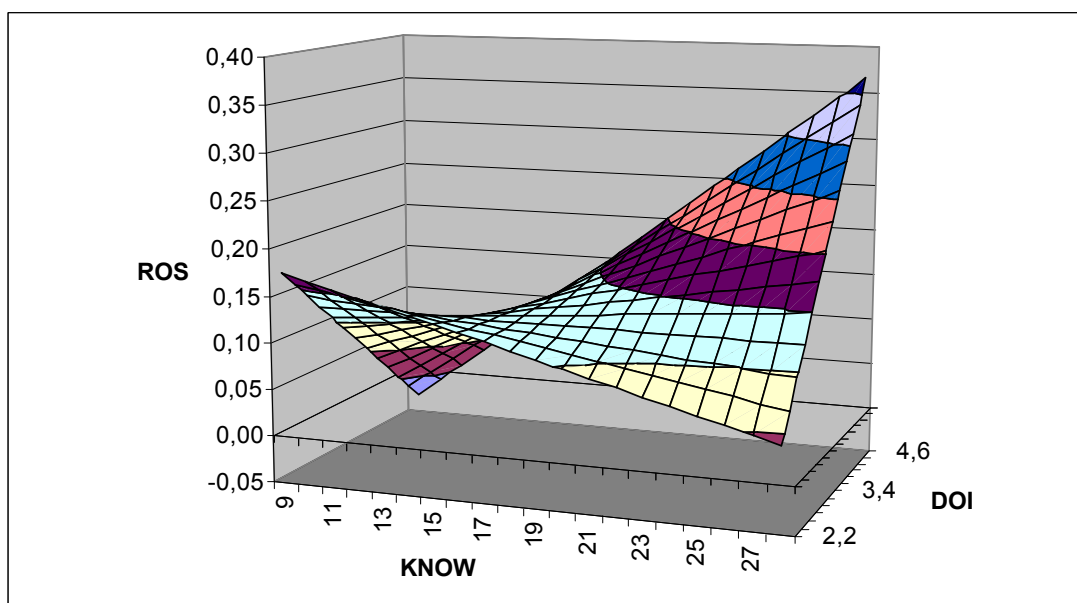


Figure 20: ROS as a Function of the Degree of Internationalization and Knowledge Flows (Source: own illustration)

⁵⁶⁵ See chapters 4.1.4.1 – 4.1.4.3.

As can be seen from the above figure, at very low levels of intra-company knowledge flows, increasing internationalization does not have a positive impact on firm performance. However, at higher levels of intra-company knowledge flows, a higher degree of internationalization leads to higher firm performance. Calculation of the partial derivative of ROS with respect to DOI⁵⁶⁶ reveals that when the values of KNOW are below 16.4, the linkage between internationalization and performance is negative. In contrast, when KNOW exceeds 16.4, the relationship is positive.⁵⁶⁷ The inflection point at KNOW = 16.4 clearly shows that the relationship between corporate internationalization and performance is non-monotonic. Moreover, the fact that the relationship is positive at higher levels of KNOW proves the important role that intra-company knowledge flows play in enabling MNCs to benefit from corporate internationalization.

Figure 21 illustrates the impact of the degree of internationalization and the use of social control mechanisms on ROS after holding the other moderating variables (AUTO, KNOW, CONFIG, TSLACK) at their average levels.

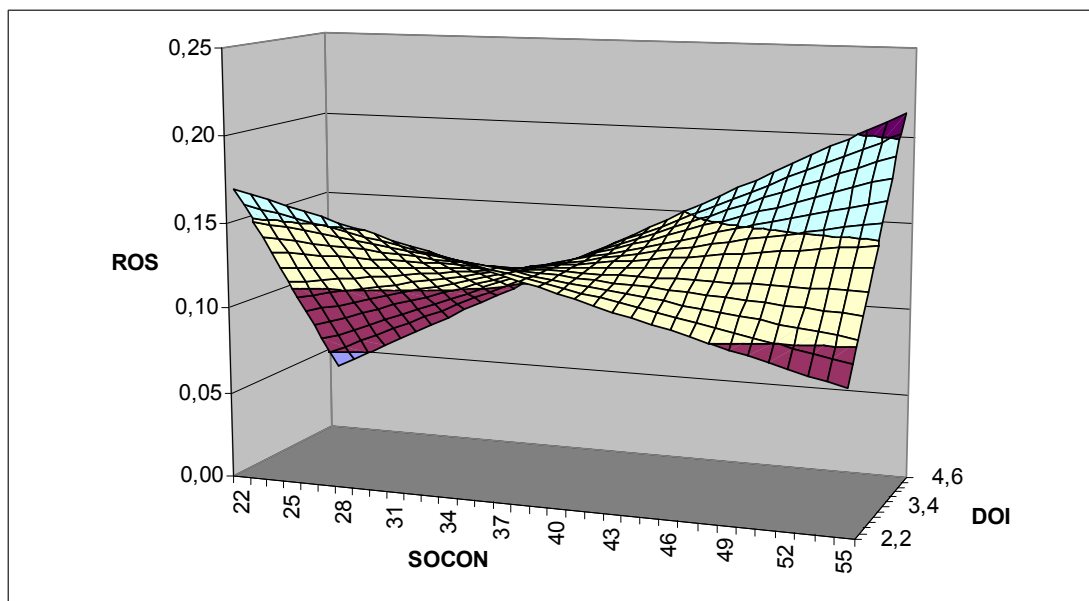


Figure 21: ROS as a Function of the Degree of Internationalization and the Use of Social Control Mechanisms (Source: own illustration)

⁵⁶⁶ $\partial ROS / \partial DOI$ is computed using the average values for AUTO, SOCON, CONFIG, and TSLACK.

⁵⁶⁷ As can be derived from the descriptive statistics provided in Appendix E, the average value of KNOW is 17.4. Thus, for the average sample MNC, the relationship between internationalization and performance as depicted in Figure 20 is positive.

As can be seen, Figure 21 largely displays the same pattern of the internationalization-performance relationship as Figure 20. At low levels of social control, the linkage between internationalization and performance is negative. However, at higher levels of social control, higher degrees of internationalization also lead to higher firm performance. This finding not only confirms the non-monotonic nature of the relationship but also suggests that the use of social control mechanisms allows MNCs to effectively manage complexity and reduce the costs associated with international expansion.

Finally, Figure 22 illustrates the impact of the degree of internationalization and the configuration of the value chain on ROS after holding AUTO, KNOW, SOCON, and TSLACK at their average levels.

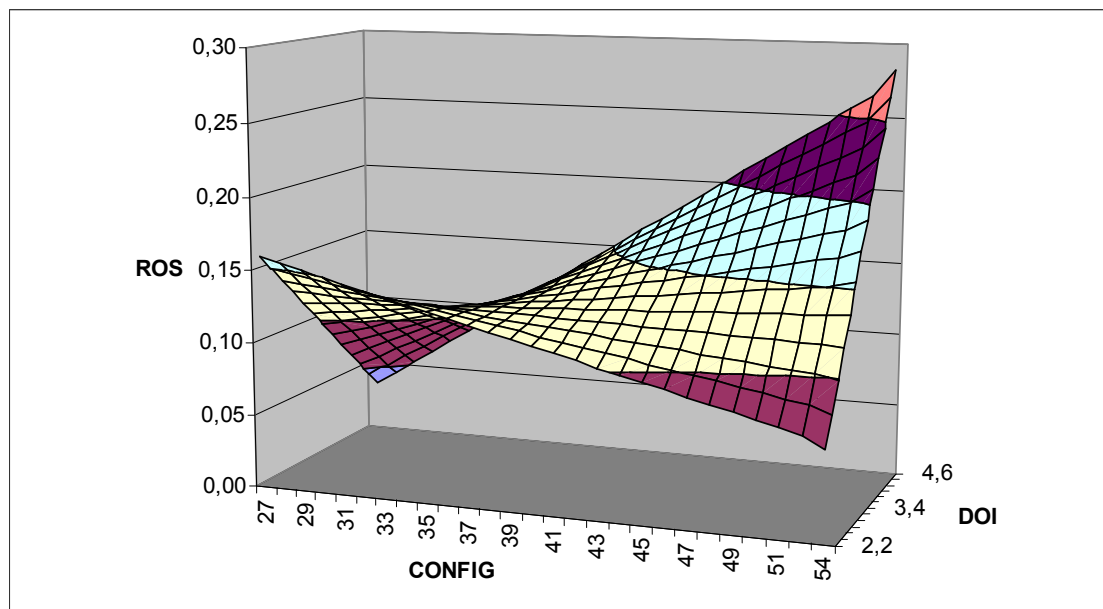


Figure 22: ROS as a Function of the Degree of Internationalization and the Configuration of the Value Chain (Source: own illustration)

Again, the relationship between corporate internationalization and performance is non-monotonic. That is, the direction of the relationship changes from negative to positive as the values of CONFIG increase. This finding corroborates that the performance effects of internationalization significantly depend on the nature of the firms' value chain configuration. Moreover, Figure 22 clearly shows that the higher the value of CONFIG gets, the more positive the linkage between DOI and corporate performance is. Thus, MNCs with value chain configurations that simultaneously allow for the realization of economies of scale and the exploitation of arbitrage opportunities appear to be better able to benefit from corporate internationalization.

The above findings are corroborated by Table 20, which presents the results of the three regression models when using return on assets (ROA) and Tobin's q as the dependent variable. As can be seen, the F-statistics for the overall significance of the regressions are highly significant irrespective of the dependent performance measure that is used. Thus, the three regression models are not only able to significantly explain the variations in ROS but also in ROA and Tobin's q. Moreover, the increase in R^2 that is caused by adding the product terms to the main effect model is highly significant when either ROA or Tobin's Q is used as the dependent variable. This finding confirms that the inclusion of the moderating effects truly adds to the explanatory power of the model.

Moreover, in both sets of regressions, the coefficients for the interactions between DOI and AUTO as well as between DOI and TSLACK are statistically insignificant (p -values > 0.1). This finding is consistent with the results of the ROS regressions, which also provide no support for the hypothesized moderating effects of subsidiary autonomy and organizational slack. In contrast, the coefficients for the interactions between DOI and SOCON as well as between DOI and CONFIG are positive and significant, irrespective of whether ROA or Tobin's q is used as the dependent variable.⁵⁶⁸ Thus, the results in Table 20 confirm that the relationship between corporate internationalization and performance is moderated by both the configuration of the value chain and the use of social control mechanisms. The interaction between DOI and intra-company knowledge flows is also positive and significant when ROA is used as the dependent variable (β_{11} for "DOI x KNOW" = 0.008, $p < 0.05$). However, when Tobin's q is the dependent variable, the coefficient for this interaction effect is still positive but in this case statistically insignificant (β_{11} for "DOI x KNOW" = 0.058, $p > 0.1$). This finding is certainly surprising and difficult to explain. Perhaps the interaction between DOI and KNOW is insignificant because it is dwarfed by the large and highly significant main effect of KNOW on Tobin's q (β_6 for "KNOW" = 0.112, $p < 0.01$). However, given that both the ROS and ROA regressions yield a positive and significant moderating effect of intra-company knowledge flows, there is still sufficient empirical evidence in support of hypothesis 2.

⁵⁶⁸ Note that in the moderated model where ROA is the dependent variable, the coefficient for the interaction between DOI and CONFIG is only significant at the 10%-level (β_{13} for "DOI x CONFIG" = 0.004, $p < 0.1$). However, in the curvilinear moderated model, the same coefficient is significant at the 5%-level (β_{13} for "DOI x CONFIG" = 0.005, $p < 0.05$).

Independent Variables	ROA									Tobin's q								
	Main Effect Model			Moderated Model			Mod. Model Curvilinear			Main Effect Model			Moderated Model			Mod. Model Curvilinear		
	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF	Co-efficient	t-value	VIF
Intercept	0,059	0,590		-0,044	-0,435		-0,030	-0,294		-1,194	-0,968		-2,436	-1,897 *		-2,342	-1,794 *	
Industry	-0,004	-0,245	1,743	-0,013	-0,799	1,881	-0,014	-0,894	1,918	0,149	0,698	1,743	0,033	0,156	1,881	0,027	0,128	1,918
Region	-0,010	-0,582	1,584	0,009	0,528	1,776	0,003	0,191	2,090	0,605	2,716 ***	1,584	0,757	3,396 ***	1,776	0,711	2,955 ***	2,090
Size	0,010	1,408	1,852	0,002	0,330	2,024	0,003	0,430	2,063	0,203	2,237 **	1,852	0,163	1,818 *	2,024	0,167	1,845 *	2,063
DOI	-0,012	-0,765	1,816	0,006	0,414	2,078	0,004	0,279	2,138	0,027	0,127	1,816	0,119	0,512	2,078	0,108	0,459	2,138
AUTO	-0,002	-1,526	1,718	-0,002	-1,706 *	1,883	-0,002	-1,853 *	2,092	-0,005	-0,398	1,718	-0,006	-0,452	1,883	-0,008	-0,591	2,092
KNOW	0,006	3,090 ***	1,440	0,007	3,823 ***	1,551	0,008	3,883 ***	1,607	0,091	3,641 ***	1,440	0,112	4,543 ***	1,551	0,114	4,539 ***	1,607
SOCON	0,001	0,850	1,373	0,001	1,326	1,428	0,001	1,325	1,428	-0,010	-0,938	1,373	-0,008	-0,777	1,428	-0,008	-0,732	1,428
CONFIG	-0,002	-2,070 **	1,233	-0,001	-0,497	1,620	-0,001	-0,564	1,634	-0,028	-1,848 *	1,233	-0,009	-0,597	1,620	-0,010	-0,610	1,634
TSLACK	0,018	0,955	1,435	0,015	0,765	1,729	0,016	0,805	1,735	0,774	2,633 **	1,435	0,873	3,096 ***	1,729	0,868	3,053 ***	1,735
DOI x AUTO				-0,001	-0,274	1,398	-0,001	-0,280	1,398				-0,002	-0,082	1,398	-0,002	-0,081	1,398
DOI x KNOW				0,008	2,098 **	1,627	0,008	2,134 **	1,634				0,058	1,195	1,627	0,063	1,258	1,634
DOI x SOCON				0,003	2,414 **	1,328	0,003	2,354 **	1,333				0,044	2,296 **	1,328	0,043	2,195 **	1,333
DOI x CONFIG				0,004	1,867 *	1,488	0,005	2,009 **	1,773				0,072	2,398 **	1,488	0,077	2,432 **	1,773
DOI x TSLACK				0,010	0,429	1,348	0,005	0,197	1,463				-0,046	-0,090	1,348	-0,034	-0,067	1,463
DOI ²							-0,016	-0,761	1,700							-0,152	-0,530	1,700
Global Goodness-of-Fit Measures																		
R ²		0,304			0,469			0,475			0,533			0,635			0,637	
Adj. R ²		0,202			0,336			0,331			0,458			0,535			0,529	
ΔR ²					0,165 ***			0,006						0,102 **			0,002	
F-Test Overall Significance		2,965 ***			3,534 ***			3,312 ***			7,105 ***			6,349 ***			5,861 ***	
Regression Assumptions																		
RESET		1,655			0,508			0,283			2,278			2,257			2,266	
Breusch-Pagan		0,878			1,184			1,193			0,645			0,434			0,570	
Kolmogorov-Smirnov		0,057			0,079			0,075			0,079			0,095			0,069	
Shapiro-Wilk		0,992			0,985			0,989			0,974			0,964 *			0,969 *	
VIF (Max)		1,852			2,078			2,138			1,852			2,078			2,138	

Note: Unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 20: Multiple Regression Results for the Complete Sample Using ROA and Tobin's Q as the Dependent Variables
(Source: own illustration)

The results in Table 20 do not only provide additional support for the presence of the moderating effects found by the ROS regressions, but also confirm two other important aspects. As can be seen, the coefficient for DOI (β_4), which measures the direct (main) effect of corporate internationalization on performance, remains insignificant irrespective of whether ROA or Tobin's q is used as the dependent variable. This finding corroborates the notion that internationalization per se does not yield superior returns. Moreover, consistent with the findings for ROS, the results in Table 20 provide no support for a curvilinear specification of the internationalization-performance relationship. For both dependent performance measures (ROA and Tobin's q), the increase in R^2 that is caused by introducing the squared term of DOI is small and statistically insignificant. In addition, in both cases the regression coefficient for DOI² is insignificant as well. Thus, the results presented in Tables 19 and 20 provide a consistent picture of the internationalization-performance relationship. In particular, they suggest that the positive performance effects of corporate internationalization depend on the nature of the firms' value chain configuration, their use of intra-company knowledge flows, and the presence of social control mechanisms. Therefore, the multiple regression analyses presented above provide empirical evidence in support of hypotheses 1, 2, and 3.

