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Value Creation Architectures and Competitive Advantage: LESSONS FROM THE EUROPEAN AUTOMOBILE INDUSTRY

Helmut Dietl
Susanne Royer
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In recent years, European automobile manufacturers have heavily restructured their value creation activities and processes. During this process of restructuring, a variety of organizational models evolved from relatively homogeneous production and distribution systems characterized by strict vertical control and high levels of vertical integration. Understanding these fundamental changes and their strategic consequences requires a perspective that goes beyond firm boundaries and investigates different degrees of integration of the value-adding processes.

Disintegration in the automobile industry has been initiated by the reorganization of production. Vehicle manufacturers had to react due to increasing competition from Japanese manufacturers, who initiated lean production methods at a much earlier stage. To improve production efficiency, manufacturing depth has been drastically reduced. Automobile manufacturers consolidated the number of direct suppliers and transferred extensive quality, quantity, time, and cost responsibilities—for assembly groups and modules and sometimes even for complete models—to their suppliers.

Whereas reorganization in production has already reached advanced levels, changes in distribution are a more recent phenomenon. In the automobile sector, the term “distribution” is usually not limited to the sale of new cars, but includes complementary finance, leasing, and mobility services as well as the entire repair, service, and parts sector. In the past, car distribution was characterized by a number of smaller brand-exclusive dealers that were strongly coordinated and steered by the vehicle manufacturers. Today, franchised dealer groups have taken responsibility for coordinating distribution networks for certain brands (importer function) or steering sub-dealer networks in Europe. Like

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cascading supplier networks in production, large multi-brand dealer chains have formed new distribution structures and have taken over integrator functions that had previously been fulfilled by the automobile manufacturers themselves. New players are searching for opportunities to influence established distribution structures and to exploit value potentials. Independent actors, such as manufacturer-independent banks and leasing companies, offer distribution services in addition to their traditional financial products. Competition is increasing, particularly in the market for after-sales services.

The current reorganization processes in the car industry are similar to the developments that characterized the PC industry about 20 years ago. Until 1985, companies like IBM and DEC controlled almost all the elements of the value chain. After 1985, IBM gave most activities of the production process to third parties. As a consequence, the whole business model shifted towards scale and volume. Changes in production affected distribution: the supply and distribution system moved from a pull to a push system, resulting in less control for IBM in distribution. Loss of control in production and distribution led to the disintegration and unbundling of the whole value chain. Even though the product was a huge success, the PC division of IBM could not sustain its competitive advantage. Disintegration and modularization led to standardization. Differentiation shifted from the end product to the components. As a consequence, dominant suppliers such as Microsoft and Intel appropriated the lion's share of the total value creation. IBM's PC business never recovered and in 2004 was sold to Lenovo, a Chinese component supplier and contract manufacturer.

However, other PC manufacturers were more successful. For example, Apple and Dell did not fall into this standardization trap. Apple's business model regarding PC products is characterized by high integration and control over the total system in both production and distribution. Apple's products have system-specific software and most components and complementary products are developed and produced in-house or by quasi-integrated suppliers. Apple is setting its own standards and has strong control over related value-adding activities. In distribution, Apple PCs are sold exclusively by franchised stores or dealerships that are owned by Apple. Wholesale and retail functions are therefore very much in the hands of Apple. Dell, in contrast, extensively outsources production activities to third parties. Dell's value creation relies on just-in-time assembly, built-to-order supply and permanent improvements of the assembly processes to optimize efficiency and flexibility while sourcing the components from third parties. Distribution, on the other hand, is highly integrated. Dell controls the customer interface and

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differentiates its system of direct sales via phone and Internet on the basis of extensive electronic customer services.¹

These examples from the PC industry highlight how different degrees of integration along the entire value chain determine the competitive position of individual firms. Traditional approaches tend to overlook these effects. This article presents the new concept of value creation architecture and demonstrates how it can be applied to explain the effect of inter-firm organization on the competitive performance of participating firms.

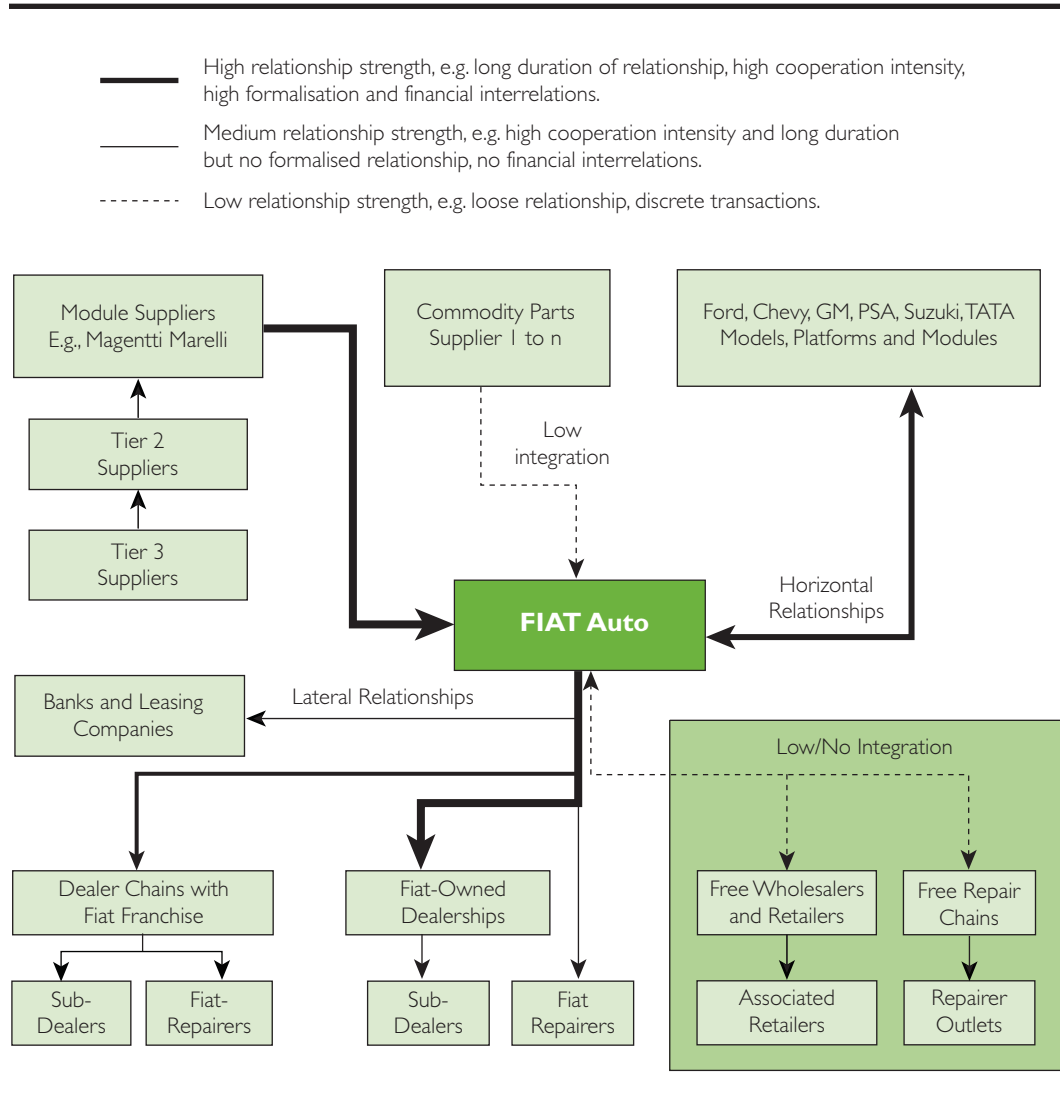
Architecture of Value Creation: What Is It?

