

**SOURCES OF COMPETITIVE
ADVANTAGE AND BUSINESS
PERFORMANCE IN THE EUROPEAN
MEAT PROCESSING INDUSTRY**

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Jesper Strandkov
The Aarhus School of Business

EXECUTIVE SUMMARY

1. The aim of the paper is to investigate the relative importance of three sets of sources of competitive advantages on business performance in a specific industry context, ie the European meat processing industry. The three sets of competitive sources are Firm Specific Advantages (FSAs), Localizational Specific Advantages (LSAs) and Relationship Specific Advantages (RSAs). Based on a literature study, each set of competitive advantages is briefly described in terms of their theoretical antecedents. Seven hypotheses are formulated regarding the direct as well as the indirect relationships between the FSAs, LSAs and RSAs and business performance. Also, the direction of causality between the various sets of explanatory variables is considered. The hypotheses are combined in a structural modelling of firm competition.

2. Data and measurements are derived from a survey in the European meat processing industry in which 133 meat processors from 10 EU countries agreed to participate. A total of 17 variables of sources of advantage were developed and analysed (nine FSAs, four LSAs and four RSAs). Examples of the FSA measures are level of process technology; product development efforts; new product introductions and marketing mix efforts. The LSAs include variables related to national endowment of resources and industry-related factors such as for example the degree of industry concentration. The RSA measurements include relationships with retailers; relationships to suppliers; access to raw materials and distribution costs. Business performance was measured by applying the following indicators: return of investments, sales growth and market share.

3. The data set was subjected to conformational factor analysis and structural equation modelling using LISREL8. Based on an evaluation of the reliability values and t-values of each item, only seven of the measurements of competitive advantages were further analysed. A three-factor model was found to fit the data best, viz. that firm, localizational and relationship-specific advantages together should be treated as independent constructs. Six structural equation models were estimated of which one model, in particular, seems to fit the data best.

4. The meat processing industry results of the analysis show that the FSAs and the RSAs are the most important explanatory variables as regards business performances, however, with strong interaction effects between the two sets of variables. LSAs such as industry structure and national endowment of resources do not seem to influence the business performance of the meat processors. Moreover, the paper shows that those meat processing firms developing strong ties with the retailing sector will have their business performance increased as well as their firm-specific advantages (such as product development, process development etc.) being improved by strong retail relationships. Finally, the paper supports the view that investments in process and/or product innovation will pay off in the meat processing industry.

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INTRODUCTION

For years, a classic problem in strategy and marketing research has been linked to the question: The importance of internal versus external sources of competitive advantage and the links to business performance. There has been an active debate among management scholars concerning the relative importance of inter-firm capabilities versus environmental factors to sustained competitive advantages (Hill & Deeds, 1996; Hitt & Ireland, 1985; Rumelt, 1991). Evidence suggests, however, that both internal and external factors are crucial to competitive success (Hansen & Wernerfelt, 1989; Mauri & Michaels, 1998; Porter, 1991).

Although an extensive body of literature focusing on a broad range of issues pertaining to competitive advantage of the firm has been published up till now (Barney, 1991; Bharedwaj, Vanradarajan & Fahy, 1993; Day & Wensley, 1988), this article is based on the premise that a closer examination of the sources of competitive advantage in the context of a specific industry, ie the meat processing industry, can provide managerial insight into strategic problems and opportunities that may not be readily apparent at a more aggregate level.

The paper is organized as follows: First we focus a theoretical lens on various types of sources of competitive advantages based on three main paradigms of competitive advantage. Hypotheses are then developed connecting sources of advantages and their interaction with business performance and a model is suggested. Next, the data and measurements from a study of 133 meat processors in 10 European countries are presented. Finally, we test the model of competitive advantage by means of structural equation modelling. We conclude with a discussion of our findings and implications for further study.

ANTECEDENTS TO COMPETITION: SOURCES OF COMPETITIVE ADVANTAGES

In the strategic management literature there are at least two main paradigms for explaining sustained superior performance of the firm (Hansen & Wernerfelt, 1989; McGrath, MacMillan & Venkataraman, 1995). By sustained performance we mean superior marketplace performance (eg market share, customer satisfaction) and financial performance (eg return of investment, shareholder wealth creation). Sustainability is achieved when the competitive advantages of the firm resist erosion by competitor behaviour (Porter, 1985, p 20).

The first of these paradigms, ie the resource-based view, suggests that firms are fundamentally idiosyncratic, and over time accumulate unique combinations of resources and skills which allow them to garner rents on the basis of "distinctive competence". The second paradigm for explaining superior firm performance, ie the country/industry view, draws upon the concepts of industrial organization economics and comparative advantages of nations more directly related to the firm's environment (external view of competition). A third paradigm, however, for explaining firm performance may be added. The so-called business network approach (Ford, 1990; Hakansson & Snekota, 1995) argues that a competitive advantage of the firm cannot be analysis independent of the specific business relationship it is a part of. Therefore, creating and sustaining competitive advantages are embedded in business relations (buyer-seller relationships, co-operative arrangement etc.).

Without going deeply into the literature on firm competition and the sources of competitive advantage, we suggest that each of the paradigms relies on three different sets of sources: Firm Specific Advantages (FSAs), Localization Specific Advantages (LSAs) and Relationships Specific Advantages (RSAs). We will turn to each and briefly describe their theoretical antecedents and present the hypotheses and the model of the study.

The resource-based view of competition: Firm specific advantages

In the new realities of global competition, the underlying competitive emphasis in most industries appears to have shifted from being product-market based to being more resource based. It has been argued that successful firms of today build their strategies around thorough knowledge of a few highly developed core competencies and not around products (Prahalad & Hamel, 1990). As a result, any viable study of sustainable competitive advantages within an industry should concentrate on isolating the underlying competitive resources employed by firms.

Recently, strategic management has developed the resource-based theory of the firm. According to this theory, bundles of resources, rather than industry-wide structural characteristics or the product-market combinations chosen for their deployment (eg strategic conduct), lie at the core of a firm's competitive advantage. However, the resource-based view is a broader paradigm that attempts to understand and explain sustainability of competitive advantages, the nature of rent creating and the origin of heterogeneity of firms (Barney, 1986; 1991; Dierickx & Cool, 1989; Peteraf, 1993; Wernerfelt, 1984).