Drawing on these findings, it is possible to build a fitted model of the internationalization-performance relationship by applying a backward elimination strategy. That is, independent variables (with the exception of control variables) that have shown no significant explanatory power are removed from the moderated model given by equation (6) one at a time. The procedure used in this study follows the hierarchical backward elimination approach outlined by Kleinbaum and Klein. Accordingly, higher-order terms (i.e., product terms) are eliminated first, followed by first-order terms (main effects).⁵⁶⁹ At each stage, the fit of a model that still includes the independent variable to be eliminated is compared to the fit of a model that drops the variable of interest. If the difference in fit between the models is trivial (i.e., the change in R^2 caused by dropping the variable is insignificant), then this suggests that the variable can be eliminated.⁵⁷⁰ First-order control variables were not subjected to elimination, preferring instead to leave them in to control for confounding effects.⁵⁷¹

⁵⁶⁹ Cf. Kleinbaum and Klein (2002), pp. 174-181.

⁵⁷⁰ Cf. Jaccard and Turrisi (2003), pp. 66-67.

⁵⁷¹ Cf. Lambert et al. (2001), p. 1848; Kleinbaum and Klein (2002), pp. 174-176.

The elimination of insignificant variables is an important step to reduce the complexity of the model. As Backhaus et al. note, the larger the number of explanatory variables in the model, the higher the probability to obtain a significant regression coefficient even when the respective independent variable correlates with the dependent variable only by chance.⁵⁷² This problem is a consequence of what is commonly called "overfitting". Thus, a fitted model that still contains the three moderating effects found above, would underscore the reliability of this study's findings.

Following the backward elimination strategy described above, the interaction between DOI and the level of subsidiary autonomy was removed first, based on an insignificant change in model fit ($\Delta R^2 = -0.018$, $F = 2.320$, $p > 0.1$). Subsequently, the interaction between DOI and organizational slack was removed from the model in the same manner ($\Delta R^2 = -0.019$, $F = 2.338$, $p > 0.1$). Because all other moderating effects remained significant after dropping the two interaction terms, it was decided to retain them in the model and continue with the elimination of insignificant first-order terms. The hierarchy principle generally states that if a product term is retained in the model, then all lower-order components of that variable must be retained in the model as well.⁵⁷³ Therefore, the only first-order terms that could be further removed from the model were the main effects of subsidiary autonomy (AUTO) and organizational slack (TSLACK). Because dropping subsidiary autonomy did not result in a significant change in the model fit ($\Delta R^2 = -0.008$, $F = 1.013$, $p > 0.1$), it was removed from the model just like TSLACK ($\Delta R^2 = -0.015$, $F = 1.788$, $p > 0.1$).

The regression results of the fitted model using ROS as the dependent variable are presented in Table 21. As can be derived from the lower part of the table, the fitted model also satisfies the general assumptions and requirements of OLS regression analysis. Moreover, compared to the moderated model that includes all product terms, the F-statistic for the overall significance of the regression is higher, while the maximum VIF is slightly smaller. Thus, the quality of the regression results appears to have increased by eliminating the insignificant explanatory variables. More importantly, however, the moderating effects of CONFIG, KNOW, and SOCON remain positive and statistically significant. Thus, the results of the backward elimination strategy confirm the previous findings and also corroborate their reliability.

⁵⁷² Cf. Backhaus et al. (2005), p. 85.

⁵⁷³ Cf. Kleinbaum and Klein (2002), p. 175.

Results of Regression Analysis - Dependent Variable ROS						
Independent Variables	Moderated Model			Fitted Model		
	Coefficient	t-value	VIF	Coefficient	t-value	VIF
Intercept	-0,318	-2,794 ***		-0,400	-4,400 ***	
Industry	0,008	0,449	1,881	0,033	2,182 **	1,199
Region	0,014	0,739	1,776	0,024	1,319	1,573
Size	0,012	1,689 *	2,024	0,011	1,478	1,815
DOI	0,012	0,704	2,078	0,021	1,218	2,000
AUTO	-0,002	-1,549	1,883			
KNOW	0,008	3,562 ***	1,551	0,007	3,110 ***	1,425
SOCON	0,002	1,629	1,428	0,002	1,874 *	1,377
CONFIG	0,003	2,253 **	1,620	0,004	2,994 ***	1,380
TSLACK	0,028	1,290	1,729			
DOI x AUTO	-0,003	-1,298	1,398			
DOI x KNOW	0,012	2,716 ***	1,627	0,010	2,451 **	1,427
DOI x SOCON	0,003	2,086 **	1,328	0,003	2,098 **	1,314
DOI x CONFIG	0,005	2,125 **	1,488	0,007	2,590 **	1,401
DOI x TSLACK	-0,031	-1,119	1,348			
DOI ²						
Global Goodness-of-Fit Measures						
R ²		0,558			0,498	
Adj. R ²		0,448			0,414	
ΔR ²					-0,060	
F-Test Overall Significance		5,056 ***			5,952 ***	
Regression Assumptions						
RESET		1,008			0,510	
Breusch-Pagan		0,867			1,384	
Kolmogorov-Smirnov		0,072			0,051	
Shapiro-Wilk		0,986			0,984	
VIF (Max)		2,078			2,000	

Note: Unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 21: Results of Backward Regression Analysis (Source: own illustration)

Figure 23 provides a graphical representation of the fitted model of the internationalization-performance relationship found by the above multiple regression analyses.

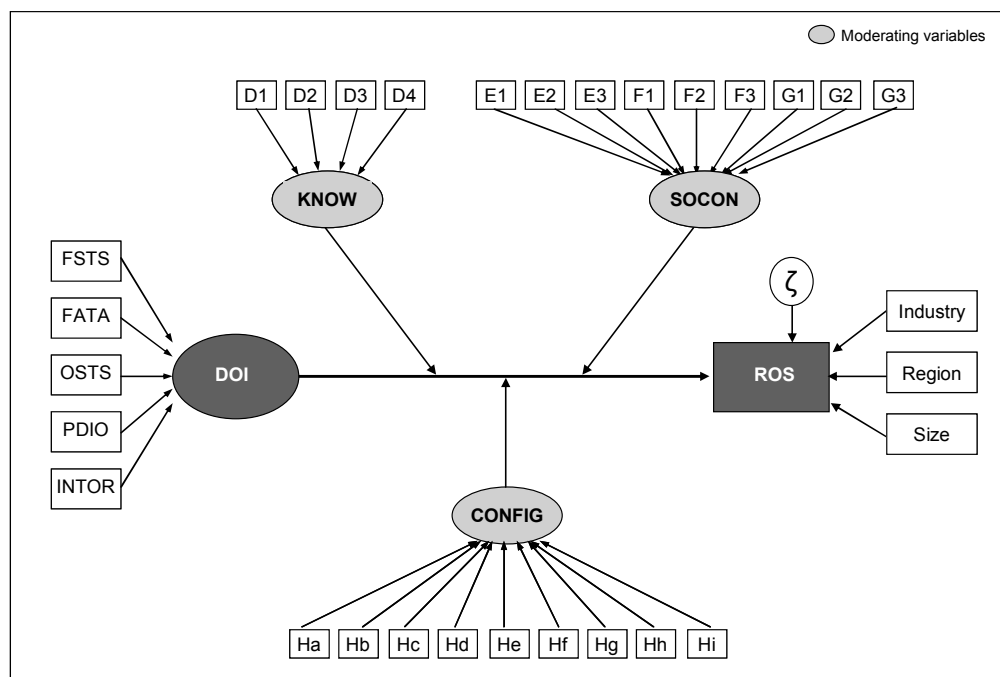


Figure 23: Fitted Model (for simplicity, covariances among indicators of formative constructs as well as direct effects of the moderating variables on the endogenous variable are omitted).

7.2.2 Regression Results on the Moderating Effects of Contextual Variables

The subsample analyses that are used to test for the moderating effects of contextual variables are based on the refined (fitted) model of the internationalization-performance relationship presented above. That is, variables that were previously found to have no significant explanatory power are excluded from the analyses. This approach was chosen because the individual subsamples are smaller than the complete sample and therefore provide fewer degrees of freedom for a given regression model. Therefore, the inclusion of irrelevant variables in the subsample analyses would even aggravate the adverse consequences of overfitting and only exacerbate the multicollinearity problem.⁵⁷⁴

⁵⁷⁴ As Wooldridge notes, multicollinearity is also related to sample size because a small sample size can also lead to large sampling variances (Wooldridge (2003), pp. 98-99). Therefore, it is reasonable to expect that the level of multicollinearity in the subsample analyses will be higher than in the regression analyses for the complete sample. However, this does not imply that the level of multicollinearity in the subsample regressions is harmful.

7.2.2.1 Results on the Moderating Effect of Industry Membership

The results of the separate regression analyses for the pharmaceutical and food & beverage industry subsamples are presented in Table 22. As can be seen, the estimated regression models meet the general assumptions and requirements of OLS regression analysis irrespective of the subsample employed. The results of the Breusch-Pagan and RESET tests are statistically insignificant, indicating the absence of heteroscedasticity and functional form misspecification. Moreover, the insignificant results of the Kolmogorov-Smirnov and Shapiro-Wilk tests confirm that the distributions of the residuals do not deviate significantly from normality. As expected, the values of the variance inflation factors (VIFs) in the subsample regressions are slightly higher than those in the multiple regressions using the complete dataset. This indicates that the level of multicollinearity increased as a result of the smaller sizes of the subsamples. However, the maximum VIF in each regression model is still far below the common threshold value of 10. Therefore, there is no serious concern about harmful multicollinearity. In summary, the results of the subsample regression appear to be suitable for making statistical inferences.

As described previously, a moderating effect of the companies' industry affiliations exists, if the regression coefficients for DOI or one of the product terms are significantly different in the two subsamples. A comparison of the coefficients for the interactions between DOI and KNOW as well as between DOI and SOCON reveals no significant differences between the two subsamples. In contrast, the coefficient for the interaction between DOI and CONFIG is positive and significant in the pharmaceutical industry subsample, whereas it is positive but insignificant in the subsample comprising MNCs in the food & beverage industry. Thus, the configuration of the companies' value chain only appears to significantly moderate the relationship between internationalization and performance in the pharmaceutical industry. More important, however, is the difference between the two subsamples in the regression coefficient for DOI (β_4). While the main effect of internationalization on performance is consistently positive and significant in the food & beverage industry subsample, it is consistently insignificant in the subsample comprising pharmaceutical MNCs. Thus, in contrast to the pharmaceutical industry, corporate internationalization appears to have a significant direct performance effect in the food & beverage industry.

Independent Variables	Pharmaceutical Industry									Food & Beverage Industry								
	Fitted Main Effect Model			Fitted Model			Fitted Model Curvilinear			Fitted Main Effect Model			Fitted Model			Fitted Model Curvilinear		
	Coef-	t-value	VIF	Coef-	t-value	VIF	Coef-	t-value	VIF	Coef-	t-value	VIF	Coef-	t-value	VIF	Coef-	t-value	VIF
	ficient			ficient			ficient			ficient			ficient			ficient		
Intercept	-0,168	-1,339		-0,474	-2,725 **		-0,456	-2,637 **		-0,237	-2,102 **		-0,330	-2,668 **		-0,324	-2,574 **	
Region	-0,055	-1,919 *	1,480	-0,014	-0,465	2,045	-0,019	-0,625	2,081	0,071	2,949 ***	1,612	0,071	2,890 ***	1,717	0,073	2,916 ***	1,761
Size	0,028	2,620 **	1,850	0,017	1,475	2,487	0,017	1,459	2,488	0,003	0,317	1,611	0,003	0,273	1,722	0,002	0,207	1,739
DOI	-0,045	-1,520	2,059	0,024	0,659	3,852	0,019	0,531	3,897	0,040	2,068 **	1,604	0,046	2,228 **	1,714	0,043	2,016 *	1,797
AUTO																		
KNOW	0,010	3,002 ***	1,454	0,010	2,972 ***	1,737	0,010	2,957 ***	1,739	0,000	-0,028	1,277	0,000	0,096	1,930	0,001	0,242	2,051
SOCON	0,000	0,198	1,810	0,001	0,313	2,530	0,001	0,638	2,739	0,002	1,777 *	1,274	0,002	2,000 *	1,525	0,002	1,813 *	1,587
CONFIG	0,002	0,741	1,093	0,005	1,940 *	1,673	0,005	1,838 *	1,687	0,002	1,641	1,030	0,003	2,150 **	1,617	0,003	2,123 **	1,617
TSLACK																		
DOI x AUTO																		
DOI x KNOW				0,011	1,691	1,632	0,012	1,850 *	1,661				0,010	1,693	1,607	0,010	1,693	1,609
DOI x SOCON				0,001	0,488	2,077	0,003	0,828	2,276				0,001	0,260	1,347	0,002	0,548	1,891
DOI x CONFIG				0,012	2,139 **	2,824	0,015	2,457 **	3,314				0,001	0,330	1,780	0,001	0,267	1,796
DOI x TSLACK																		
DOI ²							-0,045	-1,209	2,123							0,023	0,618	1,914
Global Goodness-of-Fit Measures																		
R ²		0,435			0,579			0,602			0,452			0,522			0,530	
Adj. R ²		0,318			0,433			0,443			0,334			0,350			0,334	
F-Test Overall Significance		3,724 ***			3,969 ***			3,781 ***			3,845 ***			3,037 **			2,704 **	
Regression Assumptions																		
RESET		0,579			2,031			2,249			0,527			0,027			0,013	
Breusch-Pagan		1,517			1,049			1,291			0,316			0,601			0,525	
Kolmogorov-Smirnov		0,106			0,093			0,070			0,114			0,091			0,110	
Shapiro-Wilk		0,974			0,989			0,990			0,977			0,974			0,967	
VIF (Max)		2,059			3,852			3,897			1,612			1,930			2,051	

Note: Unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 22: Multiple Regression Results by Industry (Source: own illustration)

A potential reason for the difference in the main effect of DOI may be found in the different nature of the international strategies that MNCs in the pharmaceutical and food & beverage industries are said to pursue. Companies in the pharmaceutical industry are commonly considered to pursue a "global strategy", which involves the integration of activities on a global scale in order to achieve economies of scale and scope. A critical factor driving the need for global integration in the pharmaceutical industry can be found in its high research and development intensity. Thus, a major goal of corporate internationalization in the pharmaceutical industry is to generate economies of scale in order to redeem their high research and development costs. This view is supported by the positive and significant moderating effect of CONFIG found in the results for the pharmaceutical industry subsample (see Table 22). As mentioned before, high values of the configuration measure (CONFIG) represent value chain configurations that also allow for the realization of economies of scale.⁵⁷⁵ In contrast, companies in the food & beverage industry are said to pursue "multinational strategies" which put emphasis on decentralizing assets and capabilities in order to respond to differences that distinguish national markets. In particular, they may be driven to localize production in each market to effectively meet the divergent customer demands. Thus, a key requirement for companies in the food & beverage industry is to be close to their customers worldwide. Consequently, they need to expand their operations abroad, and corporate internationalization itself becomes a critical factor of success.⁵⁷⁶

The above considerations can be supported by comparing the mean values of DOI and its individual components in the two industry subsamples. The descriptive statistics provided in Appendix E show that the mean degree of internationalization of the pharmaceutical companies in the sample is 3.4. Similarly, the mean degree of internationalization of the food & beverage companies is 3.5. A t-test confirms that the difference between these two values is statistically insignificant (p-value = 0.33).⁵⁷⁷ However, a comparison of the foreign assets to total assets ratio (FATA) reveals a different picture. The mean value of FATA in the pharmaceutical industry and food & beverage subsample is 0.47 and 0.62, respectively. A two-tailed t-test confirms that the difference between these two values is

⁵⁷⁵ See chapter 6.3.2.

⁵⁷⁶ See chapter 5.2.1 for a more detailed discussion of the different characteristics of the pharmaceutical and food & beverage industries.

⁵⁷⁷ A two-tailed t-test assuming unequal variances was employed to test for the mean difference in DOI between pharmaceutical and food & beverage companies.

statistically significant at the 1%-level (p -value = 0.004).⁵⁷⁸ Thus, the FATA ratio of food & beverage MNCs is significantly higher than the FATA ratio of pharmaceutical MNCs. Because a large proportion of foreign assets are typically made up of plant and equipment, the FATA ratio is commonly used as a measure of a firm's dependence on overseas production.⁵⁷⁹ The higher FATA ratio of food & beverage MNCs therefore confirms the view that these companies depend much more on local production in order to meet customer demands. This in turn may explain why the results in Table 22 show a significant positive direct effect of corporate internationalization on performance in the food & beverage industry subsample.

The results of the subsample regressions so far suggest a moderating effect of the industry affiliation of MNCs. To corroborate this finding, a Z-test assessing the statistical significance of the difference between each pair of regression coefficients in Table 22 was performed. The results are shown in Table 23.