Strategic management deals with the question of how firms create value in terms of achieving and sustaining competitive advantage.² The market-based, resource-based, dynamic capabilities, and relational views identify different sources of competitive advantages. From the market-based perspective, competitive advantages are the result of strategic positioning in imperfect markets.³ The resource-based view identifies firm-specific resources as the main source of sustainable competitive advantage.⁴ From the dynamic capabilities perspective, temporary competitive advantages result from risk-taking and entrepreneurial insights in an uncertain or complex environment.⁵ After a while, the insights diffuse and become best practice. The relational view attributes competitive advantages to relationship-specific assets, knowledge-sharing routines, complementary resources and capabilities, as well as effective governance mechanisms.⁶ It is suggested that these advantages are jointly generated in an exchange relationship and cannot be generated by one firm in isolation.⁷

Even though the relevance of an inter-firm perspective has been acknowledged,⁸ the integration of the sketched insights into an economically rooted concept of strategy and organization is not yet sufficiently advanced.⁹ There is still a lack of research regarding a systematic way of understanding the different components of competitive advantage that may be a consequence of market structure, the firm itself, or relations of the firm to other actors. Such relations occur in diverse qualities and types. The inter-firm profit achievement can only be adequately analyzed when taking intra- as well as inter-organizational resource processes into account.¹⁰ Therefore, what is needed is an adequate conceptualization of competitive advantage that can actually be used in different industry contexts to map the underlying value creation architecture and relate it to economic performance.¹¹ Certain patterns of labor division that emerged among co-specialized actors in a sector are called industry architectures.¹² Our aim is to develop a conceptualization of such architectures in relation to competitive advantage that can be used to identify and evaluate different value creation architectures in the same industry.

The term “value creation architecture” describes the structure and relationships of all the value-adding activities that are carried out by various actors and companies to bring a particular product or service to market. Figure 1 shows the value creating actors around the vehicle manufacturer Fiat as an example. It

FIGURE I. Value Creation around Fiat Auto



becomes obvious that Fiat is embedded into different relationships on the production as well as the distribution side. A horizontal partner, for example, is its competitor Ford, with whom Fiat shares platforms and models. In addition, Fiat has intense relationships with its module suppliers while looser relations exist with independent repair chains and dealer groups.

The concept focuses on the actors in value creation architectures that manufacture or assemble the final product, i.e., the actor that is the linking pin between the production and the distribution side. In the car industry, the focus is on the vehicle manufacturers, in the PC industry on the PC manufacturers, in the videogame industry on the assemblers of the consoles, and so forth. This focus on certain players in an industry makes it not only possible to reduce

complexity, but also facilitates the identification of generic forms of value creation architectures to be found in different industry settings. Based on this typology, the main research question is which architectures create more value than others and who can appropriate the value created?

Value creation architectures are differentiated through three criteria: activities that are undertaken centrally; activities that are given to third parties; and relationship characteristics between the participating actors. The resulting typology is a continuum with the integrated type at one extreme and the disintegrated type at the other. The integrated architecture is characterized by a high degree of centrally undertaken activities and a low number of activities outsourced to third parties. In addition, the locus of value-adding activities is within the boundaries of a single firm¹³ and all the value appropriation opportunities are concentrated within this firm. A good example of such an architecture can be found in the fashion industry where American Apparel undertakes a high degree of value creation activities without using sub-contractors, outsourcing, or off-shoring. To bring the product “fashionable textiles” to the market, the activities of knitting, dyeing, sewing, photography, marketing, distribution, and design are all undertaken in the facilities of American Apparel in Los Angeles.¹⁴

Disintegrated architectures, on the other hand, are characterized by highly decentralized, market-mediated relations between independent firms. In disintegrated architectures, each participating firm has control over its components and services and competes with all the other firms within the value creation architecture for value appropriation. This competition results in high-powered incentives and assures a comparatively high level of value creation. This advantage, however, comes at a high cost. Most of the firms that are part of a disintegrated architecture are forced to standardize their products, which, in turn, limits their differentiation options. Usually, the component manufacturer whose component is the one differentiating the final product from competitive products from other value creation architectures will be able to appropriate a major part of the value created. Within disintegrated architectures, differentiation is often transferred from the level of the final product to the level of individual components and, at the same time, made more difficult because of the necessary standardization processes. Examples of this transfer can be found not only in the PC industry, but also in the sports apparel or bicycle industries, where consumers prefer clothes that are made of Gore-Tex and bicycle gear shifts from Shimano, respectively.

Quasi-integrated architectures are a hybrid form between the extremes of full integration and complete disintegration. The hybrid form is characterized by a combination of extensive outsourcing to third parties and close relationships with these third parties. The value creation architecture for Apple PCs offers an example of a quasi-integrated architecture of value creation.¹⁵

In markets where products may be separated into different modules and therefore be produced in integrated as well as disintegrated architectures, competitive advantage is not determined by the characteristics of individual firms alone. It is rather the result of competition among and within different

constellations of actors. Consider the video game industry. Reducing competition to the console manufacturers Microsoft versus Sony versus Nintendo would miss important aspects. Game publishers and developers as well as customers have to be included in the analysis of competitive advantage.¹⁶ Obviously, different architectures may work in different competitive environments. There is not a single form of value creation architecture that dominates all the other forms. Different forms, in particular integrated versus disintegrated architectures, have relative advantages and disadvantages.

Architecture of Value Creation: How Can It Be Understood?

From the perspective outlined here, unique strategic resources and strong capabilities are a necessary, but not sufficient, condition for sustainable profitability. IBM had valuable resources and outstanding capabilities and created substantial amounts of value with its PC business. However, IBM failed to appropriate adequate amounts of this value because the value creation architecture put suppliers such as Microsoft and Intel into a favorable strategic position. To understand better the determinants of competitive advantage, it is essential to analyze the underlying value creation architecture—in particular, the levels of integration in production and distribution. Integrated architectures are characterized by a high production and distribution depth, while disintegrated architectures have a low depth of activities in both areas. The levels of production and distribution depth are used as an indicator of the amount of value creation by the focal actor.

Quasi-integrated architectures are characterized by low production and distribution depths combined with a high degree of control and coordination responsibility for the other actors in the same architecture. Therefore, next to understanding production and distribution depths, it is essential to analyze the extent of control exercised by the focal actor over the other actors. Effective governance mechanisms to restrain opportunism here can be observed in two types: third-party enforcement of agreements such as legal contracts; and self-enforcing agreements based on “hostages” such as financial investments (formal safeguards) or goodwill, trust, and reputation (informal safeguards).¹⁷ While formal safeguards in the form of economic hostages align the incentives of the partners, informal safeguards such as trust and reputation lead to lower transaction costs for monitoring and bargaining.