The basic idea is that a firm possesses and develops resources and capabilities that make it more or less unique compared to other firms. Unique ways of combining and applying innovation resources (product development capabilities), human resources, brand label capital or functional experience (production, marketing, sales etc.) are examples of such capabilities. In particular, the non-tradeable resources and capabilities (perfect immobile) which develop and accumulate within the firm are of central concern to the resource-based theory (Dierickx & Cool, 1989). Such capabilities in turn are normally seen as production bundles of routines of a highly tacit and social complex nature and therefore tend to defy imitation.

Whether resource selection and deployment result in enduring variation across firms will depend on factor market imperfections, defined as barriers to acquisition, imitations, and substitution of key resources or inputs (Barney, 1986). These barriers inhibit competitors in obtaining or duplicating critical resources and they lead to long-term differences among firms in their ability to generate rents. When strategic factor markets are imperfect, they create barriers to resource mobility and an unequal distribution of resources across competing firms (Dierickx & Cool, 1989).

Resource market characteristics, in turn, shape resource characteristics and the rent potential of resources. The persistence of rents from resources fundamentally depends on the resource features themselves. These resource characteristics include whether resources are scarce, unique, intangible and nonsubstitutable (Amit & Schoemaker, 1993; Barney, 1991; Mahoney & Pandian,

1992). Since the resources and capabilities are different across firms (eg unique historical circumstances and the accumulation of specialized capabilities), they are associated with different efficiencies, and therefore yield differential rents when deployed to product markets. The implication is that the firm's endowment of resources and capabilities is expected to be the main sources of its competitiveness and consequently the key determinant of its business performance.

The group of resources and capabilities from the resource-based theory has much in common with the concepts of distinctive competence, firm specific advantages (Aharoni, 1993; Johansson, 1983), and ownership advantages (Dunning, 1993). Firm Specific Advantages (FSAs) can be defined as those specific resources and capabilities which have been developed and accumulated internally in the firm and largely take the form of the possession of distinctive skills and intangible assets, which are, at least for a period of time, exclusive or specific to the firm possessing them. Firms that possess such unique skills and assets (resources) that are special and hard to imitate will outperform their rivals.

Researchers generally distinguish between two broad sources of competitive advantage: unique resources (assets) and distinctive skills (capabilities). Day and Wensley (1988) characterize superior skills as the distinctive capabilities of a firm's staff that set them apart from the staff of competing firms and superior resources as more tangible requirements for advantages that enable a firm to exercise its capabilities. These two broad sets of resources facilitate the attainment of competitive positional advantages in the form of 1) superior customer value through a differentiated product/service, and/or 2) lower relative cost through cost leadership (see also Porter, 1985).

Based on the discussion above, there is theoretical support for the following hypothesis:

H1: FSA-factors have a positive relationship to the competitive performance/strengths of the firm.

Notwithstanding its important insight, the resource-based view has not examined the decision making context in which resource selection decisions are embedded (eg how firms actually make, and fail to make, resource choices) and how this context might affect sustainable firm differences in pursuit of economic rents (Oliver, 1997). As pointed out by Barney (1986), the business performance of the firm depends not only on the returns from its strategies by idiosyncratic resource deployment but also on the cost of implementing those strategies.

The resource-based theory has not addressed issues where the firm has not as such developed critical resources and capabilities but in co-operation with other firms. We will now turn to these so-called relationship specific advantages that stem from inter-organizational links and co-operation with other firms.

The business network view of competition: Relationship specific advantages

According to the business network (interaction) approach, the firm's target environment or market context most often consists of long-lasting relationships with certain customers, suppliers and other specific counterparts, rather than with an anonymous market (Axelsson & Easton, 1992). For the individual firm this is not just a matter of buying and selling. On the contrary, interaction comprises complex patterns of information exchange concerning the firms' needs, capabilities and strategies with regard to production, logistics, quality etc. (Anderson, Hakansson & Johanson, 1994; Ford, 1990). For example, in most industrial markets it is essential for the firm to be regarded as an attractive supplier/partner which requires trust building activities such as meeting agreed-upon quality and delivery conditions, and building social and personal bonds with customer counterparts.

It may be argued that the FSAs of the focal company cannot really be analysed independently of the specific relationships it is a part of (Ferguson et al, 1995). In the business network view it is argued that business relationships may give access to critical resources/capabilities outside the boundary of the firm which may in some cases be more important than resources developed internally (Hakansson & Snehota, 1995). Since interaction in business relationships is a matter of co-ordinating activities and resources this may in turn have an influence on the business performance of the focal firm in question.

This does not only mean that much of the capability put in use in a firm is derived from its relationships with others outside the firm, but also that the development of capabilities to a large extent takes place in those relationships. In some cases, a firm can get access to critical capabilities by tapping resources from its major suppliers and/or customers and vice versa. In other cases, co-ordination activities between business partners means that interdependent production, logistics, development, and administrative resources are modified and adapted in order to bring about a better match between the co-operating firms. This may imply discrete changes in products, production systems or processes.

Since the evolution of interaction can be seen as a social exchange process, the co-ordination of activities between the partners create interdependence. During the evolving process, understanding (eg on how to co-ordinate activities), trust and commitment will often be established as the firms learn about each other's competencies and behaviour (Axelrod, 1984; Dwyer, Schurr & Oh, 1987). If relationship co-ordination is successful, the process may lead to extension to more committed co-operative arrangements (eg joint production, joint product development etc.) that require larger investments in the relationship (Fiol & Lyles, 1985). From this also follows that the resource development process in the firm contains a never ending interaction between capabilities linked to its staff and capabilities linked to the relationships with business partners.

Based on the discussion above, Relationship Specific Advantages (RSAs) can be defined as those specific resources and capabilities which have been acquired through the firm's accumulation of the ties with other business actors most often developed over time. The RSAs are developed only if both business partners consider it profitable or otherwise worthwhile to engage in future ex-

change. Evidently, there is a strategic element in the development of relationships. But no choice can be made unilaterally, since the counterpart must be continuously motivated to engage in the relationship.