Test for Differences in Industry Subsamples - Dependent Variable ROS						
Independent Variables	Fitted Main Effect Model		Fitted Model		Fitted Model Curvilinear	
	Δ		Δ		Δ	
	Coefficients	Z-Test	Coefficients	Z-Test	Coefficients	Z-Test
Intercept	0,070	0,413	-0,143	-0,671	-0,132	-0,617
Region	-0,126	-3,367 ***	-0,085	-2,169 **	-0,093	-2,332 **
Size	0,025	1,669	0,014	0,895	0,014	0,914
DOI	-0,084	-2,402 **	-0,021	-0,508	-0,024	-0,550
AUTO						
KNOW	0,010	2,377 **	0,010	2,080 **	0,009	1,911 *
SOCON	-0,002	-0,783	-0,002	-0,806	-0,001	-0,433
CONFIG	0,000	-0,098	0,002	0,624	0,002	0,528
TSLACK						
DOI x AUTO						
DOI x KNOW			0,002	0,179	0,002	0,283
DOI x SOCON			0,001	0,227	0,001	0,250
DOI x CONFIG			0,011	1,693	0,014	2,033 *
DOI x TSLACK						
DOI ²					-0,068	-1,288

Note: Differences in unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 23: Results of Z-Test for Differences between the Regression Coefficients in the Pharmaceutical and Food & Beverage Industry Subsamples
(Source: own illustration)

As can be seen, there is a consistent and significant difference between the two subsamples in the coefficient for the variable controlling for the geographic origin of the companies. The same applies to the coefficient for the main (direct) effect of intra-company

⁵⁷⁸ A two-tailed t-test assuming unequal variances was employed.

⁵⁷⁹ Cf. Ramaswamy (1995), p. 243; Gomes and Ramaswamy (1999), p. 181.

knowledge flows on corporate performance. However, the difference in the coefficient for the main effect of DOI between the pharmaceutical and the food & beverage industry subsample is only significant in the fitted main effect model. Therefore, the Z-test only partially supports the moderating effect of the industry affiliation of MNCs. However, the Z-test does not capture an important difference between the two subsamples that still remains. As discussed above, the main (direct) effect of internationalization on performance in the food & beverage industry subsample remains uniformly positive and significant across models. In contrast, the main effect of internationalization is consistently insignificant in the subsample comprised of pharmaceutical MNCs. Therefore, the presented results generally appear to provide sufficient support in favor of hypothesis 6, which states that the relationship between corporate internationalization and performance is moderated by a company's industry membership.

7.2.2.2 Results on the Moderating Effect of Geographic Origin

A second contextual variable that was hypothesized to moderate the internationalization-performance relationship is the geographic origin of MNCs. To test this hypothesis, separate regression analyses for the subsamples comprised of North American and European MNCs were performed. As can be derived from Table 24, these subsample regressions meet the general assumptions and requirements of OLS regression analysis. The test statistics in the lower part of the table are uniformly insignificant, which indicates that there is no concern about heteroscedasticity, functional form misspecification, or a non-normal distribution of the residuals. Moreover, the values of the variance inflation factors (VIF) are below the cut-off threshold of 10, although they are much higher in the North American subsample than in the subsample comprised of European MNCs. This difference can be attributed to the small size of the North American subsample and indicates that the separate regression results for U.S. MNCs need to be interpreted with caution. The F-statistics for the overall significance of the regressions are highly significant in the European subsample. Consequently, the employed regression models are able to significantly explain the variations in ROS observed among the European sample MNCs. In contrast, the F-statistics of the regressions in the North American subsample indicate that while the fitted model is significant ($p < 0.05$), the fitted main effect model and the curvilinear model only have weak significance ($0.05 < p < 0.1$). Therefore, the

comparisons between the regression coefficients in the two subsamples should be mainly based on the fitted model of the internationalization-performance relationship.

A mere comparison of the signs of the regression coefficients for DOI (and DOI²) already reveals important differences between the two regional subsamples. As Table 24 shows, the sign of the coefficient for the main effect of DOI in the North American subsample is consistently negative. Thus, the results of the fitted main effect model and the fitted model suggest a negative linear relationship between corporate internationalization and performance for U.S. MNCs. When a curvilinear relationship is assumed, the positive sign of the squared term of DOI points to a U-shaped form of the relationship between multinationality and performance. However, the signs of the coefficients for DOI and DOI² in the European subsample suggest just the opposite. The positive sign of the coefficient for the main effect of DOI in the fitted main effect model and the fitted model indicates a positive linear relationship between internationalization and performance for European MNCs. When a curvilinear relationship is assumed, then the negative sign of the squared term of DOI suggests an inverted U-shaped form of the relationship. Thus, in each of the three regression models, the difference in the sign of the coefficient for DOI (and DOI²) between the two regional subsamples suggests opposing forms of the internationalization-performance relationship.

A much more important difference, however, emerges when the significance of the coefficients is taken into consideration. In the fitted moderated model, the main effect of internationalization on performance is positive and significant ($p < 0.05$) for European MNCs, whereas it is negative and insignificant ($p > 0.1$) for North American MNCs. Thus, when all three moderating variables (KNOW, SOCON, and CONFIG) are at their mean values, there is a positive and significant performance effect of corporate internationalization in the European subsample. The fact that corporate internationalization itself appears to be of significant value to European MNCs may be ascribed to their comparatively small home markets. As noted earlier, compared to U.S. firms that can draw on a large home market to generate economies of scale, companies headquartered in smaller countries (e.g., most European firms) have to move outside of their home country early on in order to take advantage of these benefits.⁵⁸⁰ Thus, international expansion seems to be much more critical for European MNCs. That is why they are also expected to operate at higher degrees of internationalization (DOI). The descriptive statistics support

⁵⁸⁰ See chapter 4.2.2.

the above notion.⁵⁸¹ The mean value of DOI in the North American subsample is 3.2, whereas it is 3.6 in the subsample comprised of European MNCs. A two-tailed t-test confirms that the difference between the mean values of DOI in the two subsamples is significant ($t = 3.68$, $p < 0.000$).⁵⁸² Thus, the European MNCs in the sample indeed operate at a higher degree of internationalization. The difference is even more pronounced for some of the components of DOI. While the average foreign sales to total sales ratio (FSTS) for U.S. MNCs is 0.46, it is as high as 0.79 for European MNCs. The difference in the FSTS ratio is also significant ($t = 9.14$, $p < 0.000$).⁵⁸³

Besides the difference in the main effect of DOI, the results in Table 24 also reveal a significant difference between the coefficients for the interaction between DOI and KNOW in the two regional subsamples. While the moderating effect of intra-company knowledge flows is positive and significant in the European subsample, it is positive but insignificant in the subsample comprised of North American MNCs. Because European MNCs operate at a higher degree of internationalization and also expand abroad at an earlier stage than their U.S. counterparts, they also have a greater need to learn how to operate in dispersed and culturally distinct business environments. As intra-company knowledge flows contribute to organizational learning, they may therefore be of great importance to European MNCs. This may explain why the interaction between DOI and KNOW is positive *and* significant in the European subsample. Moreover, as Ruigrok and Wagner note, experiential knowledge facilitates the "organizational learning that eventually allows for successful foreign expansion."⁵⁸⁴ This perspective is supported by the fact that only the inclusion of the moderating effect of KNOW leads to a significant positive main effect of internationalization in the European subsample.

It is important to note that none of the subsample regressions provides support for a curvilinear specification of the internationalization-performance relationship. However, a positive linear relationship is supported in the subsample comprised of European MNCs.

⁵⁸¹ See Appendix E.

⁵⁸² A two-tailed t-test assuming unequal variances was performed to test for the mean difference in DOI between the North American and European MNCs in the sample.

⁵⁸³ The foreign assets to total assets ratio (FATA) is also significantly higher for European MNCs than for U.S. MNCs (the FATA ratio in the U.S. and European subsample is 0.39 and 0.62, respectively).

⁵⁸⁴ Ruigrok and Wagner (2003a), p. 14.

Independent Variables	North America									Europe								
	Fitted Main Effect Model			Fitted Model			Fitted Model Curvilinear			Fitted Main Effect Model			Fitted Model			Fitted Model Curvilinear		
	Coefficient	t-value	VIF	Coefficient	t-value	VIF	Coefficient	t-value	VIF	Coefficient	t-value	VIF	Coefficient	t-value	VIF	Coefficient	t-value	VIF
Intercept	-0,052	-0,245		-0,384	-1,299		-0,453	-1,292		-0,273	-3,039 ***		-0,381	-4,275 ***		-0,390	-4,307 ***	
Industry	0,004	0,121	1,145	0,007	0,249	1,313	0,009	0,305	1,351	0,065	3,761 ***	1,135	0,054	3,281 ***	1,332	0,056	3,327 ***	1,357
Size	0,035	2,667 **	1,359	0,015	1,132	1,838	0,017	1,166	2,199	0,006	0,583	2,138	0,001	0,149	2,216	0,003	0,317	2,352
DOI	-0,089	-1,834 *	1,243	-0,035	-1,153	2,394	-0,011	-0,124	4,956	0,027	1,418	1,962	0,044	2,510 **	2,120	0,044	2,465 **	2,122
AUTO																		
KNOW	0,009	2,010 *	1,266	0,013	2,092 *	3,655	0,014	2,045 *	4,116	0,003	1,355	1,331	0,002	0,908	1,902	0,003	0,938	1,907
SOCON	0,001	0,549	1,319	0,003	0,798	3,339	0,002	0,477	4,399	0,002	1,465	1,443	0,002	2,256 **	1,568	0,002	2,259 **	1,569
CONFIG	-0,001	-0,284	1,081	0,004	1,034	4,553	0,004	0,835	5,010	0,003	1,819 *	1,117	0,005	3,201 ***	1,358	0,005	3,200 ***	1,359
TSLACK																		
DOI x AUTO																		
DOI x KNOW				0,028	1,612	3,759	0,028	1,575	3,763				0,013	2,973 ***	1,802	0,014	3,025 ***	1,838
DOI x SOCON				0,006	0,706	4,412	0,004	0,358	6,248				0,001	0,585	1,600	0,001	0,442	1,654
DOI x CONFIG				0,011	0,979	7,708	0,009	0,709	9,184				0,002	0,856	1,382	0,003	1,052	1,585
DOI x TSLACK																		
DOI ²							0,046	0,401	8,862							-0,016	-0,720	1,327
Global Goodness-of-Fit Measures																		
R ²		0,426			0,658			0,662			0,453			0,605			0,611	
Adj. R ²		0,223			0,439			0,403			0,370			0,510			0,503	
F-Test Overall Significance		2,208 *			2,996 **			2,551 *			5,511 ***			6,309 ***			5,656 ***	
Regression Assumptions																		
RESET		0,568			0,823			1,443			1,588			0,187			0,187	
Breusch-Pagan		0,136			0,222			0,194			0,133			0,723			0,803	
Kolmogorov-Smirnov		0,154			0,111			0,101			0,094			0,098			0,094	
Shapiro-Wilk		0,940			0,975			0,974			0,982			0,98			0,982	
VIF (Max)		1,359			7,708			9,184			2,138			2,216			2,352	

Note: Unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 24: Multiple Regression Results by Geographic Region (Source: own illustration)

Overall, the above discussion suggests that the relationship between corporate internationalization and performance is moderated by the geographic origin of the sample companies. This finding is corroborated by the results of the Z-test presented in Table 25.

Test for Differences in Regional Subsamples - Dependent Variable ROS						
Independent Variables	Fitted Main Effect Model		Fitted Model		Fitted Model Curvilinear	
	Δ		Δ		Δ	
	Coefficients	Z-Test	Coefficients	Z-Test	Coefficients	Z-Test
Intercept	0,221	0,966	-0,003	-0,009	-0,063	-0,174
Region	-0,061	-1,660	-0,047	-1,384	-0,046	-1,320
Size	0,029	1,793 *	0,013	0,855	0,014	0,823
DOI	-0,116	-2,225 **	-0,079	-2,251 **	-0,055	-0,622
AUTO						
KNOW	0,005	1,048	0,011	1,565	0,011	1,558
SOCON	0,000	-0,078	0,000	0,128	0,000	-0,086
CONFIG	-0,003	-1,162	0,000	-0,008	-0,001	-0,129
TSLACK						
DOI x AUTO						
DOI x KNOW			0,015	0,831	0,015	0,794
DOI x SOCON			0,005	0,582	0,003	0,283
DOI x CONFIG			0,008	0,753	0,006	0,456
DOI x TSLACK						
DOI ²					0,062	0,534

Note: Differences in unstandardized regression coefficients are shown. Asterisks show significance levels using a two-tailed t-test where * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 25: Results of the Z-Test for Differences between the Regression Coefficients in the North American and European Subsamples (Source: own illustration)

As can be seen, the Z-test also reveals statistically significant differences between the coefficients for DOI in the North American and European subsamples. Of particular importance is the significant difference in the fitted model because this model is able to significantly explain the variations in ROS in both subsamples (see above). Thus, the results of the Z-test also support the moderating effect of the geographic origin of MNCs on the linkage between internationalization and performance.

As mentioned before, the regression results for the North American MNCs certainly have to be treated with caution due to the higher level of multicollinearity in the subsample (although the VIFs are still below the common cut-off threshold of 10). However, the regression results in the European subsample also differ from those in the overall sample, which do not show a significant direct effect of internationalization on performance. Therefore, there should be enough confidence to accept hypothesis 7 stating that the relationship between corporate internationalization and performance is moderated by the geographic origin of MNCs.

7.3 Summary of Findings

The empirical results presented in the above sections lend support to the central ideas of this dissertation. That is, the relationship between corporate internationalization and performance appears to be influenced by both organizational/managerial variables and contextual variables. An overview of the findings on the individual variables is provided in Table 26.

Central Idea	Potential moderating variables	Hypotheses	Result
The organization and management of MNCs influences the effects of internationalization on performance	Value chain configuration	H1: Multinational corporations with a higher degree of both concentrated and geographically dispersed value activities are better able to reap the benefits of corporate internationalization.	supported
	Intra-company knowledge flows	H2: Greater usage of both vertical and lateral knowledge flows enhances an MNC's ability to benefit from corporate internationalization.	supported
	Social control mechanisms	H3: The use of social control mechanisms positively moderates the effects of international expansion on corporate performance.	supported
	Subsidiary autonomy	H4: The relationship between corporate internationalization and performance is moderated by the level of subsidiary autonomy.	rejected
	Organizational slack	H5: Organizational slack positively moderates the relationship between corporate internationalization and performance.	rejected
The relationship between internationalization and performance is dependent on contextual settings	Industry membership	H6: The relationship between corporate internationalization and performance is moderated by companies' industry membership.	supported
	Geographic origin	H7: The relationship between corporate internationalization and performance is moderated by companies' geographic origins.	supported

Table 26: Overview of Empirical Results (Source: own illustration)

8 DISCUSSION

The following discussion explains how the findings of this study relate to the literature and prior empirical results. Moreover, it derives the implications for theory and practice and provides recommendations for future research on the internationalization-performance relationship.

8.1 Discussion of Empirical Findings

In general, the results for the complete sample of MNCs in this study suggest that the relationship between corporate internationalization and performance is less deterministic and uniform than may be assumed. In particular, the performance effect of multinationality appears to be moderated by three important variables that relate to the organization and management of MNCs.

The positive and significant coefficient for the interaction between internationalization (DOI) and the configuration measure (CONFIG) indicates that multinational corporations with a value chain configuration that simultaneously allows for the realization of economies of scale and the exploitation of arbitrage opportunities are better able to benefit from their international presence. This finding is consistent with both the theory of monopolistic advantages and the theory of operational flexibility. As discussed, economies of scale represent a monopolistic advantage of MNCs over their purely domestic counterparts because their larger size allows them to better reach the optimal scale of operations, which in turn lowers their average production costs.⁵⁸⁵ In addition, Kogut suggests that the advantages of MNCs not only stem from their larger size and the associated ability to generate economies of scale but also from their operating flexibility.⁵⁸⁶ This operating flexibility derives from the coordination of flows within the multinational network and it allows MNCs to effectively arbitrage national differences in factor, product, or capital markets.⁵⁸⁷ Thus, achieving some level of concentration in their value activities while simultaneously maintaining the required flexibility to exploit differences in the international environment appears to be most beneficial to MNCs. This consideration is not only supported by the empirical results of this study but also by the concept of the transnational organization. As Bartlett and Ghoshal note, "the transnational

⁵⁸⁵ See chapter 2.1.1.2.2.

⁵⁸⁶ Cf. Kogut (1989), pp. 383-389.

⁵⁸⁷ See chapter 2.1.2.3.

organization centralizes some resources at home, some abroad, and distributes yet others among its many national operations."⁵⁸⁸ Such a flexible configuration complements the benefits of scale economies with the advantages of low input costs or ready access to scarce resources that results from the exploitation of national differences in product and factor markets.