From the perspective suggested here, actors in different industries may be mapped regarding their integration in the area of production in terms of their production depth as well as their control over other actors that contribute to the production of the central products. Regarding the degree of integration in the area of distribution, the distribution depth as well as the control over other actors that contribute to the distribution of the central products are taken into account. The results are maps that give insights into the different strategies of players in an industry regarding the integration, quasi-integration,

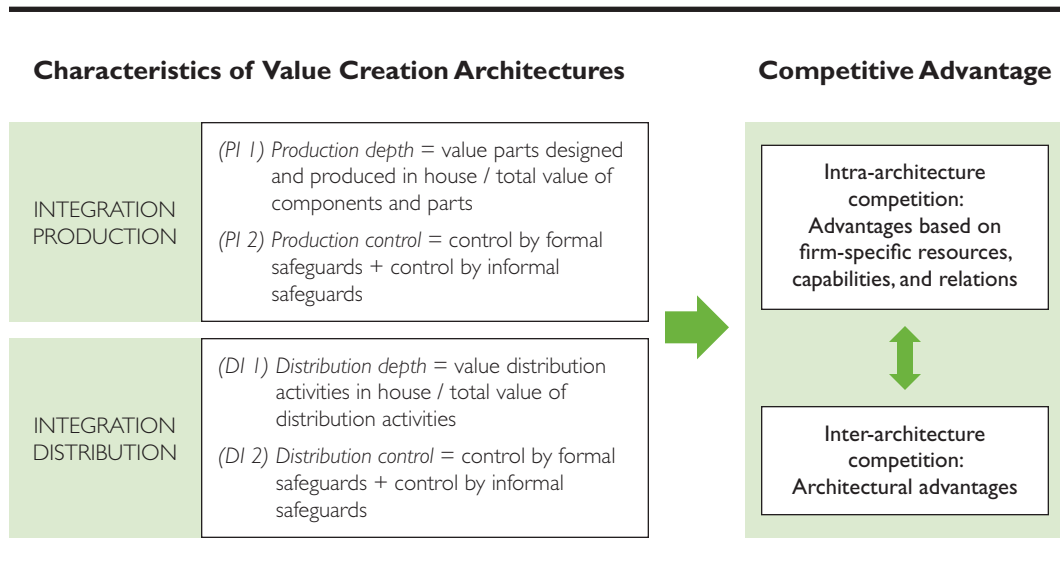
and disintegration of their activities in production and distribution. Different architectures of value creation determine the competitive potential of a product or service and of the different companies involved. In fact, there are two levels of competition. At the first level, architectures compete against each other. This form of inter-architecture competition is about value creation: Which of all the competing architectures can gain the largest share of a certain market? At the second level, the firms within a certain architecture compete against each other. This form of intra-architecture competition is about value appropriation: Which firm can appropriate the largest part of the total value creation?

Architectures of value creation have to deal with the trade-off between differentiation and efficiency.¹⁸ It can be very efficient to outsource many components that are standardized from a purely cost-oriented perspective. However, differentiation potential may thereby be sacrificed. Each firm must consider this trade-off when it is designing the value-adding activities around a certain product and positioning itself in intra-architecture competition. Furthermore, competent and resourceful actors have to be attracted and already participating actors have to be motivated to stay within the architecture and add maximum value in the long run. Within an architecture, a balance of incentives and contributions among participating firms is essential to be successful in inter-architecture competition.

From this perspective, the analysis of *architectural advantages* is central. These competitive advantages result from the interplay between internal competition and the cooperation of different actors that form an architecture of value creation and the competition between different architectures in the market. The architectures chosen in a certain market context can vary considerably in terms of core characteristics: the number of participating firms, the extent of integration, and the settings for the relationship levers (e.g., contract conditions or level of cooperation).

With regard to intra-architectural competition and cooperation, the analysis focuses on the question of which actors appropriate the highest share of value and on the impact of this value appropriation on the motivation and ability of all actors to continue to contribute to this architecture. The position of each firm within the intra-architectural competition depends on its resources, its capabilities, and its relationship with other actors within the architecture. The position of different actors in the architecture enables the investigation of efficiency (cost) and strategic (differentiation) advantages. This is the linking pin to the level of competition between different architectures of value creation. At the level of inter-architectural competition, all the firms of a certain architecture simultaneously enjoy architectural advantages based on the higher amount of total value creation by this architecture in comparison with competing architectures. Figure 2 summarizes how the characteristics of value creation architectures, namely, the level of integration in production (measured by production depth and production control) and the level of integration in distribution (measured by distribution depth and distribution control) result in competitive advantages at the intra- and inter-architectural levels.

FIGURE 2. Conceptual Framework Linking Value Creation Architectures with Competitive Advantage



Case Study: The European Automobile Industry

The empirical part of this article deals with the analysis of competing value creation architectures in the European automobile industry. The main objective is to identify the effect of different architectures on performance at the level of the entire architecture and with regard to individual actors within the architecture. The analysis of architectures is on the brand and not on the level of a specific model. Data availability, measurement problems, and practicality issues are the reasons for the analysis at brand level.

Methodology

To analyze the postulated theoretical relationship, we chose a case study methodology as the research strategy. Cases are a useful means to illustrate general facts or theoretical concepts.¹⁹ The case study investigates the architectures of value creation of different automobile brands in Europe. A main selection criterion to be included in this case research is that the brand is undertaking value creation activities in the European market. This requires an official distribution organization whereas the production of the marketed cars can also take place outside Europe. The brands should be comparable in terms of the product portfolio available in Europe.

General Motor's European subsidiary Opel,²⁰ the Mercedes Car Group, and Toyota Motors Europe fulfill these requirements and were chosen as cases for this research. The architectures around Opel, Mercedes-Benz, and Toyota cars are analyzed with regard to the identified dependent (i.e., competitive advantage) and independent variables (i.e., integration in production and

distribution). The following subsections are based on isolated as well as combined analyses of value creation architectures in production and distribution.²¹

The research is based on quantitative and qualitative data from the time period between 2002 and 2007. We used different data collection methods to increase the validity and generalizability of the research results. The data for performance indicators are mainly based on official documents such as annual reports and public statistic documents. For the analysis of the performance of individual actors such as franchised dealers, firm internal data are used as far as available. The data for the measurement of independent variables have been acquired through a range of different documents and studies and through contract analyses. The data collection was supported by expert interviews with relevant actors inside the architectures.

Operationalization of the Independent Variables

The operationalization of the independent variables follows the same methodology in production and in distribution. The underlying aim is the measurement of the level of integrated activities and the formal and informal integration of actors inside the architecture (by the focal vehicle manufacturer). The following paragraphs explain the operationalization of the independent variables.

As highlighted in Figure 2, the *level of integration in production (distribution)* is reflected in production (distribution) depth and formal as well as informal control over production- (distribution-) related actors. *Production depth* is measured by the level of activities in car design, parts production, and assembly that are carried out in-house compared with the total amount of activities required to produce the final car. The measure, which can differ for each production plant, is aggregated to a single index for all model lines and production plants because this research focuses on the architectures of value creation of specific brands.²²

Distribution depth reflects the direct involvement and intervention of vehicle manufacturers in car distribution and relevant complementary distribution services (in particular, car service, car repair, parts sales, and financial services).²³ Distribution depth with respect to new car sales is measured as the quotient of direct sales by the vehicle manufacturer to total new car registrations of the manufacturer's brand in the market. Vehicle manufacturers organize direct sales via dealerships that they own or via central sales forces within the company.

The level of integration in the area of complementary services, such as repair and maintenance services, parts distribution and financial services, is assessed by analyzing the spectrum of distribution activities that are offered directly by vehicle manufacturer-owned institutions. With respect to financial services, it is relevant whether the manufacturer owns or controls financial institutions to serve different customer groups. The group of business customers—which is continuously replacing private demand in the European automobile markets, for example—orders a wide spectrum of different service modules such as leasing packages with service and repair modules as well as fleet manage-

ment. A high degree of integration enables the vehicle manufacturer to offer its own financial products to serve the demand of these customer groups.