Since firms co-operate in business relationships in pursuit of profitability or some other payoff linked to business performance (eg co-operation may raise joint productivity of the relationship partners), we would expect that the relationship-specific advantages have a positive impact on business performance. We hypothesize the following:

H2: RSA-factors have a positive relationship to the competitive performance/strengths of the firm.

The country/industry view of competition: Localization specific advantages

Firm performance is also a function of the location of firms in the industry structure and/or national environment. First, it can be argued that the FSAs are not valuable per se. The FSAs are valuable because they allow firms to perform activities that create advantages, in particular product markets (Porter, 1991). Or to quote Collis and Montgomery *“Resources cannot be evaluated in isolation, because their value is determined in the interplay with the market forces. A resource that is valuable in a particular industry or at a particular time might fail to have the same value in a different industry or chronological context”* (1995, p 120).

Second, an industry structure explanation may be plausible because a firm will generate different levels of performance depending on the degree of rivalry it faces for given stocks of resources and assets, which in turn depends on the location of other competitors (Cool, Dierckx & Martens, 1994). Or as claimed by Michael Porter: *“Industry is the arena in which competitive advantages is won or lost”* (1986, p 9). Consequently, the competitive value of resources can be enhanced or eliminated by changes in input prices, technology, vertical integration, buyer needs etc. which an inward focus on resources and competencies will overlook. However, the analysis of competitive positions within the country/industry view will only be static if not stressed on resource developments, because behind every product market position of the firm there is a collection of resources (Wernerfelt, 1984).

Whereas firm resources and capabilities are clearly something intrinsic to firms, country and industry specific factors are more directly related to the environment in a broad sense. Factors such as the national endowment of production factors (labour costs, capital costs, etc.), the level of competition, industrial organization are examples of localizational factors that can differ between firms. These have much in common with Porter's analysis of the competitive advantages of nations (Porter, 1990) and with Dunning's discussion of location-specific advantages (Dunning, 1988). Often they are labelled the sources of comparative advantages and are most often considered exogenous to the firm.

In what is called the “diamond” model of national competitiveness, Porter addresses the central question why some firms based in some nations innovate

more than and thereby achieve a competitive advantage over others (Porter, 1990). The answer he provides lies in the business environment and is based on four main determinants: factor conditions; firm strategy, structure and rivalry; demand conditions and related and supported industries. Because of their influence on these determinants, government (eg industry policy, interventions etc.) and chance events also have an impact on innovativeness as well. It is the constant upgrading of these factors that is of paramount importance as an impetus for firms to innovate their products and production processes that create a competitive advantage in the long run.

Traditionally, country-specific characteristics like factor conditions (endowments) have been the centrepiece of the theory of international trade. Due to location-bound resources (eg differences in national endowments of production factors, government policy etc.) a firm from one country may enjoy a comparative advantage vis-à-vis competitors from other countries. Also, a long tradition, most often associated with the traditional Industrial Organization economics has been concerned with identifying properties of industries (treated in the “diamond” model as strategy and structure and demand conditions) contributing to above-average economic performance (eg profitability).

Industrial economics, largely based on the structure-conduct-performance (SCP) paradigm (Bain, 1956) emphasizes barriers to competition, and take the position that industry effects will explain differences in profitability. As a result, particular industries are more or less attractive because they contain structural impediments to competitive forces. I/O-based theory is founded on the belief that there are empirical regularities that govern business behaviour and determine profits. Numerous theoretical and empirical studies support this view, and although a large set of variables (growth, concentration, capital intensity, advertising intensity, etc.) have performed differently in different studies, the overall importance of these factors is beyond dispute (Scherer, 1990).

On this background, we hypothesize the following:

H3: LSA factors have an impact on the business performance/strengths of the firm.

However, the causal relationships between the LSA factors and business performance cannot be specified in a general way since broad environmental forces from either the national level (endowments of resources, industry policy etc.) or the industry level may have a positive as well as negative impact on firm performance. Firms located in high cost countries, for example, are expected to have comparative disadvantages, which in turn will have a negative impact on firm performance. On the other hand, firms with high market shares competing in monopolistic or oligopolistic market structures can expect a positive impact on profitability from their industry location.

The combined view of competitive advantages: Interaction effects

According to the preceding discussion we would expect that in reality it is difficult to make a sharp distinction between the internal resources and capabilities (FSAs) and external sources in terms of country localization factors (LSAs) and

business relationships factors (RSAs) as they reinforce each other in an interacting way. Thus, we expect significant interaction effects between the three sets of explanatory variables. One of them may, of course, still empirically be more significant than the other ones as determinants of competitive advantage. However, the influence of one of other sets of factors may only manifest itself indirectly through the other two sets. For example, if the FSAs turn out to be the most important determinants, it is still possible for the LSAs to exert an indirect influence through the FSAs.

Evidently, the question of causality and direction of relationships between the sets of competitive sources are important. Therefore the amount and nature of competitive advantages (value, sustainability, etc.) must be seen in connection with the contextual inter-firm, industry and country environment in which the sources of advantages are sought to be exploited. In the following, the indirect relationships between the FSAs, LSAs, RSAs and the links to business performance (the CSPs) are considered.

LSA-FSA links. If a company is located in an environment characterized by resource abundance (ie scarce endowment of raw materials, labour, capital etc.) it is reasonable to influence the strategy of the firm. For example, the existence of high labour costs will increase the incentives of the firm either to exploit economies of scale in the production and distribution by process innovations, introduction of labour saving technology etc. and/or to develop differentiated products for non-price competition (product innovations). Or high costs of raw materials will increase the incentives to produce low volume – high value added finish products, eg a differentiated focus kind of strategy.

Also, the nature of competition (the market structure) is expected to have an impact on the strategy of the firm. Within the industry structure firms with high absolute or relative market shares are expected to be more profitable than firms with low shares (Scherer, 1980). Or creating entry barriers through brand positioning, for instance, can diminish the threats of new entrants. Because of the indirect links between the potentials of creating entry barriers and the investment in brand assets, the possibilities for premium pricing thus can boost income and thereby profits. These arguments suggest the following hypothesis:

H4: There is an indirect relationship from the LSA factors to the FSA factors when explaining the business performance/strengths of the firm.