Moreover, the results show a positive and significant interaction between internationalization (DOI) and the use of intra-company knowledge flows (KNOW). Thus, the transfer of tacit (procedural) knowledge in the form of managerial know-how between the various organizational units of MNCs positively impacts the performance outcomes of corporate internationalization. This finding has several important implications. First of all, it lends support to the resource transmission theory, which predicts that there is considerable value in transferring and unifying resources and capabilities across countries, especially technological competences and managerial know-how.⁵⁸⁹ More importantly, however, it highlights the significant role that organizational learning plays in corporate internationalization. Ghoshal notes that a key asset of multinational corporations is the diversity of environments in which they operate. This environmental diversity provides MNCs with a broader learning opportunity than is available to purely domestic firms and allows them to develop diverse resources and capabilities. The diversity of resources and competencies, in turn, may enhance the MNC's ability to create joint innovations and to exploit them in multiple locations.⁵⁹⁰ O'Donnell similarly notes that MNCs often encounter multipoint competition where they face the same global competitors in multiple international markets. Therefore, competitive tools in the form of resources or knowledge developed at the subsidiary level in order to compete effectively against a competitor in one country market may also be used effectively against the same competitor in a different market or country.⁵⁹¹ Thus, the positive moderating effect of intra-company knowledge flows lends support to the view that international subsidiaries shouldn't just be pipelines to move products. Rather, their own special strengths should be used to help build competitive advantage.⁵⁹² This finding is also in line with the resource-based view of the firm, which predicts that MNCs may benefit from their international presence due to their

⁵⁸⁸ Bartlett and Ghoshal (2002), p. 69.

⁵⁸⁹ See chapter 2.1.2.1.

⁵⁹⁰ Cf. Ghoshal (1987), p. 431.

⁵⁹¹ Cf. O'Donnell (2000), p. 530.

⁵⁹² Cf. Bartlett and Ghoshal (1986), p. 89.

ability to access new valuable resources and capabilities that were developed outside of their home markets.⁵⁹³

A third variable that is found to have a significant moderating effect on the relationship between corporate internationalization and performance is the use of social control mechanisms. In particular, the regression coefficient for the interaction term (DOI x SOCON) shows that the use of social control mechanisms positively impacts the performance outcomes of international expansion. This finding may be interpreted in two ways. First, social control mechanisms themselves may represent a source of competitive advantage for MNCs. Scholars of the resource-based view of the firm suggest that a sustainable competitive advantage may arise from socially complex resources and capabilities that are difficult to imitate by competitors. Such resources and capabilities can be found in the interpersonal relationships among managers in a firm and a firm's culture.⁵⁹⁴ Thus, the individual components of the social control measure used in this study represent organizational assets and capabilities that may be a source of competitive advantage, which manifests in an improved efficiency and effectiveness of the MNC's operations. This may explain why the use of social control mechanisms by MNCs positively impacts the performance outcomes from internationalization.

Second, the use of social control mechanisms may allow MNCs to effectively manage the increased complexity and organizational constraints that are associated with international expansion.⁵⁹⁵ According to the transnational organization concept, social control mechanisms are the tools to create the appropriate decision-making processes that enable the MNC to build and manage the multidimensional strategic capabilities that are required in today's competitive environment.⁵⁹⁶ Therefore, an MNC must use all informal mechanisms (developing informal networks of communication, stressing a corporate culture, managing career paths, etc.) if the firm is to have enough flexibility to remain responsive to local differences and, at the same time, have enough consistency to take advantage of global opportunities, especially of learning and exploiting local expertise at a world level.⁵⁹⁷ Moreover, the use of social control mechanisms may alleviate organizational constraints on information sharing in MNCs. Therefore, the positive

⁵⁹³ See chapter 2.1.2.2.

⁵⁹⁴ Cf. Barney (1991), p. 107.

⁵⁹⁵ See chapter 4.1.4.3.

⁵⁹⁶ Cf. Bartlett and Ghoshal (2002), p. 36.

⁵⁹⁷ Cf. Martinez and Jarillo (1989), p. 500.

moderating effect of social control mechanisms is consistent with the empirical results of Gupta and Govindarajan who find that these mechanisms function as transmission channels that positively affect the transfer of knowledge within MNCs.⁵⁹⁸

As can be derived from the above discussion, the three moderating effects supported by this study are well in line with the theories on the benefits of corporate internationalization and the concept of the transnational organization.

In contrast, the empirical results in chapter 7 provide no support for the hypothesized moderating effect of the level of subsidiary autonomy. However, this finding does not necessarily imply that being locally responsive is of minor importance for MNCs. Several researchers note that foreign subsidiaries assume different roles and responsibilities within the corporate network depending on the importance of their national market and their competence in certain areas (e.g., technology, production, marketing, etc.).⁵⁹⁹ Moreover, empirical studies show that the level of autonomy that subsidiaries are granted by headquarters varies according to the role they assume.⁶⁰⁰ Thus, the appropriate level of subsidiary autonomy, and consequently of local responsiveness, appears to largely depend on the circumstances in each national market. This might be the reason why the study's measure of the level of autonomy that headquarters of the sample MNCs generally grant to their subsidiaries turns out to be insignificant. Moreover, the empirical results also provide no support for the hypothesis that organizational slack positively moderates the relationship between internationalization and performance. However, the regression coefficient for the direct performance effect of organizational slack is consistently positive and, in the main effect model, even significant. Thus, organizational slack *per se* has a positive direct effect on the performance of the multinational corporations in the sample. This finding is consistent with previous empirical studies⁶⁰¹ and lends support to the notion that slack may facilitate innovation and conflict resolution.⁶⁰² However, the insignificant moderating effect of organization slack suggests that its positive direct performance effect does not depend on the degree of internationalization of the sample MNCs. Specifically, increasing internationalization does not appear to require higher levels of organizational slack.

⁵⁹⁸ Gupta and Govindarajan (2000), pp. 485-489.

⁵⁹⁹ See chapter 5.1.4.

⁶⁰⁰ Cf. Harzing and Noorderhaven (2006a), pp. 1-20; Gupta and Govindarajan (1991), pp. 768-792.

⁶⁰¹ Cf. Daniel et al. (2004), pp. 565-574.

⁶⁰² See chapter 4.1.4.5.

The importance of the moderating effects described above is corroborated by the fact that the main (direct) effect of the degree of internationalization is insignificant in all of the multiple regression analyses of the complete sample of MNCs. This finding indicates that internationalization per se does not yield superior returns. Rather, increasing internationalization only appears to have positive performance consequences when coupled with a specific configuration of the value chain and the use of both intra-company knowledge flows and social control mechanisms. Therefore, the positive moderating effect of intra-company knowledge flows lends support to Gupta and Govindarajan's view that "the primary reason why MNCs exist is because of their ability to transfer knowledge more effectively and efficiently in the intra-corporate context than through external market mechanisms."⁶⁰³ This statement is based on the internalization theory, which proclaims that the value of corporate internationalization stems from the possession of intangible assets with a public good property, and the value of these intangible assets increases with the degree of internationalization.⁶⁰⁴ In the present case, such valuable intangible assets can be found in the organizational resources and capabilities that stem from the use of intra-company knowledge flows and social control mechanisms. However, the insignificant main effect of DOI on Tobin's q is inconsistent with the view that investors value multinational corporations as a means to indirectly diversify their portfolios internationally.⁶⁰⁵ Therefore, the results do not support the portfolio diversification theory, which suggests that the international diversification of MNCs alone leads to additional investment value that is reflected in the valuation of their shares.⁶⁰⁶ Moreover, the graphical representations of the three moderating effects found in this study show that additional costs associated with corporate internationalization may well exist. As can be seen in Figures 20-22, when the moderating variables (KNOW, SOCON, CONFIG) assume low values, the relationship between the degree of internationalization and performance is negative. In contrast, the relationship is positive at high values of the three moderators. This change in the direction of the relationship suggests that costs of increasing internationalization do exist, but they are outweighed by the positive effects of the moderating variables. Therefore, the results are not necessarily inconsistent with agency theory, which basically suggests that MNCs incur large monitoring costs due to

⁶⁰³ Gupta and Govindarajan (2000), p. 473.

⁶⁰⁴ See chapter 2.1.1.2.3.

⁶⁰⁵ Cf. Morck and Yeung (1991), pp. 165-187.

⁶⁰⁶ See chapter 2.1.1.4.

their complex organizational structures.⁶⁰⁷ However, the positive moderating effect of the use of social control mechanisms confirms that these mechanisms provide an effective tool to manage this organizational complexity.

In addition, the results of the subsample regression analyses indicate that the performance effects of internationalization are context-dependent. In contrast to the pharmaceutical industry subsample, the main (direct) effect of internationalization on performance is positive and significant in the subsample comprised of food & beverage MNCs. A potential reason for the differential performance effect of internationalization in these two subsamples may be found in the different strengths of the forces for global integration and local responsiveness in the pharmaceutical and food & beverage industries. Because the peculiarities of national consumption in the food & beverage industry remain substantial, forces for local responsiveness are much more pronounced than in the pharmaceutical industry.⁶⁰⁸ Consequently, food & beverage MNCs are expected to pursue "multinational strategies" that put emphasis on decentralizing assets and capabilities in order to respond to differences that distinguish national markets.⁶⁰⁹ In particular, they may be driven to localize production in each market to effectively meet divergent consumer demands. This view is supported by the significantly higher foreign assets to total assets ratio of MNCs in the food & beverage industry subsample.⁶¹⁰ Thus, a key requirement for companies in the food & beverage industry appears to be close to customers worldwide. To meet this requirement, they need to expand their operations abroad, and corporate internationalization itself becomes a crucial factor of success. This might explain why the main (direct) performance effect of internationalization is positive and significant in the food & beverage industry subsample. Overall, the above considerations point to an important contingency factor of the internationalization-performance relationship, which can be found in the industry affiliations of companies.

The results of the subsample regression analyses also lend support to the view that the geographic origin of companies represents an important contextual setting and macro-level moderator of the internationalization-performance nexus. In contrast to the results for the North American subsample, the regression results for European MNCs show a significant

⁶⁰⁷ See chapter 2.2.2.

⁶⁰⁸ See chapter 5.2.1.

⁶⁰⁹ See chapter 4.1.1.

⁶¹⁰ See chapter 7.2.2.1.

positive direct effect of internationalization on performance. This finding is consistent with Ruigrok and Wagner who suggest that European firms generate significantly higher effect sizes than their U.S. and Japanese counterparts.⁶¹¹ Thus, it appears that internationalization itself is of significant value to European MNCs. A likely explanation for this phenomenon may be found in the comparatively small home markets of most European firms. As mentioned earlier, compared to U.S. firms that can draw on a large home market to generate economies of scale, companies headquartered in smaller countries (e.g., most European firms) have to move outside of their home country early on in order to take advantage of these benefits.⁶¹² Therefore, international expansion is much more critical for European firms, which is corroborated by the higher average DOI in the European subsample.⁶¹³

8.2 Implications for Theory and Practice

The findings of this study support the view that the search for a "grand theory" by examining the direct performance consequences of multinationality may be misguided. In particular, the results show that the performance effects of internationalization depend on three important organizational/managerial variables: the configuration of the value chain, the use of intra-company knowledge flows, and the use of social control mechanisms. The inclusion of these moderating variables significantly adds to the explanatory power of the model, which provides a persuasive argument for also including them in future studies of the internationalization-performance relationship. Moreover, it shows that the examination of the direct (main) effect of internationalization in isolation cannot predict performance outcomes reliably. Therefore, the divergent results of previous empirical studies may reflect the inherent instability of the incomplete linkage. Consequently, the findings of this study suggest abandoning simple bivariate models of the internationalization-performance relationship in favor of more complex multivariate models.

Moreover, the findings suggest that the performance effect of internationalization may be context-dependent, which questions the existence of one universalistic relationship between internationalization and performance across companies from different industries

⁶¹¹ Cf. Ruigrok and Wagner (2003a), p. 20.

⁶¹² See chapters 4.2.2. and 5.2.1.

⁶¹³ See chapter 7.2.2.2.

and geographic regions. Therefore, different sample compositions of large-scale cross-sectional studies may also have contributed to the ambiguity of previous empirical results. Consequently, greater attention should be paid to the research site when conducting and interpreting empirical studies on the internationalization-performance relationship

Empirical studies in support of an inverted U-shaped form of the internationalization-performance relationship suggest that an "internationalization threshold" exists. That is, performance rises monotonically with increasing multinationality until it reaches a threshold level beyond which performance monotonically declines. However, such a deterministic relationship between performance and internationalization, seemingly irrespective of the type or strategy of the MNC, would question the premise of proactive management.⁶¹⁴ Therefore, the findings of this dissertation are certainly good news for the management of MNCs because they highlight the important role that organizational and managerial variables play in making internationalization beneficial to firm performance. In particular, they sensitize MNC managers on the need to employ intra-company knowledge flows and social control mechanisms in order to actually realize the suggested benefit of worldwide learning and to effectively manage the complexity of their organizations. Moreover, the study's findings suggests that the management of MNCs should try to simultaneously realize economies of scale and arbitrage national differences in factor, product, and capital markets by configuring the value chain appropriately. Thus, managers should generally strive to build a truly "transnational organization".

8.3 Limitations and Directions for Future Research

As every empirical study has certain limitations so does this dissertation. First, the measurement of organizational variables had to largely rely on the information provided by a limited number of survey respondents located in each sample MNC. Although several measures were taken to enhance and ensure the reliability of their responses,⁶¹⁵ the questionnaire answers might therefore contain an element of individual perception, which might reduce the validity of the study's findings. However, this limitation is shared with virtually all empirical studies on the organization of MNCs. Moreover, the prevalent response rates in international surveys make any other approach infeasible in practice.

⁶¹⁴ Cf. Sullivan (1994a), p. 166.

⁶¹⁵ E.g., collecting information from multiple respondents where possible, assessment of inter-rater agreement, personal contacts by phone to explain the research project, etc...

In addition, the research design of this dissertation imposed strict criteria on the empirical data. Most notably, a complete set of primary and secondary data had to be available for each sample company. These restrictions limited the number of sample MNCs available for the statistical analyses of the international-performance relationship, particularly in the industry and regional subsamples. Therefore, although the data collection process might be cumbersome, further empirical studies applying the same research design to larger samples would be desirable to confirm the findings of this dissertation. This would also have the advantage of providing longitudinal data on the moderating effects found in this study. The presented results are a snapshot of the moderated relationship between corporate internationalization and performance based on 2005/2006 data. However, multinational corporations are dynamic, i.e. their organizations and managerial processes change over time. Therefore, future studies might provide important insights into whether the identified moderating effects of organizational/managerial variables are constant over time.

This dissertation indicates that the direct performance effect of corporate internationalization may be context-dependent. In doing so, however, it concentrates on two specific industries and geographic regions. Therefore, the results may provide a starting point for future empirical studies investigating the potentially different performance effects of corporate internationalization in industries and geographic regions (countries) other than those included in this study. This may further contribute to resolve the ambiguity of the existing empirical results on the internationalization-performance relationship that was likely caused by large-scale cross-sectional studies.

Finally, another fruitful research topic may be the identification of further moderating variables that relate to the implementation of international strategy. This study focused on investigating the moderating effects of selected organizational and managerial variables (e.g., value chain configuration, social control mechanisms, etc.). However, the list of potential moderators of the internationalization-performance relationship is long. For example, a possible extension of this study would be to test how certain practices in human resource or marketing management (e.g. global branding) affect the performance outcomes of internationalization. Moreover, it would be interesting to know how external solutions to the delivery of MNCs' value-add (outsourcing or joint-ventures) influence the internationalization-performance relationship. Thus, certainly not all variables with a potentially moderating effect have yet been identified.

9 CONCLUSION

This dissertation contributes to an emerging stream of research that is trying to resolve the hitherto divergent empirical findings on the relationship between corporate internationalization and firm performance. In particular, the findings suggest that the relationship is far less deterministic and universalistic than previously assumed. The configuration of an MNC's value chain as well as the use of intra-company knowledge flows and social control mechanisms are found to be important organizational and managerial variables that positively moderate the performance effects of internationalization. Thus, the results of this study indicate that simple bivariate models are not able to fully capture the internationalization-performance relationship and therefore warrant the use of multivariate models in the future. Moreover, the internationalization-performance relationship appears to be context-dependent. The findings of this study suggest that the industry affiliation and geographic origin of MNCs influence the direction and significance of the relationship. Thus, large-scale cross-sectional studies may have blurred important differences in the relationship and therefore may have contributed to the ambiguity of prior empirical work. Consequently, special attention should be paid to the research setting not only in the interpretation of the results but also in the design of future empirical studies. Our understanding of the relationship between corporate internationalization and performance is still incomplete. Therefore, further empirical studies concentrating on companies in a single industry or from a particular geographic region (country) are certainly desirable. In addition, the identification of further moderating variables also appears to be a fruitful research topic.