In after-sales, vehicle manufacturers employ different strategies to participate in value-adding activities. Repair and maintenance services go along with the sale of parts. The value-adding process in after-sales starts with the distribution process of the new car and ends with the end-of-life of the vehicle. Fully integrated after-sales services require that the vehicle manufacturer is serving customers' needs during the entire lifetime of a vehicle. Usually, independent repairers become increasingly relevant towards the end of the lifetime when car owners become less willing to spend their money on car repairs and servicing. In after-sales, the main question is what kind of integrated activities the specific vehicle manufacturer is conducting to control the value-adding streams during the entire life cycle of a vehicle.²⁴ At the center of attention are the activities in parts distribution, on the wholesale level, and on the retail level.

Control over production-related actors by formal safeguards is operationalized by the duration and sustainability of relationships as well as the level of location-specific investments. To manage the complexity this involves, we focus on the integration of direct suppliers only. *Duration and sustainability of relationship* is reflected in the use of multiple sourcing strategies versus exclusive supplier relationships. Multiple-sourcing strategies are used to increase the negotiation power and to reach maximum price reductions. Vehicle manufacturers who follow a single sourcing strategy have fewer possibilities to change and to use their negotiation power. Exclusive supplier relationships often go along with a long duration of supplier contracts. The *level of location-specific investments* is analyzed in terms of the geographic proximity of the production plants of the related suppliers to the plants of the focused actor. Location-specific investments are an indicator of the integration of suppliers through (financial) hostages. For example, supplier parks next to the vehicle manufacturer's factories in order to realize just-in-time concepts imply a high degree of location-specific investments. There are different forms of geographic supplier integration. Extreme forms can be seen as a means of re-integrating production activities, e.g., if suppliers are working under the same roof and with vehicle manufacturer-owned machinery. Supplier parks are usually supported by strong contractual integration and by relatively long and exclusive relationships between the manufacturer and the respective suppliers.

Control over distribution-related actors by formal safeguards is reflected in the type of sales and franchise contracts as well as the inherent level of specific investments at franchised dealers. Analogous to the analysis in production, the assessment is based exclusively on the relationships with direct distributors.

The first step in this assessment is the identification of the *contract type* that is used by the vehicle manufacturer to govern its relation with franchised dealers. There are three types of contracts. First, *agency contracts* represent a high level of integration because they locate the responsibilities for most distribution functions with the vehicle manufacturer. Second, *selective franchise contracts* represent medium levels of integration in distribution by granting the vehicle

manufacturer quantitative and qualitative selection authority to select its dealers. In addition, franchised dealers are under strict vertical selling restraints. Third, *exclusive franchise contracts* represent the lowest level of formal safeguards in distribution. Vehicle manufacturers who have chosen this contract type are not allowed to restrict the sale to other independent car retailers. They can, however, define exclusive market areas. Since the dealer is permitted under exclusive franchise contracts to wholesale cars to other retailers, the vehicle manufacturer is actually losing control of the retail process. Service and sales franchise contracts usually specify requirements regarding corporate identity, business equipment, personnel, and the extent of specific distribution tasks for the retailer. The analysis of these contractual requirements is summarized by a franchise complexity index to estimate the level of control exercised on franchisees by vehicle manufactures.²⁵

Level of specific investments within the dealer network is measured by the level of brand exclusivity at dealer outlets. The level of specific investments usually correlates with franchise selectivity.²⁶ Brand-exclusive points of sales combined with high brand-specific sales standards imply a strong dependency between vehicle manufacturer and distributor. The level of specific investments in the dealer network is low when the brand is primarily sold via multi-franchised outlets. Under these conditions, it is relatively easy for the dealer to replace one brand with another.

Control over external actors through informal safeguards is based on mechanisms that are not explicitly designed and legitimated by third parties but have grown out of social beliefs, common values, and repeated interactions between the transaction partners.²⁷ Important informal safeguards are shared norms and goals, trust,²⁸ reputation, and personal relationships.²⁹ They influence the extent of cooperation and opportunism between the parties.³⁰ The existence of meta-organizational goals and trust, for example, will enhance cooperation between the partners. In general, extensive informal safeguards support and facilitate cooperation by stimulating and motivating the partners to achieve common goals. From this perspective, the level of satisfaction with their relationship, as reported by the partners, may be regarded as an indicator for the achievement of such meta-organizational goals and for the intensity of trust, social bonds, and fairness—and, therefore, cooperation between the partners.³¹ Supplier and dealer satisfaction studies that consider these mechanisms are used in here to measure the intensity of cooperation between a manufacturer and its suppliers and contracted dealers.³²

Table 1 summarizes the operationalization of the independent variables in car production and distribution. Each of the outlined attributes to measure the three independent dimensions in production and distribution—integrated activities, formal integration, and informal integration—was assessed on a 5-point scale ranging from -2 to +2. The reference point for the scale is 0 and identifies the industry average. Accordingly, a score of +2 (-2) represents relatively high (low) levels of integration compared with the industry average. The overall score

TABLE I. Operationalization of the Independent Variables

Independent Variable	Production	Distribution
Integrated Activities at the Focal Vehicle Manufacturer	<ul style="list-style-type: none"> Activities^a brought out by the vehicle manufacturer in design, component manufacturing and final assembly^b 	<ul style="list-style-type: none"> Quotient of direct new car sales to total new car registrations by vehicle manufacturer-owned dealerships Integration into financial services by owned financial institutions Integration into after-sales by integrated parts distribution activities
Level of Formal Integration	<ul style="list-style-type: none"> Sustainability and exclusivity of formalized relationships between the vehicle manufacturer and its direct suppliers Integration of suppliers by financial hostages in terms of location-specific investments undertaken by the supplier 	<ul style="list-style-type: none"> Contractual integration of direct dealers by type of contract^c Level of specific investments required from the dealer in terms of contract standards and requirements
Level of Informal Integration	<ul style="list-style-type: none"> Intensity of cooperation between the vehicle manufacturer and its direct suppliers as deduced from supplier satisfaction studies 	<ul style="list-style-type: none"> Intensity of cooperation between the vehicle manufacturer and its direct franchised dealers as deduced from dealer satisfaction studies

Notes:

a. Activities have to be brought out under the roof of the focal vehicle manufacturer.

b. All model lines produced for the focused European markets are considered.

c. Differentiation by agency, selective and exclusive new car sales contract (level of formal integration in this order).

for each of the independent variables is the rounded average of the scores for the underlying attributes.

Operationalization of the Dependent Variables

Architectural advantages are reflected by financial performance indicators, measures of innovation performance, market performance, and differentiation performance. *Financial performance indicators* are used to operationalize architectural advantages. These indicators are obtained at the architectural level and are interpreted as the sum of all the values appropriated by the participating actors. To measure the financial performance of the value creation architecture, the financial performance of direct suppliers, vehicle manufacturers, and direct distributors is analyzed. The major financial performance indicator is return on sales (RoS). Note that the performance data reflect the situation within the focused markets and for the architecture around the chosen brand.

A purely hard-data driven measurement of the financial performance of suppliers and dealers inside specific architectures is problematic. Financial performance data are easily available for vehicle manufacturers. However, many suppliers and in particular dealers do not publish financial performance indicators. In addition, a number of suppliers and dealers carry out value-adding

activities for different architectures. The assignment of financial performance indicators to specific architectures is therefore difficult. To solve this problem, the quantitative data were complemented by qualitative data. With regard to direct dealers, quantitative data were complemented by a qualitative analysis of the extent to which the dealer was able to fulfill its financial objectives by working with a specific vehicle manufacturer. With respect to suppliers, quantitative data were complemented by studies of the price pressure put on direct suppliers by vehicle manufacturers. These studies were based on time series analyses of the relationship between the vehicle manufacturers and relevant actors (here, direct suppliers and the direct dealers).³³ Analysis of financial data for actors beside the vehicle manufacturer allows conclusions about the allocation of value appropriation and about competitive forces within the architecture.