LSA-RSA links. We also suggest that industry factors as well as the national endowment of production factors (input prices) will influence the RSAs. The relationship-specific advantages are, at least in part, determined by the quality of the customers, suppliers and competitors in a country or region. In national environments, for example, characterized by small and medium-sized companies there are industrial policy incentives to promote inter-firm business cooperation and arrangements. Inter-organizational ties may also be created and developed because of specific industry-related localizational factors, such as an attractive R&D environment, important “change agents” etc. The host government ability to stimulate, upgrading of the local environment, through a supportive macro-economic policy and in investment in infra-structures and education, are thus important contributions to the development of relationship specific advantages. We suggest the following hypothesis:

H5: There is an indirect relationship from the LSA factors to the RSA factors when explaining the business performance/strengths of the firm.

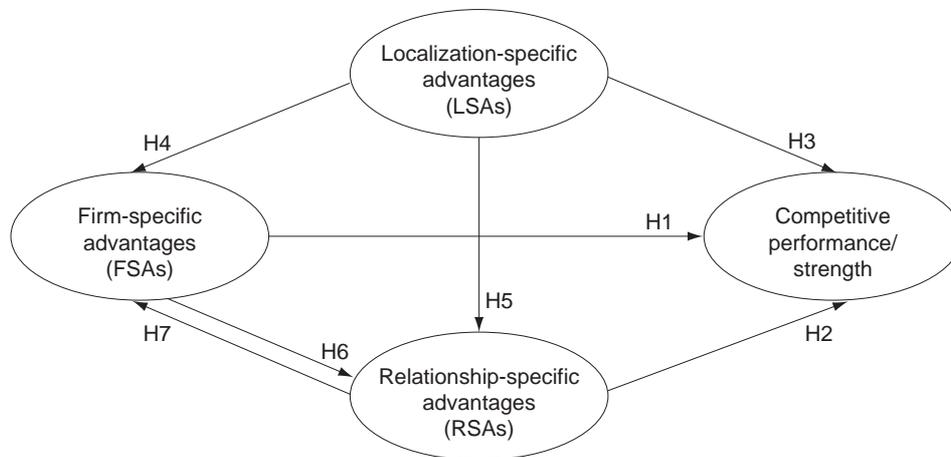
FSA-RSA links. It seems reasonable to suggest that the RSAs partly emerge from interaction between firms, each possessing separate and different FSAs. In particular, complementary assets and skills in the interface between the business actors are expected to develop based on the relative positions of the FSAs of each partners. Also, RSAs may influence the FSAs because firms acquire contacts in order to assist the process of upgrading their resources and capabilities. Therefore, we would expect to find reciprocity between the relationships between the FSAs and the RSAs. Finally, the following hypotheses are formulated:

H6: There is an indirect relationship from FSA factors to RSA factors when explaining the business performance/strengths of the firm.

H7: There is an indirect relationship from RSA-factors to FSA factors when explaining the business performance/strengths of the firm.

The seven hypotheses are combined in the structural model as illustrated in figure 1. The arrow numbers correspond to the number of hypotheses. The model shows that we expect direct relationships from FSAs, LSAs and RSAs to business performance (CSPs), and indirect relationships from FSAs to RSAs and from LSAs to RSAs and FSAs to business performance.

Figure 1. Structural model of relationships between Firms Specific Advantages, Localizational Specific Advantages, Relationships Specific Advantages and Business Performance



DATA AND MEASUREMENTS

The empirical context of this study is the European meat processing industry, which at an “industrial” level (excluding the small artisan producers) consists of approximately 2,000 to 2,500 firms. The meat processing industry covers a wide range of products derived from pork, beef and lamb. As a rule the processed meat products are classified under two main headings: cooked (ie ham,

sausages, pates, canned pork, ready meals) and uncooked (ie cured and dried hams, bacon, dry sausages and smoked products) types.

For years the EU meat industry has been a very conservative one (GIRA, 1990). Traditionally, meat processing firms have operated on a strong competitive scene characterized by a generally high-priced volatile raw material on one hand and a low added value (final) product on the other. This has ensured that profitability has always been low and that specialized family companies and farmer-owned co-operatives have remained the major players in the industry.

As a consequence, the degree of concentration at the national as well as the supra-national EU level is low, indicating a highly fragmented industry structure. An overcapacity of approximately between 25 and 40% has been estimated. However, lately the structural development in Denmark, the Netherlands and Belgium (the large net exporting countries) has increased considerably. Net EU intra-industry trade represents a very low percentage of total EU consumption (between 1-2%) indicating a low but increasing degree of internationalization. Differences in consumption patterns and eating behaviour across EU countries and national regions still exist. However, due to the growing bargaining power and internationalization of the retail sector there is a tendency to develop cross-border segments.

Data

The study is based on a survey conducted in 1997. Semi-structured interviews with industry executives were held before developing the questionnaire. Also a pre-test covering a small population of Danish meat processing firms was conducted to validate the data instrument. The survey was mailed to a sample of companies drawn from the Kompass register in ten EU countries (Denmark, Sweden, Germany, the United Kingdom, Ireland, France, Italy, Spain, the Netherlands and Belgium). To avoid small-company over-representation the sample was stratified to size including companies with more than 20 employees. The questionnaire was addressed directly to the CEO or the marketing director of the company in question.

The 1,194 cross-national questionnaire-mail-out (using two follow-up waves) produced a response rate of 15.3%. This is below the average response rates in other industrial surveys (Jobber & O'Reilly, 1998). In all, the number of usable questionnaires was 133. Subsequently analysis of response data and a follow-up telephone survey of non-respondents partly confirmed that the respond database was broadly representative of the original sampling frame and, consequently, of the European meat processing industry.

The respondent set of companies in the database was characterized by the following attributes:

- Most of the firms were small (37% of the total population has less than 50 employees), while the dispersion of the other firms sizes were fairly even.
- 75% of the meat-processors were independent, family businesses

- About half of the firms made over 50% of their total turnover through the retail sector, and
- Most companies have an export share of less than 5% of the total turnover.