APPENDIX

Appendix A:
Details of Past Empirical Studies on the Internationalization-Performance
Relationship

Details of Empirical Studies Exploring a Linear Association between Internationalization and Performance				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Grant (1987), pp. 79-89	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 304 UK manufacturing companies • Study period: 1972-1984 	<ul style="list-style-type: none"> • Multinationality measure(s): sales of overseas subsidiaries/total sales (FSTS) • Performance measure(s): sales growth, return on net assets (RONA), ROE, ROS • Control variable(s): firm size (ln sales), industry affiliation 	<p>Multinationality has a highly significant, positive influence on performance, consistent across all three profitability measures</p> <p>Positive linear association between multinationality and performance</p>
Delios and Beamish (1999), p. 711-727	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 399 publicly listed Japanese manufacturing firms • Study period: 1997 	<ul style="list-style-type: none"> • Multinationality measure(s): number of foreign direct investments made by 1996, number of countries in which FDI occurred • Performance measure(s): ROS, ROA, ROE • Control variable(s): R&D and advertising spending, industry growth rates and concentration, leverage, product diversification • Partial Least Squares (PLS) analysis 	Multinationality (geographic scope) is positively associated with firm profitability, even when competing effects of proprietary assets are considered.
Bühner (1987), pp. 25-37.	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 40 large West German corporations (out of top 300) • Study period: 1966-1981 	<ul style="list-style-type: none"> • Multinationality measure(s): Herfindahl-type index based on sales per market region • Performance measure(s): Jensen's alpha, ROA, ROE • Control variable(s): firm size (log sales), sales growth, leverage, ownership, 	Significant positive, linear association between multinationality and both market- and accounting-based performance measures.

Details of Empirical Studies Exploring a Linear Association between Internationalization and Performance - continued				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Siddharthan and Lall (1982), pp. 1-13.	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 74 largest U.S. MNCs in manufacturing industries • Study period: 1976-1979 	<ul style="list-style-type: none"> • Multinationality measure(s): foreign sales to total sales ratio (FSTS) • Performance measure(s): growth of consolidated sales revenue during 1976-1979 • Control variable(s): R&D and advertising expenditure, firm size, industry affiliation 	Multinationality has a negative linear effect on firm growth.
Chang and Thomas (1989), pp. 271-284	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 64 U.S. firms in multiple industries • Study period: 1977-1981 	<ul style="list-style-type: none"> • Multinationality measure(s): foreign sales to total sales ratio (FSTS), averaged over 3 years • Performance measure(s): mean return on assets (ROA) over 3 years • Control variable(s): mean assets, product diversification 	Profitability growth is negatively (linear) associated with changes in the geographic diversity of companies.
Severn and Laurence (1974), pp. 181-190	Includes both comparative and control elements	<ul style="list-style-type: none"> • 62 direct investors (i.e. MNCs having at least 10% of their business abroad) • 70 domestic firms (less than 10% of business abroad) • Study period: 1965 	<ul style="list-style-type: none"> • Multinationality measure(s): dummy variable (0 for domestic firm, 1 for direct investor) in comparative approach; foreign assets to total assets (FATA) in control approach • Performance measure(s): pre-tax and after-tax return on assets (ROA) • Control variable(s): R&D expenditure as percent of assets 	<p>Foreign direct investors outperform domestically oriented manufacturing firms in terms of ROA (comparative approach).</p> <p>Negative (linear) association between FATA and ROA (control approach)</p>

Details of Empirical Studies Exploring a Linear Association between Internationalization and Performance - continued				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Denis, Denis, and Yost (2002), pp. 1951-1979	Includes both comparative and control elements	<ul style="list-style-type: none"> • 7520 (domestic and multinational) U.S. firms • Study period: 1984-1997 	<ul style="list-style-type: none"> • Multinationality measure(s): multinational status dummy variable based on foreign sales (1 for companies with foreign sales, 0 for firms without) • Performance measure(s): excess market value defined as actual of a firm's total capital over imputed values of its industrial segments as stand-alone domestic firms • Control variable(s): R&D and advertising intensity, leverage, etc. 	<p>Multinational firms (dummy equal to 1) on average have negative excess values which differ significantly from those of domestic firms (univariate analysis)</p> <p>Multivariate regression analysis shows a significant negative association between multinational status and firm value.</p>
Christophe and Lee (2005), pp. 636-643	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 100 large U.S. multinational corporations in manufacturing industries • Study period: 1999 	<ul style="list-style-type: none"> • Multinationality measure(s): Sullivan's degree of internationalization (DOI), foreign assets to total assets ratio (FATA) • Performance measure(s): stock market valuation measured by Tobin's q • Control variable(s): R&D and advertising expenditure, firm size (log of total assets), debt ratio 	<p>Significant negative, linear relationship between FATA and firm value (Tobin's q)</p> <p>FATA squared is positive and marginally significant suggesting a slight upturn in performance at high levels of internationalization (FATA).</p> <p>Insignificant association between performance and Sullivan's DOI</p>

Details of Empirical Studies Exploring a Quadratic Association between Internationalization and Performance				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Capar and Kotabe (2003), pp. 345-355	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> 81 major German service firms in 4 industries Study period: 1997-1999 	<ul style="list-style-type: none"> Multinationality measure(s): foreign sales to total sales ratio (FSTS) Performance measure(s): return on sales (ROS) Control variable(s): firm size (ln of employees), industry affiliation Ordinary Least Squares (OLS) regression model 	Results support a U-shaped curvilinear relationship between multinationality and firm performance.
Mathur, Singh, and Gleason (2001), pp. 561-578	Includes both comparative and control elements	<ul style="list-style-type: none"> 427 Canadian firms (187 multinational firms, 240 domestic firms) Study period: 1992-1994; 1997 	<ul style="list-style-type: none"> Multinationality measure(s): foreign sales to total sales ratio (FSTS), foreign assets to total assets ratio (FATA) Performance measure(s): return on assets (ROA), return on equity (ROE), pre-tax operating margin (OPMARG) Control variable(s): firm size (ln of sales), leverage, sales growth, total asset turnover 	<p>Using a comparative approach (dummy variable indicating multinational status), a negative linear relationship between multinationality and performance is shown.</p> <p>Using a linear continuous linear specification, both FATA and FSTS are found to be negatively related to ROE.</p> <p>Multiple regression results for a nonlinear specification reveal a U-shaped relationship between FATA and performance.</p>
Lu and Beamish (2001), pp. 565-586	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> 164 Japanese small and medium-sized firms (95 with FDI and 69 without FDI) Study period: 1986-1997 	<ul style="list-style-type: none"> Multinationality measure(s): number of foreign direct investments, number of countries in which FDI occurred Performance measure(s): ROS, ROA Control variable(s): R&D and advertising spending, firm size, product diversification 	<p>Multinationality (measured by FDI activity) first decreases profitability, but greater levels of FDI are associated with higher performance.</p> <p>Results support a U-shaped curvilinear relationship</p> <p>Exporting negatively moderates the relationship.</p>

Details of Empirical Studies Exploring a Quadratic Association between Internationalization and Performance - continued				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Geringer, Beamish, and daCosta (1989), pp. 109-119	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 200 multinational enterprises (100 largest U.S. MNCs and 100 largest European MNCs) • Study period: 1977-1981 	<ul style="list-style-type: none"> • Multinationality measure(s): foreign sales to total sales ratio (FSTS) • Performance measure(s): 5-year average of return on sales (ROS) and return on assets (ROA) based on net after-tax profits • ANOVA techniques 	<p>Results indicate the existence of an "internationalization threshold" constituting an inverted U-shaped relationship between internationalization and performance.</p> <p>Significance of internationalization in explaining performance depends on the continent-of-origin.</p> <p>Related product diversification is positively associated with performance.</p>
Gomes and Ramaswamy (1999), pp. 173-188	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 95 U.S. based MNCs in four industries (chemicals, pharmaceuticals, computer and office equipment, electrical products) • Study period: 1990-1995 	<ul style="list-style-type: none"> • Multinationality measure(s): composite index encompassing FSTS, FATA, and the number of countries in which a firm has subsidiaries • Performance measure(s): ROA, ratio of operating costs to sales (OPSAL) • Control variable(s): firm size (log of sales), industry affiliation • Pooled cross-section/ time-series regression method 	Results provide evidence for the existence of a curvilinear inverted U-shaped relationship between multinationality and performance.
Daniels and Bracker (1989), pp. 46-56	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • 116 U.S. firms in 8 industries • Study period: 1974-1983 	<ul style="list-style-type: none"> • Multinationality measure(s): FSTS and FATA • Performance measure(s): ROS and ROA • Sub-segments based on R&D /advertising expenditures, and assets/ sales ratio 	<p>Within certain upper limits multinationality is positively related to performance.</p> <p>Indicative support for an inverted U-shaped int.-performance relationship.</p> <p>Varying explanatory power by industry</p>

Details of Empirical Studies Exploring a Cubic Association between Internationalization and Performance				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Lu and Beamish (2004), pp. 598-609	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> 1,489 Japanese firms (1,059 engaged in FDI) Study period: 1986-1997 	<ul style="list-style-type: none"> Multinationality measure(s): composite measure including a firm's number of overseas subsidiaries and the number of countries in which a firm has subsidiaries Performance measure(s): ROA and Tobin's q Control variable(s): R&D and advertising expenses, firm size (log of sales), debt-to-equity ratio, export intensity, product diversification GLS random-effects model 	<p>Results show a horizontal S-shaped relationship between multinationality and performance.</p> <p>Intangible assets (R&D and advertising) positively moderate the relationship, i.e., firms investing more heavily in these intangible assets achieve greater profitability gains from growth in FDI.</p>
Thomas and Eden (2004), pp. 89-110	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> 151 U.S. manufacturing firms Study period: 1990-1994 	<ul style="list-style-type: none"> Multinationality measure(s): index of multinationality encompassing FSTS, FATA, and the number of foreign countries Performance measure(s): ROA and ROE as measures of short-term performance; excess market value and average market value as measures of long-run performance Control variable(s): R&D expenditure, administrative costs to sales ratio, firm size, debt-to-equity ratio, industry effects Pooled, cross-section time-series regression techniques 	<p>The impact of multinationality on performance depends on the time dimension incorporated in the performance measure.</p> <p>The results indicate the existence of a three-stage, sigmoid multinationality-performance relationship (horizontal S-shape).</p>

Details of Empirical Studies Exploring a Cubic Association between Internationalization and Performance – continued				
Author(s)	Study Type	Study Sample	Methodology	Key Findings
Sullivan (1994a), pp. 165-186	Control study (multinationality defined as a continuous variable)	<ul style="list-style-type: none"> • Sullivan replicates the sample of Geringer, Beamish and daCosta (1989) • 200 multinational enterprises (100 largest U.S. MNCs and 100 largest European MNCs) • Study period: 1977-1981 	<ul style="list-style-type: none"> • Multinationality measure(s): Sullivan's multi item measure (DOI), FSTS • Performance measure(s): 5-year average of return on sales (ROS) and return on assets (ROA) based on net after-tax profits • ANOVA techniques 	Using his multi-item measure of multinationality (degree of internationalization), Sullivan finds a horizontal S-shaped relationship between multinationality and both ROS and ROA.

Appendix B:
Search Results for Sullivan's DOI on the Social Science Citation Index

#	Author	Title	Source:	Year	Vol.	Issue	BP	EP
1	Ruzzier, M; Antoncic, B	Social capital and SME internationalization: An empirical examination	TRANSFORMATIONS IN BUSINESS & ECONOMICS	2007	6		1 122	138
2	Zhou, LX; Wu, WP; Luo, XM	Internationalization and the performance of born-global SMEs: the mediating role of social networks	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2007	38		4 673	690
3	Sparrow, PR	Globalization of HR at function level: four UK-based case studies of the international recruitment and selection process	INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	2007	18		5 845	867
4	Ruzzier, M; Antoncic, B; Hisrich, RD; Konecnik, M	Human capital and SME internationalization: A structural equation modeling study	CANADIAN JOURNAL OF ADMINISTRATIVE SCIENCES-REVUE CANADIENNE DES SCIENCES DE L'ADMINISTRATION	2007	24		1 15	29
5	Myers, MB; Droge, C; Cheung, MS	The fit of home to foreign market environment: An exploratory study of the relationship of congruence to performance	JOURNAL OF WORLD BUSINESS	2007	42		2 170	183
6	Chari, MDR; Devaraj, S; David, P	International diversification and firm performance: Role of information technology investments	JOURNAL OF WORLD BUSINESS	2007	42		2 184	197
7	Ruzzier, M; Antoncic, B; Hisrich, RD	The internationalization of SMEs: developing and testing a multi-dimensional measure on Slovenian firms	ENTREPRENEURSHIP AND REGIONAL DEVELOPMENT	2007	19		2 161	183
8	Ellis, PD	Distance, dependence and diversity of markets: effects on market orientation	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2007	38		3 374	386
9	Li, L	Multinationality and performance: A synthetic review and research agenda	INTERNATIONAL JOURNAL OF MANAGEMENT REVIEWS	2007	9		2 117	139
10	Cooper, D; Doucet, L; Pratt, M	Understanding 'appropriateness' in multinational organizations	JOURNAL OF ORGANIZATIONAL BEHAVIOR	2007	28		3 303	325
11	Dunning, JH; Fujita, M; Yakova, N	Some macro-data on the regionalisation/globalisation debate: a comment on the Rugman/Verbeke analysis	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2007	38		1 177	199
12	Rugman, AM; Verbeke, A	Liabilities of regional foreignness and the use of firm-level versus country-level data: a response to Dunning et al. (2007)	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2007	38		1 200	205
13	Lippert, SK; Volkmar, JA	Cultural effects on technology performance and utilization: A comparison of US and Canadian users	JOURNAL OF GLOBAL INFORMATION MANAGEMENT	2007	15		2 56	90
14	Curwen, P; Whalley, J	Measuring internationalisation in the mobile telecommunications industry	INTERNATIONAL BUSINESS REVIEW	2006	15		6 660	681
15	Hitt, MA; Tihanyi, L; Miller, T; Connelly, B	International diversification: Antecedents, outcomes, and moderators	JOURNAL OF MANAGEMENT	2006	32		6 831	867
16	Drogendijk, R; Slangen, A	Hofstede, Schwartz, or managerial perceptions? The effects of different cultural distance measures on establishment mode choices by multinational enterprises	INTERNATIONAL BUSINESS REVIEW	2006	15		4 361	380
17	Lee, HU; Park, JH	Top team diversity, internationalization and the mediating effect of international alliances	BRITISH JOURNAL OF MANAGEMENT	2006	17		3 195	213
18	Chiao, YC; Yang, KP; Yu, CMJ	Performance, internationalization, and firm-specific advantages of SMEs in a newly-industrialized economy	SMALL BUSINESS ECONOMICS	2006	26		5 475	492
19	Pla-Barber, J; Escriba-Esteve, A	Accelerated internationalisation: evidence from a late investor country	INTERNATIONAL MARKETING REVIEW	2006	23	02. Mrz	255	278
20	Thomas, DE	International diversification and firm performance in Mexican firms: A curvilinear relationship?	JOURNAL OF BUSINESS RESEARCH	2006	59		4 501	507
21	Zahra, SA; Korri, JS; Yu, JF	Cognition and international entrepreneurship: implications for research on international opportunity recognition and exploitation	INTERNATIONAL BUSINESS REVIEW	2005	14		2 129	146