Innovation and market performance were analyzed to identify the nature of the competitive advantages. The technological innovation output of the value creation architecture was measured in terms of the quantity and commercial relevance of innovations. Superior innovation performance is a strong indicator of entrepreneurial (Schumpeterian) advantages. Relative market share and evolution of market shares over time compared with competing architectures are indicators of the market success of the relevant automobile products. Therefore, we took the relative sales performance of the available models as well as the annual growth rate of sales volumes into account. Customer satisfaction with products is taken into account as another indicator of the market success to measure the performance of the value creation architecture.

Differentiation performance measured by the relative image position is a major indicator of the sustainable strength and value of a brand. In the PC industry, modularization, standardization and outsourcing almost completely eliminated the differentiation potential of PC manufacturers. In the automobile industry, brand image is very important because many purchase decisions are dominated by emotional aspects.³⁴ The brand image itself is therefore a valuable strategic resource for vehicle manufacturers. The relative image position of a brand is measured according to an annual survey of more than 300,000 readers of a European automobile journal.³⁵ Table 2 summarizes the operationalization of the dependent variables.

Results of the Case Study Analysis

The following summarizes three cases of value creation architectures in the European automobile industry: Opel–Vauxhall, Mercedes Car Group, and Toyota Motors Europe. For each case, the independent variables are described first. The resulting architecture is graphically illustrated as a “spider web.” In a second step, the resulting architectural types are matched with performance indicators.

The Case of “Opel-Vauxhall”

The architecture of value creation of GM’s European core brand Opel is characterized by relatively high levels of disintegration. Production depth has

TABLE 2. Operationalization of the Dependent Variables

Dependent Variable	Operationalization
Financial Performance	<ul style="list-style-type: none"> · On the level of vehicle manufacturers: return on sales · On the level of direct suppliers: price pressure put on direct suppliers by the focal vehicle manufacturer · On the level of direct dealers: fulfillment of individual financial objectives of dealers by working with a specific vehicle manufacturer
Innovation Performance	<ul style="list-style-type: none"> · Quantity and commercial relevance of innovations
Market Performance	<ul style="list-style-type: none"> · Relative sales performance of available models · Annual growth rates of sales volume · Customer satisfaction
Differentiation Performance	<ul style="list-style-type: none"> · Relative image position of the respective brand

been significantly reduced during the last 20 years. GM/Opel had controlled a wide spectrum of activities in production until the late 1980s. These included the “Automotive Components Groups,” a separate business sector consisting of suppliers within GM, mainly driven by the large supplier “Delphi.” A major disintegration step was the separation of “Delphi” from GM in 1999. In reaction to increasing competition and shrinking margins for GM/Opel, the strong trend towards outsourcing continued. Strategically important modules were outsourced to large European and U.S. suppliers, who carry out R&D and assembly functions for Opel. Some models are completely sourced from other brands out of the GM brand group (e.g., Opel Antara from Chevrolet, produced in the former Daewoo plant in Korea) as well as from manufacturers outside the GM group (e.g., Opel Agila from Suzuki Hungary). Vice versa, Opel is supplying complex platforms to other manufacturers to realize economies of scale. Inter-brand group platform- and module-sharing increases standardization and modularization. For example, Fiat uses complete Opel platforms for two volume models. However, Opel forced the formal integration of direct suppliers by single sourcing agreements and by geographic integration in the form of supplier parks located at the European plants. All the main German production plants for Opel are combined with supplier parks. Compared with the industry average, however, GM/Opel is increasingly sourcing strategically less-important components and parts from Eastern Europe and Asian markets to realize cost reductions. The formal integration of these suppliers is low. Production flexibility stands in conflict with global sourcing strategies (e.g., just-in-sequence delivery). In terms of informal integration of suppliers, GM/Opel exhibits the lowest supplier satisfaction indices for the period between 2002 and 2007.

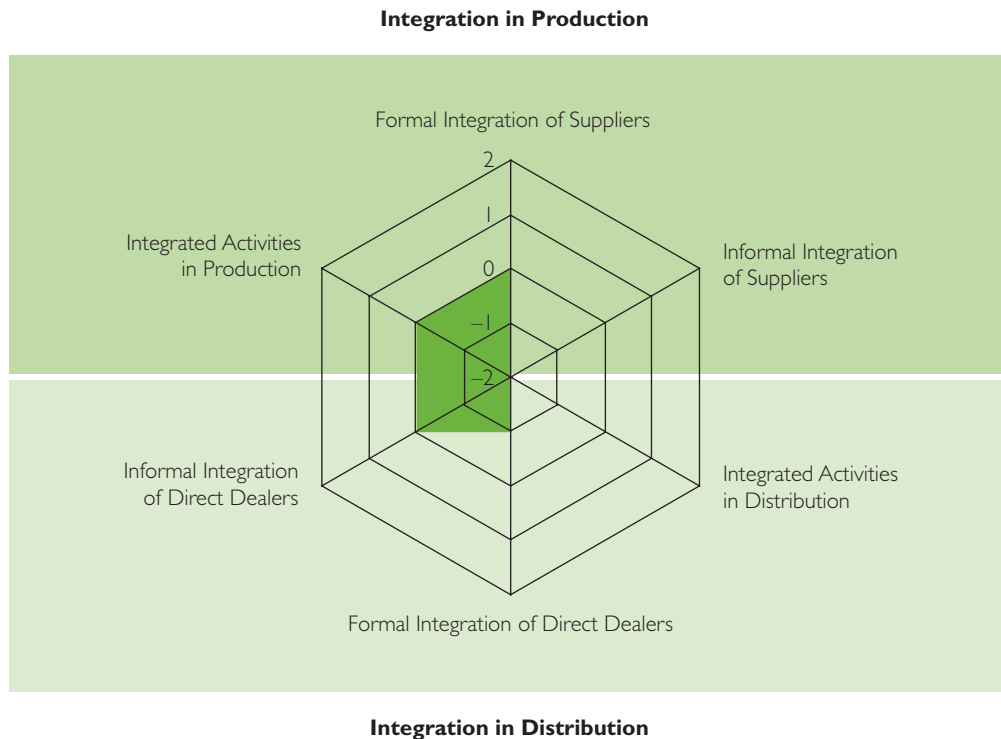
Disintegration in distribution has been progressing since 2000. In Europe, Opel does not have owned dealerships and therefore has no direct control over new car retailing and over the complementary services in distribution. Integration in financial services is low, too. In 2006, GM sold a 51 percent stake of the

GM Acceptance Corporation (GMAC). GMAC was the financial service entity within the GM organization. Formal integration of direct franchised dealers is below the industry average as well. Opel has a selective franchise system with relatively low contract requirements on franchised dealers. Opel dealers are not obliged to make high brand-specific investments. The contract complexity index is below the industry average and dealers are less financially captured in the Opel world. This freedom makes it easier to add additional franchises to one dealer location as the total investments are lower compared with other brands. Multi-brand dealerships are much more dominant in the Opel dealer network compared with the distribution networks of other brands. As a consequence, the dealer is less dependent on Opel and financial hostages are rather limited. Informal integration of dealers is on an average level within the analyzed European core markets. Dealer satisfaction studies indicate an average satisfaction of dealers with the relationship with Opel. Figure 3 illustrates the value creation architecture for Opel in Europe.