Measures

In order to test the hypotheses in the preceding section, several items measuring the sources of competitive advantages of the firm were developed. To specify the context of the sources of competitive advantages and the performance consequences, it was decided to apply the main product (in terms of turnover within the range of all offered processed meat products) as the unit of analysis. The firm-specific factors have to do with the skills and capabilities that are specifically linked to the product-market position of the individual firm in question. On the other hand, the external environment of the firm determines the localization and relationship-specific factors. In all, twenty-one variables were developed and they will briefly be discussed below.

FSA measures. In order to obtain an understanding of the importance of the FSA factors the companies were asked to evaluate their strengths and weaknesses. The following questions were asked “For your main product, please, on a scale ranging from much poorer to much better indicate your competitive positions vis-à-vis your main competitor(s)”. The specific FSA variables were chosen from previous research and industry studies. They suggest that competition in the meat processing industry revolves around a few asset stocks (eg innovation and branding), as well as the firm’s scope of operation, costs (in particular, raw material costs) and differentials (eg product differentiation) positions (Strandskov & Lund, 1993).

The following nine FSAs were listed 1) level of process technology, 2) technological flexibility, 3) process development efforts, 4) product development efforts, 5) new product introductions, 6) product quality level, 7) service level, 8) price level, and 9) brand positioning.

LSA measures. The localization-specific advantages can be measured in many different ways. Two country-based and two industry structure variables were included in this study. Based on prior studies of the meat sector (Strandskov & Lund, 1993), both raw material costs and labour costs seem to have an important impact on the competitiveness of the meat processor since they most often account for between 70-80% of the total costs. In particular in the processing part of the meat industry, labour costs will increase slightly with a higher degree of meat processing due to hiring skilled slaughterhouse workers to cut and slice the meat. Labour costs and raw material costs in the ten EU countries were obtained from another recent study on the competitiveness of the European slaughtering industry (Kristensen & Strandskov, 1994). Data on industry factors were obtained from the same source and they include the following variables (i) number of competitors in each of the ten EU countries and (ii) degree of industry concentration measured as the top five meat-processors’ shares of the total market in each country.

RSA measures. The importance of the RSAs in the meat processing industry mostly has to do with sources of competence based on relationships with the main actors in the business environment, ie suppliers and customers. In the case of suppliers, the meat processing companies in general face a high-priced volatile raw material on the one hand and a low added value final product on the other. Therefore, access to not only cheap but also quality raw materials are of great importance.

The co-ordination mechanisms between the industry and the farming sector (pork producers, beef producers etc.) ranging from open market relationships, negotiated contracts to fixed-term commitment and residual payment will indicate the type and nature of supplier-relationships. In this study, however, a simple measure of long-term relationships to suppliers of raw materials (farmers) was used: The respondents were asked to indicate the importance of wide-ranging collaboration with suppliers for the competitiveness of the most important product (using a five-point Likert scale).

Also relationships to customers, in particular, the retailing sector is very important either due to co-operation on product development, sub-contracting (eg private labelling), etc. Within the last 10 to 20 years the bargaining power of the retail sector has strongly shifted and in many cases co-operation with the retailers is a strong source of innovation for the food manufacturers. To measure long-term customer relationships, the respondents simply were asked to indicate the importance of co-product development and co-marketing of brands with the retail sector.

In order to verify whether the 17 items of competitive advantage can be grouped into the three different categories, a varimax rotated principal-component factor analysis was made to determine their underlying dimensions. Items with significant cross-loadings were eliminated. Based on factor interpretability, the scree test and an eigenvalue greater than one, a 7-factor solution accounting for 70% of the total variance was judged best. The Kaiser-Mayer-Olkin measure of sampling adequacy was low (0.55) indicating that using factor loading in the following analysis may not be a good idea. Appendix A shows these constructs with their rotated factor loadings. Factor 1 clearly describes characteristics of the industry environment, factor 3 the marketing mix, while factor 4 characterizes the technological competencies of the firm. However, factors 2, 5, 6 and 7 are more difficult to interpret.

From this it follows that the factor analysis only partly supports the assumption that the firm-specific properties belong to the same type of competitive advantage (internal resources and capabilities) while the others are related to the external environment (the measures of LSAs) or based on resource development with business partners (the measures of RSAs). Therefore, all the variables of competitive advantage will be included in the further analysis.

CSP measures. Three sets of competitive performance/strengths variables were included 1) growth in turnover, 2) return on assets (ROA), and 3) relative market share. Traditionally, these have most widely been used in similar studies.

However, a limitation of this study is the lack of publicly available financial data, since more than 50% of the sampled firms do not publish their economic

results (typically small and medium-sized family enterprises). Therefore, self-reporting Likert-scaled measures of each firm's relative success were collected (subjective performance indicators). For each performance indicator, the respondents were asked to characterize the development of their main product in terms of sales growth, ROA, and market share within the last three years (5-point scale ranging from "very satisfactory" to "very unsatisfactory").

ANALYSIS AND RESULTS

The data set was subjected to confirmatory factor analysis and structural equation modelling using LISREL8 (Jöreskog & Sörbom, 1993). Structural equation models with latent variables can be used to advantage in testing hypotheses where one or more variables are thought to intervene between an independent variable(s) and a dependent variable(s) as expected in this study. First, one gains more insight into how independent variables produce their effects. Second, by modelling intervening variables, along with their antecedents, omitted variables and certain threats that accompany such omissions and make inferences less valid can be avoided.

Reliability and construct validity

The data analysis was conducted in several steps. First, the quality of the data was assessed by means of PRELIS2 for testing of multivariate normality for continuous variables. The pre-analysis (not reported) showed that most of the measures do not contain substantial skewness within the acceptable statistical limits, except for the measures of industry concentration and export intensity (both with a substantial positive skewness). However, several of the measures were subjected to kurtosis. In particular, the measures of quality level, labour costs, costs of raw materials, access to cheap raw materials, industry concentration and export intensity contained substantial kurtosis.