#	Author	Title	Source:	Year	Vol.	Issue	BP	EP
22	Levy, O	The influence of top management team attention patterns on global strategic posture of firms	JOURNAL OF ORGANIZATIONAL BEHAVIOR	2005	26	7	797	819
23	Westphal, JD; Bednar, MK	Pluralistic ignorance in corporate boards and firms' strategic persistence in response to low firm performance	ADMINISTRATIVE SCIENCE QUARTERLY	2005	50	2	262	298
24	De Clercq, D; Sapienza, HJ; Crijns, H	The internationalization of small and medium-sized firms	SMALL BUSINESS ECONOMICS	2005	24	4	409	419
25	Gerpott, TJ; Jakopin, NM	The degree of internationalization and the financial performance of European mobile network operators	TELECOMMUNICATIONS POLICY	2005	29	8	635	661
26	Brewster, C; Sparrow, P; Harris, H	Towards a new model of globalizing HRM	INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	2005	16	6	949	970
27	Christophe, SE; Lee, H	What matters about internationalization: a market-based assessment	JOURNAL OF BUSINESS RESEARCH	2005	58	5	636	643
28	Ho, CK	Corporate governance and corporate competitiveness: An international analysis	CORPORATE GOVERNANCE-AN INTERNATIONAL REVIEW	2005	13	2	211	253
29	Yu, CMJ; Chiao, YC; Chen, CJ	The impact of internationalisation and proprietary assets on firm performance: an empirical analysis of Taiwanese high-tech firms	INTERNATIONAL JOURNAL OF TECHNOLOGY MANAGEMENT	2005	29	01. Feb	116	135
30	Westhead, P; Wright, M; Ucbasaran, D	Internationalization of private firms: environmental turbulence and organizational strategies and resources	ENTREPRENEURSHIP AND REGIONAL DEVELOPMENT	2004	16	6	501	522
31	Lu, JW; Beamish, PW	International diversification and firm performance: The S-CURVE hypothesis	ACADEMY OF MANAGEMENT JOURNAL	2004	47	4	598	609
32	de Brentani, U; Kleinschmidt, EJ	Corporate culture and commitment: Impact on performance of international new product development programs	JOURNAL OF PRODUCT INNOVATION MANAGEMENT	2004	21	5	309	333
33	Akhter, SH	Is globalization what it's cracked up to be? Economic freedom, corruption, and human development	JOURNAL OF WORLD BUSINESS	2004	39	3	283	295
34	Crick, D	UKSMEs' decision to discontinue exporting: an exploratory investigation into practices within the clothing industry	JOURNAL OF BUSINESS VENTURING	2004	19	4	561	587
35	Kim, H; Hoskisson, RE; Wan, WP	Power dependence, diversification strategy, and performance in keiretsu member firms	STRATEGIC MANAGEMENT JOURNAL	2004	25	7	613	636
36	Carpenter, MA; Sanders, WG	The effects of top management team pay and firm internationalization on MNC performance	JOURNAL OF MANAGEMENT	2004	30	4	509	528
37	Nachum, L	Liability of foreignness in global competition? Financial service affiliates in the City of London	STRATEGIC MANAGEMENT JOURNAL	2003	24	12	1187	1208
38	Goerzen, A; Beamish, PW	Geographic scope and multinational enterprise performance	STRATEGIC MANAGEMENT JOURNAL	2003	24	13	1289	1306
39	Pheng, LS; Hongbin, J	Internationalization of Chinese construction enterprises	JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE	2003	129	6	589	598
40	Jeong, I	A cross-national study of the relationship between international diversification and new product performance	INTERNATIONAL MARKETING REVIEW	2003	20	4	353	376
41	Carpenter, MA; Pollock, TG; Leary, MM	Testing a model of reasoned risk-taking: Governance, the experience of principals and agents, and global strategy in high-technology IPO firms	STRATEGIC MANAGEMENT JOURNAL	2003	24	9	803	820
42	Majocchi, A; Zucchella, A	Internationalization and performance - Findings from a set of Italian SMEs	INTERNATIONAL SMALL BUSINESS JOURNAL	2003	21	3	249	268
43	Kim, K; Park, JH; Prescott, JE	The global integration of business functions: a study of multinational businesses in integrated global industries	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2003	34	4	327	344

#	Author	Title	Source:	Year	Vol.	Issue	BP	EP
44	Capar, N; Kotabe, M	The relationship between international diversification and performance in service firms	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2003	34	4	345	355
45	Contractor, FJ; Kundu, SK; Hsu, CC	A three-stage theory of international expansion: the link between multinationality and performance in the service sector	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2003	34	1	5	18
46	Dhanaraj, C; Beamish, PW	A resource-based approach to the study of export performance	JOURNAL OF SMALL BUSINESS MANAGEMENT	2003	41	3	242	261
47	Tihanyi, L; Johnson, RA; Hoskisson, RE; Hitt, MA	Institutional ownership differences and international diversification: The effects of boards of directors and technological opportunity	ACADEMY OF MANAGEMENT JOURNAL	2003	46	2	195	211
48	Hassel, A; Hopner, M; Kurdelbusch, A; Rehder, B; Zugehr, R	Two dimensions of the internationalization of firms	JOURNAL OF MANAGEMENT STUDIES	2003	40	3	705	723
49	Prakash, A	Beyond Seattle: globalization, the nonmarket environment and corporate strategy	REVIEW OF INTERNATIONAL POLITICAL ECONOMY	2002	9	3	513	537
50	Ellstrand, AE; Tihanyi, L; Johnson, JL	Board structure and international political risk	ACADEMY OF MANAGEMENT JOURNAL	2002	45	4	769	777
51	Wally, S; Becerra, M	Top management team characteristics and strategic changes in international diversification - The case of US multinationals in the European community	GROUP & ORGANIZATION MANAGEMENT	2001	26	2	165	188
52	Duru, A; Reeb, DM	International diversification and analysts' forecast accuracy and bias	ACCOUNTING REVIEW	2002	77	2	415	433
53	Gaba, V; Pan, YG; Ungson, GR	Timing of entry in international market: An empirical study of US fortune 500 firms in China	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2002	33	1	39	55
54	Kotabe, M; Srinivasan, SS; Aulakh, PS	Multinationality and firm performance: The moderating role of R&D and marketing capabilities	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2002	33	1	79	97
55	Mansi, SA; Reeb, DM	Corporate international activity and debt financing	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	2002	33	1	129	147
56	Carpenter, MA	The implications of strategy and social context for the relationship between top management team heterogeneity and firm performance	STRATEGIC MANAGEMENT JOURNAL	2002	23	3	275	284
57	Westphal, JD; Fredrickson, JW	Who directs strategic change? Director experience, the selection of new CEOs, and change in corporate strategy	STRATEGIC MANAGEMENT JOURNAL	2001	22	12	1113	1137
58	Reeb, DM; Mansi, SA; Allee, JM	Firm internationalization and the cost of debt financing: Evidence from non-provisional publicly traded debt	JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS	2001	36	3	395	414
59	Carpenter, MA; Westphal, JD	The strategic context of external network ties: Examining the impact of director appointments on board involvement in strategic decision making	ACADEMY OF MANAGEMENT JOURNAL	2001	44	4	639	660
60	Lu, JW; Beamish, PW	The internationalization and performance of SMEs	STRATEGIC MANAGEMENT JOURNAL	2001	22	06. Jul	565	586
61	Carpenter, MA; Sanders, WG; Gregersen, HB	Bundling human capital with organizational context: The impact of international assignment experience on multinational firm performance and CEO pay	ACADEMY OF MANAGEMENT JOURNAL	2001	44	3	493	511
62	Carpenter, MA; Fredrickson, JW	Top management teams, global strategic posture, and the moderating role of uncertainty	ACADEMY OF MANAGEMENT JOURNAL	2001	44	3	533	545
63	Prakash, A	Grappling with globalisation: Challenges for economic governance	WORLD ECONOMY	2001	24	4	543	565
64	Welbourne, TM; De Cieri, H	How new venture initial public offerings benefit from international operations: a study of human resource value	INTERNATIONAL JOURNAL OF HUMAN RESOURCE MANAGEMENT	2001	12	4	652	668

#	Author	Title	Source:	Year	Vol.	Issue	BP	EP
65	Shrader, RC; Oviatt, BM; McDougall, PP	How new ventures exploit trade-offs among international risk factors: Lessons for the accelerated internationalization of the 21st century	ACADEMY OF MANAGEMENT JOURNAL	2000	43	6	1227	1247
66	Tihanyi, L; Ellstrand, AE; Daily, CM; Dalton, DR	Composition of the top management team and firm international diversification	JOURNAL OF MANAGEMENT	2000	26	6	1157	1177
67	Hassel, A; Hopner, M; Kurdelbusch, A; Rehder, B; Zugehor, R	Two dimensions of internationalization. An empirical analysis of the internationalization of firms	KOLNER ZEITSCHRIFT FUR SOZIOLOGIE UND SOZIALPSYCHOLOGIE	2000	52	3	500	+
68	Zahra, SA; Garvis, DM	International corporate entrepreneurship and firm performance: The moderating effect of international environmental hostility	JOURNAL OF BUSINESS VENTURING	2000	15	05. Jun	469	492
69	Daily, CM; Certo, ST; Dalton, DR	International experience in the executive suite: The path to prosperity?	STRATEGIC MANAGEMENT JOURNAL	2000	21	4	515	523
70	MacPherson, A	The role of international design orientation and market intelligence in the export performance of US machine tool companies	R & D MANAGEMENT	2000	30	2	167	176
71	Gomes, L; Ramaswamy, K	An empirical examination of the form of the relationship between multinationality and performance	JOURNAL OF INTERNATIONAL BUSINESS STUDIES	1999	30	1	173	187
72	Athanassiou, N; Nigh, D	The impact of US company internationalization on top management team advice networks: A tacit knowledge perspective	STRATEGIC MANAGEMENT JOURNAL	1999	20	1	83	92
73	Preece, SB; Miles, G; Baetz, MC	Explaining the international intensity and global diversity of early-stage technology-based firms	JOURNAL OF BUSINESS VENTURING	1999	14	3	259	281

Appendix C:

Questionnaire



Universität Augsburg
Lehrstuhl für Betriebswirtschaftslehre – Wirtschaftsprüfung und Controlling
Prof. Dr. Dres. h.c. Adolf G. Coenenberg

Determinants of the Internationalization-Performance Relationship



Please fax the completed questionnaire to +49-89-2423-3265

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A: Please indicate the extent to which the following statements regarding the international orientation of your company (total group) are true.
(Please mark one for each statement)

- | | To a very
little extent
↓ | To a very
great extent
↓ |
|--|---------------------------------|--------------------------------|
| 1. Key positions are mostly held by nationals of the country in which headquarters is located | 1—2—3—4—5—6—7 | |
| 2. Corporate executives and managers in key positions mostly have international assignment experience outside of their home country | 1—2—3—4—5—6—7 | |
| 3. To achieve optimal results, the company systematically draws on the best resources available worldwide (people, skills, know-how, etc.) | 1—2—3—4—5—6—7 | |
| 4. The company fosters an international identity of "one company" | 1—2—3—4—5—6—7 | |

B: Which of the following statements best describes the role of your subsidiary within the total group (corporate network)?
(Please mark one)

1. This subsidiary's main function is to deliver company products and to carry out strategies and concepts developed at headquarters (or other organizational units). Thus, the subsidiary primarily acts as a "pipeline for products and strategies" and is rather dependent upon other organizational units' work, knowledge, and skills.
2. This subsidiary can be adequately described as an independent, stand-alone national subunit. It adapts the corporation's products and marketing to local market needs and further creates its own innovations and knowledge specifically suited for its environment.
3. This subsidiary acts as a "center of competence" by performing strategic and operational tasks with global reach. For example, it may have worldwide responsibility for the R&D, production, or marketing activities associated with certain product lines or it may hold specific knowledge and information that is highly relevant to other organizational units around the world.
4. None of the above statements adequately describes the role of my subsidiary within the total corporate network.

☐☐☐☐

C: How much influence would subsidiaries in your organization typically have on the following types of decisions? (Please mark one for each decision)

	Low (HQ mostly decides)	Both equally	High (subsidiary mostly decides)
1. Development and introduction of new products for the local market	1—2—3—4—5—6—7		
2. Customization/modification of existing products for local needs (e.g., changes in product design)	1—2—3—4—5—6—7		
3. Price changes for products sold on the local market	1—2—3—4—5—6—7		
4. Design of advertising/marketing for company products sold on the local market	1—2—3—4—5—6—7		
5. Modification of a production process or changing to a new manufacturing process	1—2—3—4—5—6—7		
6. Restructuring of the subsidiary organization involving the creation or abolition of departments	1—2—3—4—5—6—7		
7. Entering new foreign markets	1—2—3—4—5—6—7		

D: To what extent do subsidiaries of your company engage in the exchange of knowledge and skills, e.g., in areas such as competitive strategy, marketing and distribution know-how, product design, and management systems? (Please mark one for each statement)

	Not at all	Average	Very much
1. Subsidiaries provide knowledge and skills to headquarters	1—2—3—4—5—6—7		
2. Subsidiaries provide knowledge and skills to other subsidiaries/organizational units	1—2—3—4—5—6—7		
3. Subsidiaries receive knowledge and skills from headquarters	1—2—3—4—5—6—7		
4. Subsidiaries receive knowledge and skills from other subsidiaries/organizational units	1—2—3—4—5—6—7		

E: Some multinational companies make use of management committees made up of executives from headquarters and different subsidiaries. The objective of these committees is to integrate the different perspectives of functional, regional, and product management, and to deal with issues such as product policy, strategy, and the resolution of internal conflicts.

Please indicate to what extent each of the following exists in your company.
(Please mark one for each)

- | | Not at all | | Occasionally | | Very frequently | | |
|--|------------|---|--------------|---|-----------------|---|---|
| 1. Temporary task forces set up to facilitate international collaboration on a specific project | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Inter-unit committees that are set up to allow managers from different international locations and corporate functions to engage in joint decision-making | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Permanent teams to coordinate actions among subsidiaries | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

F: Some multinational companies have a high degree of informal communication among executives of headquarters and different subsidiaries. Such informal communication takes place through personal contacts and relationships rather than through more formalized channels.

Please indicate to what extent each of the following occurs in your company.
(Please mark one for each).

- | | Not at all | | Occasionally | | Very frequently | | |
|--|------------|---|---------------------|---|--------------------|---|---|
| 1. Informal communication via telephone or e-mail among managers from different international locations and/or headquarters | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Business trips of subsidiary top managers to corporate headquarters | Not at all | | Once every 6 months | | Once every quarter | | |
| 3. Visits of headquarters-based managers to the subsidiary for the purpose of integrating subsidiaries into the organization | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

G: The following questions concern the way in which multinational corporations develop their managers worldwide and the extent to which they build a strong corporate culture to ensure a common set of values and goals across all parts of the organization. (Please mark one for each question)

1. To what extent are subsidiary executives aware of and act according to the goals and values of top management at headquarters?
- No shared goals/values at all Fully shared goals/values
- 1 2 3 4 5 6 7
2. How frequently are top managers and high potentials moved between headquarters, different international locations and/or product lines during their development process?
- Very rarely Occasionally Very frequently
- 1 2 3 4 5 6 7
3. How frequently do international management training programs, in which executives from different subsidiaries and headquarters participate simultaneously, take place in your company?
- 1 2 3 4 5 6 7

H: An important element of managing multinational corporations is the international configuration of the value chain. The following questions concern the way in which certain value activities are performed in your company, i.e., the number of locations in which each activity is performed and whether these activities are located in the parent company's home country or in foreign countries.

1. Please indicate whether the following value activities can be regarded as a core competence of your company (total group)

	Yes	No
a) Manufacturing	<input type="checkbox"/>	<input type="checkbox"/>
b) Procurement	<input type="checkbox"/>	<input type="checkbox"/>
c) Research & Development (R&D)	<input type="checkbox"/>	<input type="checkbox"/>
d) Product distribution	<input type="checkbox"/>	<input type="checkbox"/>
e) Marketing	<input type="checkbox"/>	<input type="checkbox"/>
f) Human Resources	<input type="checkbox"/>	<input type="checkbox"/>
g) Finance, accounting, and legal affairs	<input type="checkbox"/>	<input type="checkbox"/>
h) Information Technology (IT)	<input type="checkbox"/>	<input type="checkbox"/>
i) Government and public relations	<input type="checkbox"/>	<input type="checkbox"/>

2. Please indicate which of the statements below best describes the way in which each of the listed value activities is performed in your company (total group) (Please mark one for each activity).

	Activity is performed in only one location for the entire company	Activity is performed in multiple locations for the entire company	Activity is performed in each subsidiary individually
a) Manufacturing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Procurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) R&D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Product distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Human Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Finance, accounting, and legal affairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) IT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Government and public relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Please indicate which of the statements below best describes the geographic dispersion of the listed value chain activities (Please mark one for each activity).

	Activity is performed only in the home country of headquarters (domestically)	Activity is performed in only one foreign country	Activity is performed in multiple foreign countries
a) Manufacturing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Procurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) R&D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Product distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Human Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Finance, accounting, and legal affairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) IT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Government and public relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Finally, we would like to ask you for some statistical information to facilitate the analysis.

	No change	Only slight changes			Significant changes		
1. Please indicate the extent to which the organizational and managerial aspects covered in this questionnaire have changed in your company over the last 3 years	1	2	3	4	5	6	7
2. Please estimate by how much the answers to this questionnaire would vary if the respondent were located...							
a) ... at headquarters	1	2	3	4	5	6	7
b) ... in another foreign subsidiary	1	2	3	4	5	6	7
3. Please provide the name of your company/subsidiary	<hr/>						
4. In what country are you located?	<hr/>						
5. Please provide your current position	<hr/>						
6. How many years of work experience do you have (total career)?	<hr/> years						
7. How many years have you worked abroad (outside of your home country) in your professional career?	<hr/> years						

Thank you very much for taking the time to participate in our survey!

If you wish to receive the general study findings and an individual analysis of your company's performance relative to industry peers, please send a short notice to Sebastian.Sieler@wiwi.uni-augsburg.de. Of course, all survey results will be sanitized and will not contain the names of survey participants.