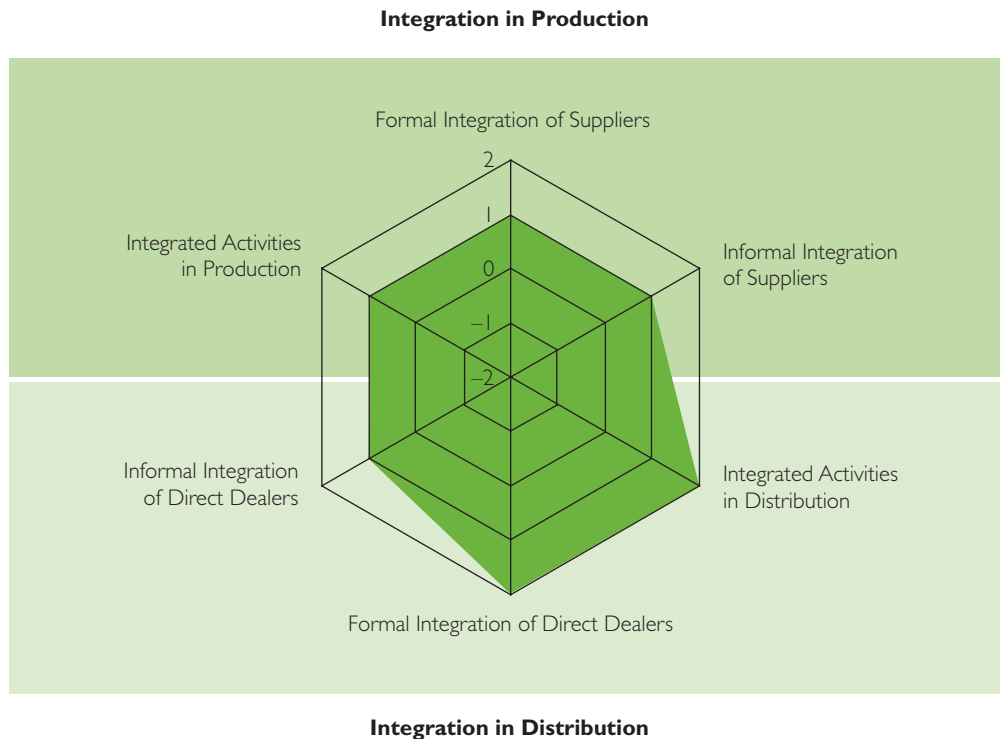
The Case of Mercedes Car Group

The value creation architecture of Mercedes Car Group (MCG) is characterized by much higher levels of integration in production and in distribution. In production, German manufacturers were traditionally more integrated than their U.S. and Japanese competitors. Most of this tradition is still reflected in the present architecture of MCG. However, Mercedes has implemented a model-based production strategy in the meantime. Production depth for high-end models such as E- and S-Class models is still significantly higher than the industry average. Components and modules that competitors normally outsource to external suppliers are still developed and produced in-house at Mercedes. For example, Mercedes defines one of its core competences as producing seats for high-end models. In comparison, manufacturing depth is much lower for Mercedes' lower-end models, such as A- or B-Class and Smart. The Smart plant in Hambach (France) still holds the record with regard to the lowest manufacturing depth worldwide. The A- and B-Class plant in Rastatt (Germany) is fairly new and is combined with an industrial park for suppliers. The Mercedes M- and R-Classes (SUVs) are exceptions to this rule. Both models are designed for the American market and produced in Tuscaloosa, Alabama. The production of these models is characterized by low production depth combined with high integration levels of suppliers. Mercedes' production strategy was traditionally characterized by exclusive and stable relationships with its suppliers. However, Mercedes has reduced tight and exclusive relationships with its suppliers in the course of rising cost pressure. Taking supplier satisfaction indices as indicators of informal integration of suppliers, these stable and long-term relationships are reflected in relatively high satisfaction scores. In summary, Mercedes' architecture to organize production is still highly integrated to a large extent, while less integrated architectural designs are implemented with new plants and models.

In distribution, MCG has the highest level of integration of all the competitors. The number of integrated dealerships is much larger than the industry average. For example, about 55 percent of all new cars are sold through

FIGURE 3. Opel's Architecture of Value Creation

dealerships owned by Mercedes. These dealerships not only sell new cars; they also control complementary products and services such as repair, maintenance, and financial services. Daimler Bank offers a wide spectrum of different customer services including extensive services in leasing and fleet management. Private as well as business customers are attracted by specialized financial products that have been created in-house. Another characteristic of MCG is the tight formal integration of dealers. Mercedes' European dealer network is based on agency contracts and on selective franchise contracts. Unlike its competitors, Mercedes uses agency contracts to formalize the relationships with its direct dealers. In addition, all new car sales are based exclusively on consignment agreements. Franchise dealers are selected according to high standards and strict qualitative requirements resulting in extensive financial hostages. The dealer network is characterized by exclusivity at the dealer level. Dealerships that sell Mercedes cars and cars from other than Mercedes Car Group brands are the exception in Europe. As a result, the mutual dependence between dealerships and manufacturer is comparatively high. Informal integration of direct dealers is also substantially higher than the industry average. Overall, relationships with dealers are stable and European dealers give high satisfaction scores when

FIGURE 4. Mercedes Car Group's Architecture of Value Creation

questioned about their business relationship with Mercedes. Figure 4 summarizes the value creation architecture of MCG.

The Case of Toyota Motors Europe

Toyota Motors Europe is the third case study chosen for this research on value creation architectures. Toyota produces five of its eight models in Europe. Basically, Toyota Europe employs similar production methods and organizes its value creation architecture like Toyota Japan. Toyota prefers a local production strategy and aims to be near to the markets. Toyota Europe has a horizontal production cooperation with Peugeot S.A. to bring a small model to the market (Toyota is responsible for the production in the Czech Republic). The Toyota production system is characterized by tight supplier relationships. Toyota started to outsource manufacturing much earlier than most of its competitors. Unlike its competitors, however, Toyota kept most of the R&D and production responsibilities in-house. Toyota controls the development and design of strategic components and modules. Innovative technologies and products are principally designed and produced in-house or in collaboration with tightly integrated and exclusive suppliers. As soon as larger responsibilities are shifted to a supplier, this supplier will be integrated into the production process at a very early stage.