Because the assumption of multivariate normality is not confirmed, and because kurtosis cannot be corrected with a simple transformation of the data, it was decided to use the Maximum Likelihood (ML) method to estimate the models. In general, ML has proved to be relative robust in the case of substantial skewness and kurtosis. One of the shortcomings of using ML, however, is its dependence on the sample size (between 100 and 200) as well as χ^2 statistics and standard errors can not be trusted (Hair, Anderson, Tatham & Black, 1992).

Second, a confirmatory factor analysis was run to approach reliability of the individual variables. The purpose of this step is to make sure that the observed variables are satisfactory representations of the theoretical constructs they are meant to measure. The measurement models along with the estimated reliabilities of the individual items are listed in table 1. The item reliabilities are defined as the correlations between the item value and the true value.

The measurement model for the FSAs shows that process development, level of technology and new product introduction best reflect the constructs. The other FSAs seem to be less good indicators of their constructs. The LSAs are almost determined by the number of competitors, degree of industry concentration and

level of raw material costs. The last indicator, however, has a lower item reliability compared with the other indicators. The importance of labour costs seems to be a less good indicator of LSAs.

Table 1. Estimated reliabilities of the sources of competitive advantages

Latent Variables	Indicators	Completely standardized loadings	Item reliabilities
Firm-Specific Advantages (FSAs)	Product development efforts	.36	.13
	Service level	.20	.06
	Product quality level	.18	.06
	Price level	.27	.09
	Technological flexibility	.29	.12
	Brand positioning	.47	.14
	Process development efforts	.50	.41
	Level of process technology	.43	.22
Localization-Specific Advantages (LSAs)	New product introductions	.68	.36
	Labour costs	.49	.03
	Raw material costs	.07	.43
	Number of competitors	.67	.75
Relationship-Specific Advantages (RSAs)	Degree of industry concentration	.17	.76
	Relationships with retailers	.57	.29
	Low costs of distribution	.22	.05
Competitive Strengths/Performance (CSPs)	Relationships with suppliers	.21	.10
	Access to cheap raw materials	.49	.02
	Return of investments (ROI)	.74	.52
	Sales growth	.59	.52
	Relative market share	.60	.51
	Export intensity	.13	.10

The measurement model for the RSAs only includes relationships with retailer as the most important indicator, whereas the other indicators show low item reliabilities. The item reliabilities are moderately high for most of the indicators of performance/competitive strengths (CSPs) with export intensity as an exception.

Although, most of the individual item reliabilities (eg $\rho_{ii} < 0.4$) may point to inadequate measurement of the construct by the given indicators, it is usually more important that the construct be measured adequately by all indicators jointly. This can be assessed by computing the index of composite reliability. For all the latent factors the composite reliabilities are moderately high (FSAs, $\rho_c=0.61$; LSAs, $\rho_c=0.76$ and CSPs, $\rho_c=0.75$).

Based on an evaluation of the reliability values and the t-values of each item, the data analyses will only include the following seven measures of competitive advantages. FSAs: process development, level of technology and new product introductions; LSAs: raw material costs, number of competitors and degree of industry concentration, and RSAs: relationships with suppliers. All the CSP measures are included except for the measure of export intensity. The other ten variables were dropped because of low values of item reliabilities ($\rho_{ii} < 0.20$) and/or insignificant t-values.

Confirmatory factor analyses were then further used to test the hypothesis that the observed independent variables measure the three independent constructs concerning the sources of firm, localizational and relational specific advantages, respectively (H1). The test of the construct validity is performed by contrasting H1 with alternative hypotheses that the observed variables represent fewer than the three latent constructs (see Bagozzi, 1994), see table 2.

In order to perform the test, a number of confirmatory factor models were specified and applied to the data. Model 1 is a three-factor model with no constraints on correlations between the latent variables. Model 3 is equal to model 1 except that the correlations between the three latent variables are fixed to unity which changes the model into a one-factor model. Model 2 specifies three variants of a two-factor model by fixing one of the correlations between latent variables to unity and setting the other ones free.

Table 2. Findings for goodness-of-fit indices for one, two and three-factor models applied to the correlations between sources of competitive advantages

Hypothesis	Goodness-of-fit data		
	χ^2	d.f.	p
<i>H1: Three factors, no constraints on correlation between latent variables</i>	20.4	12	0.06 a) 0.22 b) 0.96
<i>H2-1: Two factors, correlation between FSAs and LSAs fixed to unity</i>	65.0	13	0.00 a) 0.00 b) 0.78
<i>H2-2: Two factors, correlation between FSAs and RSAs fixed to unity</i>	60.0	13	0.00 a) 0.00 b) 0.80
<i>H2-3: Two factors, correlation between LSAs and RSAs fixed to unity</i>	192.2	14	0.00 a) 0.00 b) 0.23
<i>H3: One factor, correlation between latent variables fixed to unity</i>	234.4	15	0.00 a) 0.00 b) 0.058

Notes: a) p-value for the goodness-of-fit index RMSEA and b) CFI

Each of the hypotheses can be examined with a chi-square goodness-of-fit test to ascertain the reasonableness of the model. Table 2 provides the results. To

reduce the vulnerability of the chi-square value to sample size, it is common to divide it by the degree of freedom. As a rule of thumb, the resulting value should then be lower than 5, while RMSEA should be lower than 0.08 and, preferably, lower than 0.05. GFI should be at least 0.90 (Bagozzi, 1994).

The evidence supports the result that the first model in the table fits the data best and consequently the hypothesized three-factor structure of the model. The estimation of the model yields a goodness-of-fit index of $\chi^2 (12) = 20.4$, $p = 0.06$ and with $GFI = 0.96$ indicating that the model is significant. However, RMSEA is as high as 0.22. Judged by the χ^2 testor and the other testors supplied by LISREL8 it is shown that the other models are rejected by the data (insignificant). Therefore, the observed data seem to be best represented by the three-factor solution and the hypothesis that firm, localizational and relationship-specific advantages together should be treated as independent constructs rather than as representing one or two common constructs.

Predictive validity

The predictive validity of the latent factors identified above is finally assessed by means of structural equation modelling. Six models are estimated. The first model is the baseline model with direct links from the RSAs, LSAs and FSAs to business performance. Models 2 and 3 are the baseline models but with an indirect causal relationship from LSA to FSA and from LSA to RSA, respectively.