Comments:

Appendix D:
Official Accompanying Letter

UNIVERSITÄT AUGSBURG

Lehrstuhl für Betriebswirtschaftslehre
Wirtschaftsprüfung und Controlling

Prof. Dr. Dres. h.c. Adolf G. Coenenberg

A.G. Coenenberg, Universität Augsburg, 86135 Augsburg



Contact: Mr. Sebastian Sieler
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Email: Sebastian.Sieler@wiwi.uni-augsburg.de

September 5, 2006

Research Project "Determinants of the Internationalization-Performance Relationship"

Dear Ms. X,

Thank you very much for your interest in our research project "Determinants of the Internationalization-Performance Relationship", headed by Prof. Dr. Adolf G. Coenenberg. In the course of our studies, we will investigate the consequences that internationalization has on performance. Specifically, the project will examine the extent to which certain organizational design choices, managerial processes, and policies influence this relationship in multinational corporations.

As an integral part of this research effort, we are conducting a **survey among multinational corporations**, for which we have already enlisted leading players from your industry. As already discussed on the phone, we would like to ask you to also participate in the survey by completing a short online questionnaire that can be accessed by clicking on the link below.

<https://www.smartessurveys.com/2006-07-036/login.asp>

The survey contains closed questions that can be answered by choosing the appropriate reply on a scale from 1 to 7. The total amount of time needed to complete the questionnaire should not exceed **15-20 minutes**. We would appreciate receiving your responses by our closing date of **September 26th 2006**, if possible.

The results will be highly relevant to management practitioners and will provide the foundation for deriving concrete implications in the management of international organizations and their complexity. In addition to receiving the general study findings, each survey respondent may request an **individual analysis** of their company's performance relative to industry peers at no charge. This analysis will also show the extent to which participating companies employ the organizational designs, managerial processes, and policies that are used by the most successful companies in their industry. We are certain that the survey's design and especially the ability to receive results by industry will be valuable to your management team.

Of course, all data and information provided by survey participants will be kept **strictly confidential** and be used only for the purpose of this scientific research project. Names of survey participants will not be published or made accessible to anyone outside of the project team. All survey results sent to participants will be based upon sanitized analyses and will not contain the names of competing firms in the industry.

We would be very delighted to have you participate in the survey and to support this ambitious research project. If you have any questions or concerns, please contact Sebastian Sieler at any time either via e-mail (Sebastian.Sieler@wiwi.uni-augsburg.de) or telephone (+49-175-318-3264).

Thank you very much in advance for your time and effort.

Sincerely yours,



Prof. Dr. Dres. h.c. A.G. Coenenberg



Sebastian Sieler

Appendix E:

Descriptive Statistics and Correlation Matrices

Descriptive Statistics									
Variables	N	Minimum	Maximum	Mean	Standard deviation		Variance	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Standard error	Statistic	Statistic	Statistic	Statistic
ROS	71	-0,033	0,307	0,136	0,009	0,075	0,006	0,004	-0,377
ROA	71	-0,019	0,262	0,106	0,007	0,060	0,004	0,225	0,042
Tobin's Q	71	0,252	6,342	1,752	0,155	1,309	1,714	1,712	3,056
DOI	71	2,161	4,623	3,467	0,066	0,559	0,312	-0,011	-0,543
FSTS	71	0,160	0,992	0,679	0,026	0,223	0,050	-0,193	-1,173
FATA	71	0,070	0,971	0,545	0,027	0,229	0,052	0,147	-0,864
OSTS	71	0,492	0,953	0,795	0,012	0,101	0,010	-0,886	0,670
PDIO	71	0,333	1,000	0,811	0,022	0,188	0,035	-0,790	-0,337
INTOR	71	0,333	0,944	0,636	0,016	0,135	0,018	-0,574	-0,081
AUTO	71	14,000	47,000	29,718	0,963	8,117	65,891	0,036	-0,680
KNOW	71	9,000	28,000	17,415	0,458	3,858	14,886	0,092	-0,032
SOCON	71	22,000	55,000	42,082	1,010	8,508	72,386	-0,508	-0,558
CONFIG	71	27,000	54,000	39,054	0,718	6,052	36,624	0,564	0,192
TSLACK	71	0,310	2,329	0,959	0,047	0,399	0,160	0,890	1,393
DOI x AUTO	71	-10,298	11,257	-0,432	0,449	3,781	14,294	0,333	1,350
DOI x KNOW	71	-5,774	5,366	0,019	0,234	1,973	3,892	-0,309	1,574
DOI x SOCON	71	-9,087	15,154	0,592	0,571	4,814	23,175	0,390	1,056
DOI x CONFIG	71	-6,925	11,824	-0,002	0,382	3,222	10,381	1,193	3,376
DOI x TSLACK	71	-1,789	0,554	-0,037	0,033	0,279	0,078	-3,633	22,019
DOI ²	71	0,000	1,706	0,308	0,044	0,368	0,135	1,870	3,432
Industry	71	0,000	1,000	0,507	0,060	0,504	0,254	-0,029	-2,058
Region	71	0,000	1,000	0,338	0,057	0,476	0,227	0,700	-1,555
Size	71	5,879	10,978	8,305	0,152	1,283	1,646	0,072	-0,868
SG&A	71	0,042	0,465	0,284	0,012	0,104	0,011	-0,389	-0,689
M&S	71	0,020	0,382	0,210	0,011	0,090	0,008	-0,156	-0,785
R&D	71	0,000	0,261	0,068	0,009	0,073	0,005	0,831	-0,622

Descriptive Statistics – Complete Sample

Descriptive Statistics - Pharmaceutical Industry Subsample									
Variables	N	Minimum	Maximum	Mean	Standard deviation		Variance	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Standard error	Statistic	Statistic	Statistic	Statistic
ROS	36	-0,033	0,307	0,152	0,014	0,083	0,007	-0,354	-0,239
ROA	36	-0,019	0,262	0,114	0,011	0,068	0,005	0,080	-0,321
Tobin's Q	36	0,252	6,342	2,163	0,247	1,482	2,198	1,489	1,872
Industry	36	1,000	1,000	1,000	0,000	0,000	0,000		
Region	36	0,000	1,000	0,389	0,082	0,494	0,244	0,476	-1,881
Size	36	5,879	10,680	8,120	0,243	1,460	2,133	0,169	-1,209
DOI	36	2,161	4,427	3,403	0,095	0,567	0,322	-0,116	-0,267
FSTS	36	0,297	0,992	0,677	0,037	0,221	0,049	0,008	-1,411
FATA	36	0,070	0,920	0,470	0,031	0,187	0,035	0,172	-0,150
OSTS	36	0,492	0,950	0,807	0,017	0,101	0,010	-1,176	1,596
PDIO	36	0,333	1,000	0,818	0,033	0,201	0,040	-0,915	-0,417
INTOR	36	0,333	0,833	0,631	0,023	0,135	0,018	-0,611	-0,194
AUTO	36	14,000	42,500	26,361	1,096	6,576	43,237	0,209	-0,242
KNOW	36	10,000	28,000	17,347	0,683	4,100	16,812	0,404	0,069
SOCON	36	22,000	55,000	42,204	1,434	8,604	74,022	-0,445	-0,369
CONFIG	36	29,000	48,000	37,981	0,823	4,940	24,408	0,353	-0,489
TSLACK	36	0,437	2,329	1,141	0,069	0,417	0,174	0,786	1,114
DOI x AUTO	36	-10,298	11,257	-0,150	0,631	3,785	14,323	0,352	2,338
DOI x KNOW	36	-4,871	5,366	0,181	0,341	2,045	4,182	0,323	1,428
DOI x SOCON	36	-8,904	15,154	1,937	0,838	5,027	25,267	0,709	0,950
DOI x CONFIG	36	-4,787	11,824	0,028	0,509	3,054	9,325	1,959	6,080
DOI x TSLACK	36	-1,789	0,554	-0,079	0,059	0,355	0,126	-3,305	15,656
DOI ²	36	0,000	1,706	0,317	0,069	0,415	0,172	1,948	3,513

Descriptive Statistics – Pharmaceutical Industry Subsample

Descriptive Statistics - Food & Beverage Industry Subsample									
Variables	N	Minimum	Maximum	Mean	Standard deviation		Variance	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Standard error	Statistic	Statistic	Statistic	Statistic
ROS	35	-0,002	0,259	0,120	0,010	0,062	0,004	0,225	-0,417
ROA	35	-0,015	0,219	0,099	0,009	0,051	0,003	0,223	0,603
Tobin's Q	35	0,359	4,319	1,329	0,161	0,951	0,905	1,645	2,535
Industry	35	0,000	0,000	0,000	0,000	0,000	0,000	.	.
Region	35	0,000	1,000	0,286	0,077	0,458	0,210	0,992	-1,082
Size	35	6,697	10,978	8,495	0,179	1,059	1,121	0,331	-0,577
DOI	35	2,489	4,623	3,533	0,093	0,550	0,302	0,132	-0,941
FSTS	35	0,160	0,984	0,682	0,038	0,227	0,052	-0,395	-0,926
FATA	35	0,128	0,971	0,623	0,041	0,244	0,060	-0,246	-1,146
OSTS	35	0,509	0,953	0,783	0,017	0,100	0,010	-0,666	0,307
PDIO	35	0,333	1,000	0,803	0,030	0,177	0,031	-0,677	-0,023
INTOR	35	0,333	0,944	0,641	0,023	0,136	0,019	-0,567	0,200
AUTO	35	15,000	47,000	33,171	1,383	8,182	66,940	-0,517	-0,198
KNOW	35	9,000	24,000	17,486	0,617	3,651	13,331	-0,344	0,004
SOCON	35	23,000	54,000	41,957	1,442	8,532	72,800	-0,598	-0,665
CONFIG	35	27,000	54,000	40,157	1,169	6,914	47,805	0,421	-0,119
TSLACK	35	0,310	1,350	0,772	0,047	0,280	0,079	0,246	-0,962
DOI x AUTO	35	-8,726	10,085	-0,723	0,644	3,810	14,512	0,337	0,778
DOI x KNOW	35	-5,774	2,573	-0,148	0,323	1,911	3,651	-1,170	1,660
DOI x SOCON	35	-9,087	6,956	-0,792	0,713	4,221	17,818	-0,443	-0,375
DOI x CONFIG	35	-6,925	10,254	-0,032	0,580	3,431	11,772	0,677	2,026
DOI x TSLACK	35	-0,417	0,328	0,005	0,028	0,164	0,027	-0,373	0,587
DOI ²	35	0,002	1,336	0,298	0,054	0,319	0,102	1,619	2,506

Descriptive Statistics – Food & Beverage Industry Subsample

Descriptive Statistics - North America Subsample									
Variables	N	Minimum	Maximum	Mean	Standard deviation		Variance	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Standard error	Statistic	Statistic	Statistic	Statistic
ROS	24	-0,033	0,281	0,155	0,017	0,083	0,007	-0,869	0,746
ROA	24	-0,019	0,230	0,119	0,015	0,071	0,005	-0,484	-0,574
Tobin's Q	24	1,034	6,342	2,561	0,302	1,478	2,186	1,257	0,825
Industry	24	0,000	1,000	0,583	0,103	0,504	0,254	-0,361	-2,048
Region	24	1,000	1,000	1,000	0,000	0,000	0,000		
Size	24	5,879	10,680	8,546	0,279	1,367	1,868	-0,348	-0,900
DOI	24	2,161	3,856	3,193	0,071	0,348	0,121	-0,815	2,375
FSTS	24	0,160	0,707	0,462	0,026	0,125	0,016	0,097	0,580
FATA	24	0,070	0,630	0,392	0,028	0,136	0,018	-0,561	0,333
OSTS	24	0,605	0,917	0,790	0,017	0,085	0,007	-0,504	-0,027
PDIO	24	0,444	1,000	0,884	0,031	0,152	0,023	-1,591	2,267
INTOR	24	0,389	0,944	0,666	0,024	0,117	0,014	-0,343	1,242
AUTO	24	14,000	42,000	27,521	1,754	8,593	73,837	0,071	-1,142
KNOW	24	11,000	28,000	18,646	0,806	3,949	15,597	0,319	0,338
SOCON	24	31,000	55,000	43,396	1,444	7,074	50,043	-0,053	-1,010
CONFIG	24	27,000	54,000	39,021	1,302	6,380	40,706	0,181	0,143
TSLACK	24	0,407	2,329	1,058	0,095	0,467	0,218	0,910	0,920
DOI x AUTO	24	-4,086	10,085	0,668	0,665	3,260	10,629	0,951	1,753
DOI x KNOW	24	-4,871	1,972	-0,385	0,294	1,439	2,070	-1,749	4,150
DOI x SOCON	24	-6,212	10,555	0,141	0,648	3,176	10,088	1,008	4,649
DOI x CONFIG	24	-6,130	11,824	-0,158	0,669	3,278	10,745	2,002	7,723
DOI x TSLACK	24	-1,789	0,328	-0,083	0,080	0,391	0,153	-3,877	17,168
DOI ²	24	0,000	1,706	0,191	0,071	0,349	0,122	3,854	16,599

Descriptive Statistics – North America Subsample

Descriptive Statistics - Europe Subsample									
Variables	N	Minimum	Maximum	Mean	Standard deviation		Variance	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Standard error	Statistic	Statistic	Statistic	Statistic
ROS	47	-0,002	0,307	0,126	0,010	0,070	0,005	0,534	-0,318
ROA	47	-0,015	0,262	0,100	0,008	0,053	0,003	0,762	1,510
Tobin's Q	47	0,252	5,814	1,339	0,146	1,000	1,000	2,301	7,749
Industry	47	0,000	1,000	0,468	0,074	0,504	0,254	0,132	-2,073
Region	47	0,000	0,000	0,000	0,000	0,000	0,000		
Size	47	5,891	10,978	8,182	0,180	1,235	1,525	0,285	-0,588
DOI	47	2,308	4,623	3,606	0,087	0,596	0,355	-0,386	-0,734
FSTS	47	0,297	0,992	0,791	0,025	0,174	0,030	-0,843	-0,073
FATA	47	0,171	0,971	0,624	0,033	0,227	0,052	-0,293	-0,964
OSTS	47	0,492	0,953	0,798	0,016	0,109	0,012	-1,007	0,781
PDIO	47	0,333	1,000	0,773	0,028	0,195	0,038	-0,511	-0,677
INTOR	47	0,333	0,833	0,621	0,021	0,142	0,020	-0,562	-0,552
AUTO	47	15,000	47,000	30,840	1,126	7,717	59,545	0,124	-0,486
KNOW	47	9,000	24,000	16,787	0,539	3,696	13,660	-0,103	-0,488
SOCON	47	22,000	54,000	41,411	1,335	9,153	83,772	-0,524	-0,765
CONFIG	47	30,000	54,000	39,071	0,868	5,948	35,378	0,812	0,379
TSLACK	47	0,310	2,102	0,908	0,052	0,355	0,126	0,651	1,221
DOI x AUTO	47	-10,298	11,257	-0,994	0,574	3,935	15,484	0,335	1,367
DOI x KNOW	47	-5,774	5,366	0,225	0,318	2,181	4,759	-0,280	0,984
DOI x SOCON	47	-9,087	15,154	0,822	0,800	5,483	30,062	0,226	0,329
DOI x CONFIG	47	-6,925	10,254	0,078	0,471	3,226	10,405	0,831	1,994
DOI x TSLACK	47	-0,601	0,554	-0,014	0,029	0,201	0,040	-0,364	1,921
DOI ²	47	0,000	1,342	0,367	0,053	0,366	0,134	1,284	0,967