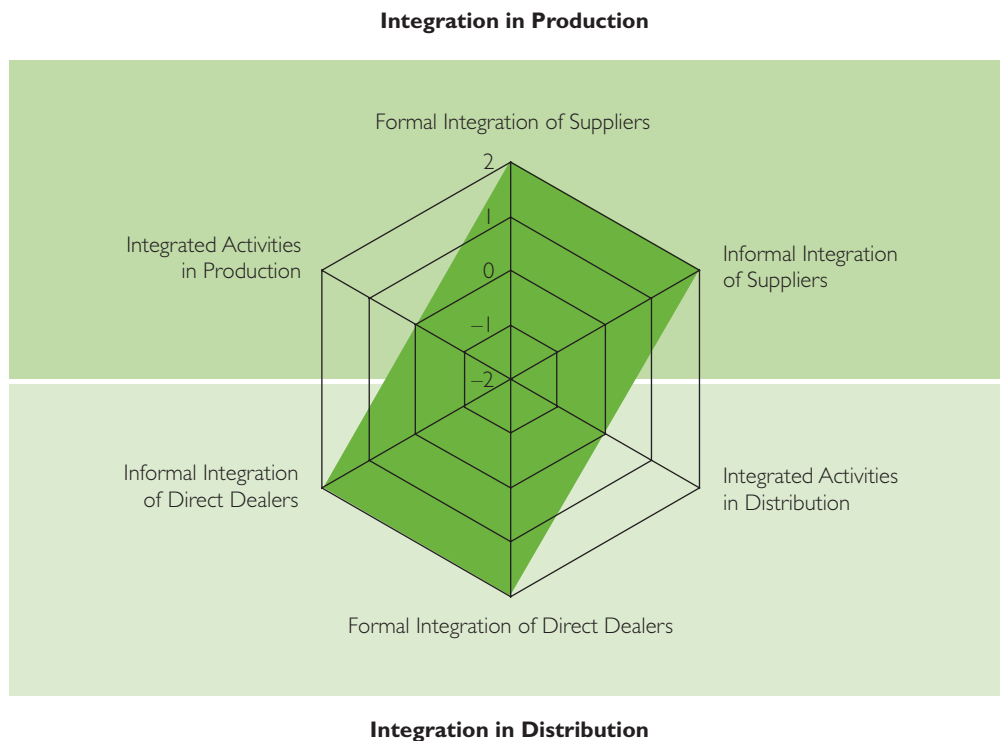
Production depth for the hybrid model Toyota Prius, for example, is twice the industry average. Contrary to the general trend in the car industry, Toyota's value creation architecture is still characterized by hierarchical supplier pyramids organized as so-called vertical keiretsu in which Toyota coordinates vertical supplier cascades. On average, Toyota's direct suppliers are much smaller than most European direct suppliers. In addition, Toyota's direct suppliers work exclusively for Toyota while many larger European suppliers normally work for various manufacturers. The exclusive and long-term relationships within the vertical keiretsu are supported by financial hostages and location- and brand-specific investments. More than 90 percent of all the suppliers are located within a radius of 100 km around the Toyota plant in order to facilitate just-in-sequence delivery. Toyota Europe has approximately 250 first-tier direct suppliers, significantly fewer than the industry average. For many years, the level of informal integration reflected in supplier satisfaction scores has also been the highest within the industry.

In distribution, the level of integrated activities is the industry average. The number of centrally owned dealerships is relatively low. Toyota has its own bank, which offers products and services primarily for private customers. This reflects Toyota's customer structure in Europe. Contrary to most of its European competitors, who sell an increasing share of cars to business customers, Toyota focuses on private customers. According to Toyota, these customers are loyal to Toyota's franchise network and there is no need to integrate independent after-sales actors. Formal integration of direct dealers, on the other hand, is relatively high. The franchised dealer network is based on a selective franchise system. Contract analysis reveals relatively high selection standards and requirements for franchised dealers. The resulting contract complexity index is above the industry average. Dealer integration is supported by extensive financial hostages. Toyota dealers usually have mono-franchised dealer sites and exclusively sell Toyota products at one location. Informal integration in distribution is also above the industry average, as indicated by high dealer satisfaction scores. Figure 5 illustrates the results for Toyota.

Matching Architectures of Value Creation with Performance Indicators

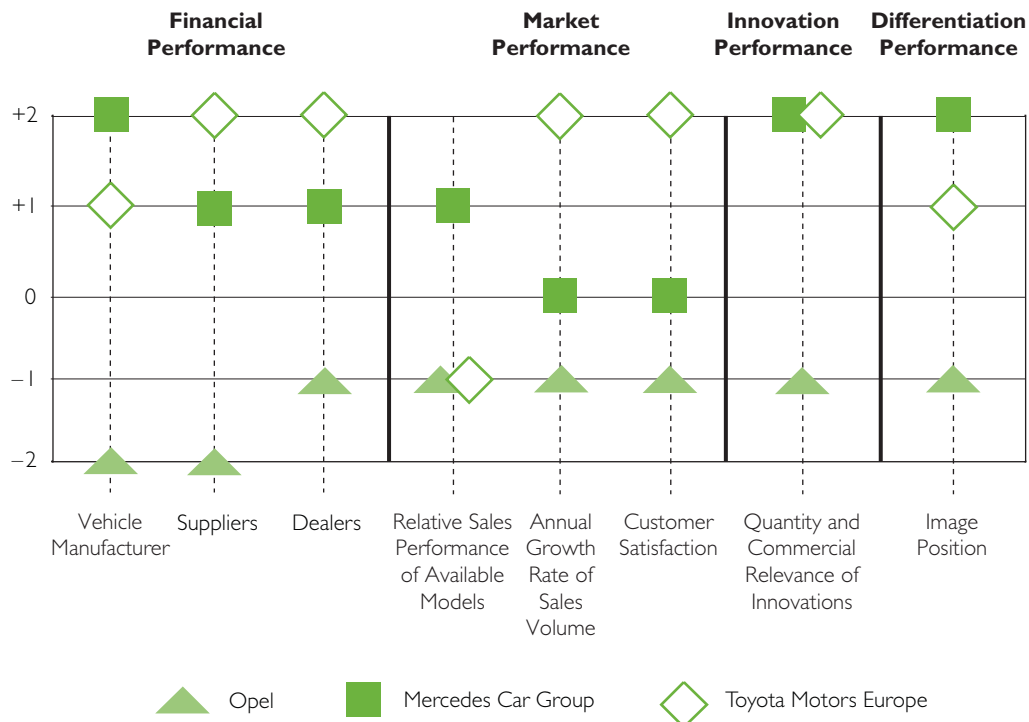
Toyota's quasi-integrated architecture outperforms Mercedes' integrated and Opel's disintegrated architectures despite the fact that domestic brands enjoy a strong initial advantage over foreign brands in the European market. Figure 6 compares the major performance indicators for the three architectures.

Overall, value creation in the Toyota architecture is higher than in other architectures. Toyota's external suppliers and dealers show a strong financial performance. This may be interpreted as a signal that Toyota has not only close and stable but also economically fair relationships with its suppliers and dealers. Intra-architectural competition is limited within the Toyota network, which seems to result in a fair balance of contributions to value creation and appropriation of the resulting share of total value creation for all participants.³⁶

FIGURE 5. Toyota Motors's European Architecture of Value Creation

Within the Mercedes architecture, on the other hand, the vehicle manufacturer appropriates most of the value created. From 2002 until 2007, Mercedes' return on sales was 5 percent above the industry average. Compared with Toyota, suppliers and dealers are less satisfied with their financial performance despite the fact that their performance is also above the industry average albeit at a lower degree. Suppliers and dealers are not exposed to intense intra-architectural competition but complain about the relationship between specific investments and financial return.

Opel's value creation architecture performed poorly. Most actors, including Opel itself, accrued losses during the time period of the analysis. Franchised dealers report negative return on investments and suppliers complain about increasing price pressure and demands for further costs reductions. In addition, they are forced to take on more responsibilities and R&D risks. As a result, suppliers and dealers are increasingly working with other vehicle manufacturers to reduce their dependency on Opel and to improve the efficiency of their facilities. Overall, intra-architectural competition is high at Opel. Compared with Mercedes and Toyota, prices within Opel's architecture are determined by market power, i.e., all actors within the architecture are exposed to intense intra-architectural competition in addition to inter-architectural competition. This

FIGURE 6. Performance Indicators for the European Market (2002-2007)

additional competition forces Opel's suppliers to improve their bargaining position through specific investments into vehicles and platforms of different vehicle manufacturers.³⁷ As a result, value appropriation is heavily impeded.

The Toyota and Mercedes architectures also outperform their competitors in terms of technological innovation. At Toyota, important innovations are protected through strong integration of suppliers while Mercedes keeps major innovation competences in-house. Opel, on the other hand, invests little in R&D. Instead, Opel uses complex components and modules from competing manufacturers or sources such components from large mega-suppliers who are working for several manufacturers. These suppliers do not exclusively allocate their resources to the Opel architecture.