Based on the realistic expectation that national/industry factors influence the amount and nature of both the relationship specific factors *and* the firm specific factors, a fourth model is suggested. Also with model 1 as the baseline model, models 5 and 6 test the interaction effects between the FSAs and the RSAs.

The results are shown in table 3. The size of the χ^2 indicates that all the models produce a relatively poor fit to the data. The p-values are particularly low for models 2, 3 and 4. However, the GFI and RMSEA indices are very satisfactory for all models. In general, the R^2 s show that the models only explain one tenth of the variation in the dependent variable, the measures of business performance. Models 1, 5 and 6 produce the highest R^2 .

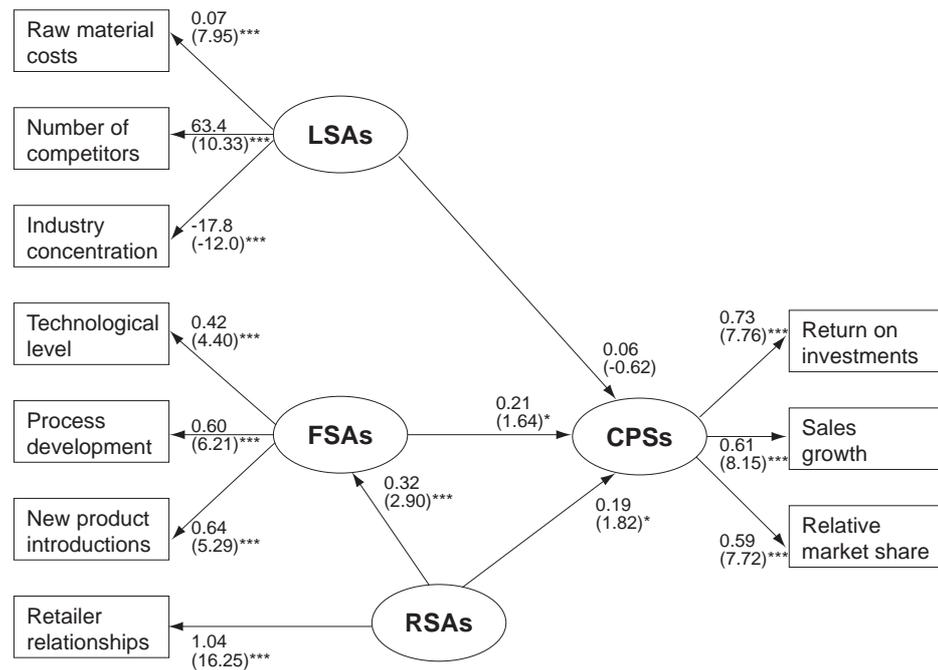
Table 3. Findings for goodness-of-fit indices for structural equation models

Models	χ^2	df.	p	GFI	RMSEA	R ²
1: Baseline model with links from RSA, LSA and FSA to CSP	47.9	30	.02	.95	.067	.10
2: As baseline model but with a causal link from LSA to FSA	57.1	31	.003	.92	.070	.081
3: As baseline model but with a causal link from LSA to RSA	57.1	31	.003	.92	.070	.081
4: As baseline model but with a causal link from LSA to both RSA and FSA	57.1	31	.003	.92	.072	.081
5: As baseline model but with a causal link from LSA to RSA	49.1	31	.02	.93	.067	.10
6: As baseline model but with a causal link from RSA to LSA	50.4	31	.015	.93	.069	.11

Figure 2 reports the finding of model 6 which best explain the variation in business performance. All the paths connecting the indicators with the latent variables are found to have significant values. Also the direction of causality of the variables is as expected. All of the variables are highly significant with $p < 0.01$. The analysis confirmed the consistency of the variables of the latent variables. Also, to some degree the model confirmed that individually the latent variables do include connected indicators. Both the FSAs and the RSAs have a significant positive (direct) effect on the performance measure (the CSPs), while the LSAs have an insignificant direct effect. Therefore, hypotheses H1 and H2 are confirmed, while hypothesis H3 is not supported. Concerning the indirect effects, the coefficient estimate for the path linking RSAs to FSAs is as high as 0.32 and with a t-value of 2.90 indicating a strong significant indirect effect on performance. As a result, hypothesis H7 is supported while there is no support for hypotheses H4, H5 and H6.

A closer look at the other models reveals that the path estimates and the signs of the relationships between the independent variables are fairly similar in most cases (not reported). Appendix B presents the results of the hypothesis testing for all the models. From the appendix it follows that none of the models find significant direct relationships between the LSA factors and the measures of business performance. Also, the LSA factors do not have an indirect impact through the FSAs and RSAs, respectively. However, since model 5 also fits the data best, it indicates the existence of a significant path linking from the FSAs through the RSAs to business performance.

Figure 2. LISREL model of sources of competitive advantages and the links to performance: Coefficient estimates (non-standardized) and t-values (in parentheses)



*** p < 0.01; ** p < 0.05; * p < 0.10.

DISCUSSION AND CONCLUSIONS

This paper aims to provide a deeper understanding of the sources of competitive advantages on business performance. Instead of testing only two important paradigms of firm competition which traditionally has been applied in most studies (the resource-based view and the industry/country view), this paper has taken a step further to include a third theoretical rationale, ie the business network view of firm competition. This theoretical perspective suggests that critical firm resources also are accumulated and developed through inter-firm co-operation and links with important customers and suppliers. The study also investigates the direction of causality between the different sources of competitive advantage.

On the basis of data from European meat processing companies, we can tentatively conclude that firm-specific factors from the resource-based theory and relationship-specific factors from the business network theory seem to be the most important explanatory variables of business performance. However, there are also strong interaction effects between the two sets of factors. On the other hand, localization specific factors such as industry structure and the national endowment of resources seem to have neither a direct and/nor an indirect (significant) influence on business performance.