Descriptive Statistics – Europe Subsample

Correlation Matrix - Variables																						
		ROS	ROA	Tobin's Q	DOI	AUTO	KNOW	SOCON	CONFIG	TSLACK	DOI x AUTO	DOI x KNOW	DOI x SOCON	DOI x CONFIG	DOI x TSLACK	DOI ²	Industry	Region	Size	SG&A	M&S	R&D
Pearson correlations	ROS	0,824																				
	ROA	0,578	0,507																			
	Tobin's Q	0,123	0,041	-0,130																		
	DOI	-0,265	-0,125	-0,243	-0,097																	
	AUTO	0,350	0,413	0,240	0,009	0,163																
	KNOW	0,361	0,317	0,036	0,126	-0,053	0,455															
	SOCON	0,072	-0,193	-0,083	-0,001	-0,245	-0,045	0,047														
	CONFIG	0,236	0,090	0,499	-0,170	-0,240	-0,035	0,017	0,029													
	TSLACK	0,037	0,099	0,206	-0,187	-0,278	0,040	-0,072	0,124	0,026												
	DOI x AUTO	0,198	0,273	0,054	-0,076	0,037	-0,099	-0,095	-0,253	0,001	0,295											
	DOI x KNOW	0,302	0,330	0,216	-0,037	-0,059	-0,086	-0,087	-0,178	0,106	0,094	0,388										
	DOI x SOCON	0,002	0,063	0,116	-0,169	0,109	-0,243	-0,189	-0,355	0,019	-0,150	-0,061	0,086									
	DOI x CONFIG	-0,199	-0,020	-0,425	0,087	0,018	0,000	0,086	0,015	-0,422	0,011	0,080	-0,097	-0,218								
	DOI x TSLACK	0,077	0,056	0,116	-0,009	-0,132	-0,059	-0,032	-0,136	0,092	-0,030	0,059	0,059	0,441	-0,297							
	DOI ²	0,217	0,126	0,313	-0,117	-0,422	-0,018	0,015	-0,181	0,465	0,076	0,084	0,285	0,009	-0,152	0,026						
	Industry	0,180	0,152	0,446	-0,352	-0,195	0,229	0,111	-0,004	0,179	0,209	-0,147	-0,067	-0,035	-0,118	-0,229	0,109					
	Region	0,334	0,208	0,075	0,502	-0,203	0,073	0,253	0,015	-0,257	0,004	0,061	0,052	-0,090	0,109	0,027	-0,147	0,135				
	Size	0,280	0,187	0,303	0,221	-0,464	-0,078	0,083	0,061	0,615	0,115	0,060	-0,028	-0,161	0,048	-0,060	0,314	0,175	0,064			
	SG&A	0,272	0,178	0,297	0,239	-0,465	-0,120	0,040	0,054	0,597	0,125	0,097	0,022	-0,168	0,063	-0,056	0,297	0,107	0,118	0,977		
	M&S	0,222	0,079	0,387	0,028	-0,506	-0,113	-0,050	-0,118	0,538	0,088	0,075	0,256	-0,084	-0,121	-0,110	0,809	0,141	0,007	0,444	0,436	
	R&D																					
Significance (two-tailed)	ROS	0,000																				
	ROA	0,000	0,000																			
	Tobin's Q	0,307	0,734	0,281																		
	DOI	0,025	0,298	0,041	0,423																	
	AUTO	0,003	0,000	0,044	0,942	0,175																
	KNOW	0,002	0,007	0,769	0,294	0,659	0,000															
	SOCON	0,549	0,107	0,491	0,997	0,040	0,706	0,700														
	CONFIG	0,048	0,454	0,000	0,157	0,044	0,771	0,889	0,810													
	TSLACK	0,762	0,410	0,084	0,119	0,019	0,740	0,550	0,301	0,827												
	DOI x AUTO	0,098	0,021	0,656	0,528	0,762	0,411	0,428	0,033	0,996	0,013											
	DOI x KNOW	0,011	0,005	0,070	0,758	0,623	0,474	0,471	0,138	0,378	0,436	0,001										
	DOI x SOCON	0,984	0,599	0,335	0,160	0,366	0,041	0,115	0,002	0,872	0,211	0,614	0,474									
	DOI x CONFIG	0,096	0,866	0,000	0,470	0,884	0,997	0,475	0,902	0,000	0,927	0,505	0,419	0,068								
	DOI x TSLACK	0,522	0,642	0,336	0,943	0,272	0,625	0,792	0,257	0,444	0,801	0,627	0,625	0,000	0,012							
	DOI ²	0,069	0,296	0,008	0,330	0,000	0,881	0,904	0,131	0,000	0,527	0,486	0,016	0,938	0,207	0,833						
	Industry	0,133	0,207	0,000	0,003	0,103	0,054	0,356	0,974	0,135	0,080	0,220	0,576	0,772	0,328	0,055	0,365					
	Region	0,004	0,082	0,537	0,000	0,089	0,544	0,034	0,901	0,030	0,973	0,614	0,667	0,455	0,367	0,820	0,222	0,260				
	Size	0,018	0,117	0,010	0,064	0,000	0,520	0,490	0,615	0,000	0,341	0,617	0,816	0,180	0,692	0,621	0,008	0,145	0,598			
	SG&A	0,022	0,137	0,012	0,045	0,000	0,319	0,742	0,657	0,000	0,299	0,421	0,856	0,161	0,602	0,641	0,012	0,376	0,329	0,000		
	M&S	0,063	0,510	0,001	0,814	0,000	0,346	0,682	0,329	0,000	0,465	0,535	0,031	0,484	0,315	0,361	0,000	0,240	0,956	0,000	0,000	
	R&D																					

Correlation Matrix – Complete Sample

Correlation Matrix - Pharmaceutical Industry Subsample																
		ROS	DOI	Region	Size	AUTO	KNOW	SOCON	CONFIG	TSLACK	DOI x AUTO	DOI x KNOW	DOI x SOCON	DOI x CONFIG	DOI x TSLACK	DOI ²
Pearson correlations	ROS	0,155														
	DOI	-0,047	-0,371													
	Region	0,392	0,574	0,046												
	Size	-0,038	-0,101	-0,044	-0,255											
	AUTO	0,491	0,078	0,249	0,136	0,281										
	KNOW	0,398	0,410	-0,002	0,449	0,054	0,479									
	SOCON	0,085	-0,015	0,161	-0,012	-0,216	0,048	0,181								
	CONFIG	0,073	-0,292	0,248	-0,298	0,048	-0,165	-0,172	0,075							
	TSLACK	-0,064	-0,507	0,178	-0,039	-0,338	-0,155	-0,195	0,204	-0,029						
	DOI x AUTO	0,276	0,010	-0,337	0,169	-0,131	-0,200	-0,021	-0,060	-0,125	0,382					
	DOI x KNOW	0,303	0,048	-0,289	0,200	0,009	-0,011	-0,267	-0,221	0,040	0,155	0,451				
	DOI x SOCON	0,072	-0,608	0,062	-0,331	0,203	-0,064	-0,290	-0,467	0,189	0,146	0,000	0,198			
	DOI x CONFIG	-0,206	0,328	-0,258	0,122	-0,148	-0,054	0,149	0,090	-0,578	0,215	0,087	-0,059	-0,373		
	DOI x TSLACK	0,132	-0,260	-0,197	-0,055	0,006	0,013	-0,009	-0,344	0,069	0,056	0,296	0,414	0,579	-0,439	
	DOI ²															
Significance (two-tailed)	ROS	0,367														
	DOI	0,784	0,026													
	Region	0,018	0,000	0,790												
	Size	0,827	0,559	0,797	0,133											
	AUTO	0,002	0,651	0,144	0,429	0,097										
	KNOW	0,016	0,013	0,989	0,006	0,754	0,003									
	SOCON	0,622	0,930	0,348	0,943	0,205	0,781	0,291								
	CONFIG	0,671	0,084	0,145	0,077	0,782	0,335	0,317	0,663							
	TSLACK	0,709	0,002	0,300	0,819	0,044	0,367	0,254	0,233	0,866						
	DOI x AUTO	0,104	0,955	0,044	0,324	0,445	0,243	0,902	0,728	0,467	0,022					
	DOI x KNOW	0,073	0,783	0,088	0,243	0,956	0,951	0,116	0,195	0,819	0,368	0,006				
	DOI x SOCON	0,674	0,000	0,722	0,048	0,236	0,710	0,086	0,004	0,270	0,395	0,999	0,247			
	DOI x CONFIG	0,229	0,051	0,129	0,480	0,388	0,755	0,386	0,600	0,000	0,207	0,616	0,733	0,025		
	DOI x TSLACK	0,442	0,125	0,250	0,749	0,975	0,941	0,959	0,040	0,690	0,746	0,079	0,012	0,000	0,007	
	DOI ²															

Correlation Matrix – Pharmaceutical Industry Subsample

Correlation Matrix - Food & Beverage Industry Subsample																
		ROS	DOI	Region	Size	AUTO	KNOW	SOCON	CONFIG	TSLACK	DOI x AUTO	DOI x KNOW	DOI x SOCON	DOI x CONFIG	DOI x TSLACK	DOI ²
Pearson correlations	ROS															
	DOI	0,154														
	Region	0,474	-0,314													
	Size	0,356	0,387	0,322												
	AUTO	-0,385	-0,217	-0,276	-0,366											
	KNOW	0,167	-0,078	0,213	-0,031	0,074										
	SOCON	0,331	-0,172	0,236	-0,008	-0,141	0,428									
	CONFIG	0,159	-0,028	-0,098	-0,013	-0,447	-0,132	-0,046								
	TSLACK	0,326	0,117	-0,018	-0,043	-0,186	0,201	0,294	0,209							
	DOI x AUTO	0,138	0,166	0,231	0,094	-0,220	0,267	0,052	0,098	0,018						
	DOI x KNOW	0,054	-0,154	0,055	-0,068	0,268	0,028	-0,181	-0,395	0,089	0,191					
	DOI x SOCON	0,181	-0,069	0,141	-0,070	0,133	-0,187	0,116	-0,065	-0,161	-0,020	0,291				
	DOI x CONFIG	-0,088	0,245	-0,133	0,211	0,067	-0,430	-0,096	-0,292	-0,216	-0,423	-0,123	-0,031			
	DOI x TSLACK	-0,086	-0,507	0,251	-0,007	0,104	0,126	-0,026	-0,183	0,159	-0,398	0,130	-0,060	0,026		
	DOI ²	-0,032	0,346	-0,287	0,192	-0,292	-0,166	-0,064	0,055	0,135	-0,151	-0,286	-0,520	0,293	0,084	
Significance (two-tailed)	ROS															
	DOI	0,378														
	Region	0,004	0,066													
	Size	0,036	0,021	0,059												
	AUTO	0,022	0,210	0,108	0,031											
	KNOW	0,336	0,654	0,218	0,861	0,674										
	SOCON	0,052	0,324	0,172	0,961	0,419	0,010									
	CONFIG	0,362	0,872	0,575	0,943	0,007	0,448	0,793								
	TSLACK	0,056	0,502	0,917	0,808	0,284	0,246	0,086	0,229							
	DOI x AUTO	0,430	0,341	0,182	0,593	0,204	0,120	0,766	0,574	0,920						
	DOI x KNOW	0,758	0,377	0,754	0,697	0,119	0,873	0,297	0,019	0,613	0,272					
	DOI x SOCON	0,299	0,694	0,418	0,688	0,445	0,283	0,506	0,710	0,356	0,909	0,089				
	DOI x CONFIG	0,614	0,156	0,446	0,225	0,702	0,010	0,584	0,089	0,213	0,011	0,481	0,858			
	DOI x TSLACK	0,622	0,002	0,146	0,969	0,552	0,470	0,880	0,294	0,362	0,018	0,455	0,730	0,880		
	DOI ²	0,856	0,042	0,094	0,269	0,088	0,339	0,713	0,753	0,438	0,387	0,096	0,001	0,087	0,630	

Correlation Matrix – Food & Beverage Industry Subsample

Correlation Matrix - North America Subsample																
		ROS	Industry	Size	DOI	AUTO	KNOW	SOCON	CONFIG	TSLACK	DOI x AUTO	DOI x KNOW	DOI x SOCON	DOI x CONFIG	DOI x TSLACK	DOI ²
Pearson correlations	ROS	-0,112														
	Industry	0,342	-0,303													
	Size	-0,154	-0,175	0,372												
	DOI	-0,005	-0,214	-0,343	0,023											
	AUTO	0,358	-0,012	-0,208	-0,037	0,266										
	KNOW	0,241	-0,208	0,107	0,212	0,011	0,371									
	SOCON	0,040	-0,011	0,156	-0,079	-0,579	-0,088	0,107								
	CONFIG	-0,036	0,545	-0,543	-0,359	0,062	-0,072	-0,290	-0,165							
	TSLACK	0,059	0,005	0,204	0,052	-0,802	-0,159	0,090	0,649	0,026						
	DOI x AUTO	0,153	-0,240	0,546	0,261	-0,168	-0,661	0,046	0,147	-0,129	0,224					
	DOI x KNOW	0,325	0,001	0,083	-0,240	0,122	-0,020	-0,600	-0,344	0,285	-0,265	0,043				
	DOI x SOCON	0,273	0,154	-0,149	-0,370	0,466	0,121	-0,291	-0,741	0,393	-0,645	-0,177	0,670			
	DOI x CONFIG	-0,282	-0,337	0,310	0,603	-0,024	-0,013	0,199	0,233	-0,748	0,154	0,160	-0,561	-0,678		
	DOI x TSLACK	0,310	0,087	-0,297	-0,803	0,102	-0,003	-0,229	-0,166	0,527	-0,169	-0,109	0,559	0,639	-0,861	
Significance (two-tailed)	ROS	0,601														
	Industry	0,102	0,150													
	Size	0,473	0,413	0,074												
	DOI	0,980	0,316	0,101	0,914											
	AUTO	0,086	0,956	0,330	0,864	0,208										
	KNOW	0,257	0,329	0,618	0,320	0,958	0,075									
	SOCON	0,851	0,960	0,466	0,715	0,003	0,684	0,619								
	CONFIG	0,867	0,006	0,006	0,085	0,774	0,738	0,169	0,441							
	TSLACK	0,783	0,981	0,340	0,808	0,000	0,457	0,675	0,001	0,903						
	DOI x AUTO	0,476	0,259	0,006	0,218	0,433	0,000	0,833	0,494	0,548	0,293					
	DOI x KNOW	0,121	0,997	0,702	0,258	0,571	0,928	0,002	0,100	0,177	0,210	0,843				
	DOI x SOCON	0,197	0,472	0,488	0,075	0,022	0,574	0,167	0,000	0,058	0,001	0,407	0,000			
	DOI x CONFIG	0,182	0,108	0,141	0,002	0,911	0,953	0,351	0,273	0,000	0,472	0,455	0,004	0,000		
	DOI x TSLACK	0,141	0,686	0,159	0,000	0,635	0,988	0,281	0,438	0,008	0,429	0,613	0,005	0,001	0,000	
	DOI ²															

Correlation Matrix – North America Subsample

Correlation Matrix - Europe Subsample																
		ROS	Industry	Size	DOI	AUTO	KNOW	SOCON	CONFIG	TSLACK	DOI x AUTO	DOI x KNOW	DOI x SOCON	DOI x CONFIG	DOI x TSLACK	DOI ²
Pearson correlations	ROS															
	Industry	0,390														
	Size	0,302	-0,088													
	DOI	0,340	-0,061	0,694												
	AUTO	-0,393	-0,522	-0,083	-0,256											
	KNOW	0,301	-0,062	0,193	0,145	0,188										
	SOCON	0,408	0,084	0,303	0,172	-0,052	0,481									
	CONFIG	0,096	-0,273	-0,068	0,022	-0,054	-0,022	0,023								
	TSLACK	0,404	0,404	-0,106	-0,033	-0,415	-0,085	0,142	0,168							
	DOI x AUTO	-0,031	0,076	-0,130	-0,168	0,005	0,058	-0,158	-0,102	-0,033						
	DOI x KNOW	0,273	0,217	-0,084	-0,215	0,073	0,139	-0,113	-0,407	0,098	0,369					
	DOI x SOCON	0,339	0,390	0,058	-0,036	-0,141	-0,093	0,036	-0,135	0,069	0,202	0,449				
	DOI x CONFIG	-0,151	-0,058	-0,051	-0,148	-0,100	-0,438	-0,147	-0,145	-0,218	0,063	-0,031	-0,085			
	DOI x TSLACK	-0,078	0,034	-0,060	-0,252	0,014	0,074	0,045	-0,212	0,002	-0,052	0,018	0,121	0,201		
	DOI ²	0,020	0,036	0,249	0,096	-0,338	-0,009	0,075	-0,128	-0,101	0,093	0,069	-0,096	0,351	0,111	
Significance (two-tailed)	ROS															
	Industry	0,007														
	Size	0,039	0,558													
	DOI	0,020	0,683	0,000												
	AUTO	0,006	0,000	0,577	0,083											
	KNOW	0,040	0,679	0,195	0,331	0,205										
	SOCON	0,004	0,576	0,038	0,249	0,729	0,001									
	CONFIG	0,521	0,063	0,652	0,884	0,716	0,884	0,877								
	TSLACK	0,005	0,005	0,478	0,823	0,004	0,568	0,340	0,259							
	DOI x AUTO	0,836	0,612	0,383	0,260	0,971	0,696	0,287	0,495	0,828						
	DOI x KNOW	0,063	0,144	0,575	0,146	0,625	0,351	0,450	0,005	0,514	0,011					
	DOI x SOCON	0,020	0,007	0,697	0,812	0,344	0,535	0,812	0,366	0,643	0,172	0,002				
	DOI x CONFIG	0,312	0,697	0,733	0,320	0,503	0,002	0,325	0,330	0,141	0,676	0,834	0,570			
	DOI x TSLACK	0,602	0,819	0,688	0,088	0,924	0,621	0,764	0,152	0,989	0,730	0,906	0,418	0,175		
	DOI ²	0,896	0,812	0,091	0,522	0,020	0,952	0,615	0,390	0,499	0,536	0,646	0,521	0,016	0,459	

Correlation Matrix – Europe Subsample

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