Of particular interest to this study is the strong (reciprocal) interplay between two sets of competitive advantages: the firm-specific and relationship-specific sources. Theoretically, feedback explanations between the firm-specific and relationship-specific variables are both logical and consistent with contemp-

orary management research. The indirect causal links to business performance point to the conclusion that the boundary of the firm in terms of resource employment, resource developments etc. are more fluent and ambiguous than expected in the resource-based theory of the firm. Thus, the sources of firm specific advantages do not operate in isolation but are embedded and reinforced through the co-ordination mechanisms with business partners across the vertical value chain. Whether this implies that it is misleading to make a sharp distinction between firm-specific factors and relationship-specific factors is open to further research.

From a theoretical point this leads to the conclusion that the resource-based theory of the firm and the business network theory should be seen as complementary rather than competitive research explanations of business performance. Hence, future research should emphasize important questions concerning how the two sets of competitive advantages interact and reinforce each other. Also, further studies are needed to test the degree to which the operationalization of the firm-specific and relationship-specific measurements captures the hypothetical feedback as well as other effects. In this study, relationships with retailers was the only explanatory variable of the relationship-specific factors, which of course is a limitation. A closer examination of the nature of the relationship-specific factors is also needed.

Another important finding of the study is the lack of a significant path from localization-specific factors to business performance. Interestingly, the study does not find any indirect relationships from the localizational-specific advantages to the firm and/or relationship specific advantages on performance. Consequently, differences in national endowments of production factors (input prices) cannot explain the variance in business performance as expected. One plausible explanation is that to be competitive in the marketplace requires at least similar factor prices vis-à-vis competitors from other countries.

For the set of industry factors in question, the lack of significance could be explained by the notion that industry structure per se may be considered as a temporary artefact of firm-specific differences in resources and skills and, as a result, performance. That is, the industry structure observed at any one point of time is an endogenous outcome of the competitive process, rather than a factor that fundamentally shapes that process (see also Hill and Deeds, 1996). If the notion of competition is independent of industry structure, it follows as a matter of basic logic that industry factors do not have an impact on business performance.

The analysis has at least three major strategic implications for firms operating in the meat-processing industry. First, the study clearly demonstrates that those firms developing strong ties with the food retail sector will have their business performance increased (measured by ROI, market share and sales growth) as well as have their firm-specific advantages improved by relationships with retailers.

Second, although a total of nine indicators of firm-specific advantages were considered, the analysis shows that (i) the technological level of the meat processing firm, (ii) the process development efforts and (iii) the company's ability to introduce new products, respectively, are all positively correlated to business performance. This points to the conclusion that investments in process and

product innovations will pay off in the meat processing industry. Whether the meat processing firm should invest in process innovations rather than in product adaptation/development are inconclusive, since the three firm specific factors account equally in explaining the variance in business performance.

Third, the study indicates that factors such as the degree of industry concentration in each country, the cost of raw materials and the number of competitors do not influence the profitability of the meat processing company. However, the lack of a significant path from country/industry factors to business performance does not necessarily point to the conclusion that the level of costs is immaterial. As discussed above, competitive factor costs of raw materials and labour are expected to be a prerequisite for firm competitiveness in particular in a mature industry like the meat processing industry. Because of a very competitive industry setting and a highly fragmented structure of the meat processing industry, the insignificance of structural industry factors on business performance were not unexpected.

All these conclusions should, of course, be judged in the light of the limitations of this study. Therefore, the findings must be interpreted with some caution. First, the theoretical model of the study demonstrates a simple way of relating sources of competitive advantages to business performance. As has been proposed by other researchers (see for instance Day and Wensley, 1988), the sources of advantage may only be indirectly linked to business performance by facilitating the attainment of competitive positional advantages in the form of either superior customer value and/or lower relative costs. Unfortunately, the data of this study do not include measurements of customer satisfaction, brand loyalty etc. as one of the two important dimensions of positional advantages.

Second, it is necessary to reiterate the methodological limitations. Thus, the variables of interest in the study do not account for more than a modest level of variation in business performance of the firm. This is first and foremost due to the measurement model: Out of seventeen indicators of sources of competitive advantage, only seven measures were considered as fairly good indicators of their constructs. The reliability problems potentially stem from the measurement of perceptions or stated belief in the sources of advantages and performance implications (self-typing data) rather than objective measurements or actual behaviour and can therefore suffer from the well-known deficiencies of perceptual measures. These issues, along with the low response rate, constrain the strengths and generalizeability of the findings. This suggests that the findings are best considered as suggestive and need further verification and testing.

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APPENDIX A: FACTOR ANALYSIS OF MEASURES

	Factor loadings
Factor 1	
Degree of industry concentration	-0.91
Number of competitors	0.88
Raw material costs	0.74
Eigenvalue = 2.63; total variance explained = 15.5%	
Factor 2	
Brand positioning	0.79
Product development efforts	0.78
Labour costs	-0.62
Eigenvalues = 2.54; total variance explained = 15.0%	
Factor 3	
Product quality level	0.82
Price level	0.71
Service level	0.63
Eigenvalues = 1.83; total variance explained = 10.7%	
Factor 4	
Process development efforts	0.72
Level of process technology	0.70
Technological flexibility	0.67
Eigen values = 1.39; total variance explained = 8.2%	
Factor 5	
Relationships with retailers	0.84
New product introductions	0.50
Eigen values = 1.29; total variance explained = 7.6%	
Factor 6	
Access to cheap raw materials	-0.82
Eigen values = 1.17; total variance explained = 6.9%	
Factor 7	
Low costs of distributions	0.76
Relationships with raw material suppliers	0.67
Eigen value = 1.01; total variance explained = 6.2%	
Kaiser-Mayer-Olkin measure of sampling adequacy: 0.55	
Bartlett's test of sphericity: $\chi^2 = 582$; df = 136, p = 0.000	

APPENDIX B. MODEL ESTIMATIONS AND HYPOTHESIS TESTING

	Model	1	2	3	4	5	6
<hr/>							
H1:	FSA	-	-	-	-	-	+
H2:	RSA	(+)	+	+	+	(+)	+
H3:	LSA	-	-	-	-	-	-
H4:	LSA-FSA		-		+		
H5:	LSA-RSA			-	-		
H6:	FSA-RSA					+	
H7:	RSA-FSA						++

- : not confirmed; (+): partly confirmed ($p < 0.10$);

+ : confirmed ($p < 0.05$); ++: strongly confirmed ($p < 0.01$)