Toyota also has the most satisfied customers in Europe. As a result, dealers benefit from high customer and brand loyalty: independent players in after-sales and finance play a relatively minor role in Toyota's architecture. The fact that Toyota's brand image is above average is mainly due to a good quality image while emotionally driven image scores are relatively low. At Mercedes, customer satisfaction recently suffered from reliability issues with new electronic features. Nevertheless, Mercedes maintained its position as one of the most desirable brands in Europe. These differentiation advantages can be appropriated through

higher retail margins, which are about 9 percent higher than those of other premium manufacturers. Opel's customer satisfaction index and brand image suffer from a lack of differentiation and innovation advantages. The resulting weak customer loyalty further increases price pressures of inter- and, in turn, intra-architectural competition.

In summary, there are some indications for strategic competitive advantages through quasi-integration of competent and resourceful value-adding partners. The purely integrated model, for example, has disadvantages with regard to motivation of the operative staff at the point of sale. In addition, the efficiency of vehicle manufacturer-owned dealerships is comparatively low. On the other hand, the disintegrated model may lead to an erosion of system control and thus may have a negative impact on the long-term competitiveness. However, the complexity of the industry does not suggest that there is a generally superior architecture of value creation. Further research has to identify in which contexts quasi-integration does outperform other types of value creation architectures.³⁸

Concluding Summary: Lessons from the European Automotive Industry

Our new approach to strategy and competitive advantage conceptualization highlights architectures of value creation around certain actors as the unit of analysis. Value creation is at the heart of firm activities—it is the aim of firms to create value for their customers and thereby generate returns for the firm owners.³⁹ Architectures of value creation describe the structure and relationships of all the value-adding activities that are carried out by various actors to bring a particular product or service to market. It is not limited to the value chain in terms of vertically linked actors, but includes all the contributions to value creation from horizontal (e.g., cooperating competitors) as well as lateral actors (e.g., related service providers such as banks). The concept takes two levels of competition into account: the competition between different value creation architectures (inter-architecture competition); and the competition between the actors in the same architecture (intra-architecture competition).

Different strategies to organize architectures of value creation are possible by putting different emphasis on the settings for the integration levers (e.g., contract conditions or degree of ownership at the architectural facilities). Different organizational settings can finally lead to a similar integration level within the overall architecture. Relationship attributes between the central coordinator and its suppliers and distributors, however, seem to be key influencing factors. It has become obvious that an analysis that goes beyond firm boundaries is necessary to understand competitive advantage realization in a world of organizational structures that transcend firm boundaries in different architectures.

The case study underlines a growing differentiation potential and performance output in the automobile industry with increasing control over important value-adding actors and value-adding units. Realizing this differentiation potential does not automatically require a high level of in-house production and

distribution. Manufacturers that retain a certain depth of value-adding activities in the area of production as well as in the area of distribution, by concentrating their core competences on strategically important areas, have significant competitive advantages compared with their rivals.

In production, for example, successful manufacturers concentrate their resources on brand-distinctive areas such as design, power trains, or safety features. However, coordination efforts will increase simultaneously and successful vehicle manufacturers have already built up resources in these areas. Suppliers are strictly integrated by different relationship settings (e.g., by new alliances, partnership models, and long-term contracts). The protection of technological innovations and brand-distinctive features is gaining importance with rising power for emerging mega-suppliers who work in different value creation architectures at the same time. Product differentiation will become much more difficult in the future. Manufacturers that follow an extensive outsourcing strategy without keeping control over suppliers will lose differentiation potential and will no longer be able to appropriate an adequate proportion of the values created.⁴⁰ They may face the same destiny as IBM in the PC industry.

In distribution, competitive manufacturers concentrate on distribution control and on valuable complementary services in finance and after-sales (service, repair, and parts). Product differentiation will no longer be a sufficient resource for long-term competitiveness. Distribution is becoming much more complex due to a series of developments and increasing competition, such as the rising number of players, new balance of power between the traditional franchised dealers and the vehicle manufacturers, innovative sales channels, and new information and communication technologies such as the Internet. Regarding distribution models, a main factor for success seems to be the motivation of the associated distribution partners, which will finally lead to higher value creation. However, the strongly hierarchical franchise model (with very strict franchise conditions and use of central manufacturer power) or the integrated model of owning the dealerships are only two of various alternatives to reach a high level of integration. The attraction of valuable and loyal distributors depends on the brand strength and on the value creation architecture (e.g., kind of participating actors, relationship settings, and potential architectural advantages). Other strategies to create architectural advantages currently concentrate on keeping control of the distribution activities by financial participation/ownership (e.g., Volkswagen's re-integration activities in distribution). The financial integration strategy is one alternative to keep control over the architecture but at the risk of economic inefficiencies. Integration by contract, by long-term partnership, and/or by providing an attractive architecture are other alternatives to realize architectural advantages. In distribution, participation in value-adding activities in the complementary finance or after-sales areas is important to improve competitiveness.

Notes

1. Recently, however, Dell shifted towards a stock-based supply system and lost some control in distribution and some of its differentiation potentials as a consequence. See S. Holzner, *How Dell Does It* (New York, NY: McGraw-Hill, 2006).
2. See for example S. Royer, *Strategic Management and Online-Selling: Creating Competitive Advantage with Intangible Web Goods* (London/New York, NY: Routledge, 2005).
3. For example, M.E. Porter, *Competitive Strategy* (Boston, MA: The Free Press, 1980).
4. For example, J.B. Barney, "Firm Resources and Sustained Competitive Advantage," *Journal of Management*, 17/1 (March 1991): 99-120.
5. For example, see K.M. Eisenhardt and J.A. Martin, "Dynamic Capabilities: What Are They?" *Strategic Management Journal*, 21/10-11 (October/November 2000): 1105-1121.
6. J.H. Dyer and H. Singh, "The Relational View: Cooperative Strategies and Sources of Inter-organizational Competitive Advantage," *Academy of Management Review*, 23/4 (October 1998): 660-679.
7. Ibid.
8. See, for example, E. Baraldi, "Strategy in Industrial Networks: Experiences from IKEA," *California Management Review*, 50/4 (Summer 2008): 99-126; D. Lavie, "The Competitive Advantage of Interconnected Firms: An Extension of the Resource-Based View," *Academy of Management Review*, 31/3 (July 2006): 638-658.
9. See, for example, H.W. Chesbrough and M.M. Appleyard, "Open Innovation and Strategy," *California Management Review*, 50/1 (Fall 2007): 57-76, at 62.
10. S. Duschek, "Inter-Firm Resources and Sustained Competitive Advantage," *Management Revue*, 15/1 (2004): 53-73, at 69.
11. For example, T.J. Sturgeon, "From Commodity Chains to Value Chains," in J. Bair, ed., *Frontiers of Commodity Chain Research* (Stanford, CA: Stanford University Press, 2009), pp. 110-135. Sturgeon sees it as a research deficit that industry neutral explanations are lacking with regard to understanding value-adding activities on a global basis.
12. See M.G. Jacobides, T. Knudsen, and M. Augier, "Benefiting from Innovation: Value Creation, Value Appropriation and the Role of Industry Structures," *Research Policy*, 35/8 (October 2006): 1200-1221, at 1201. For a description of the term "industry architecture" and its relation to competitive advantage, see also G.P. Pisano and D.J. Teece, "How to Capture Value from Innovation: Shaping Intellectual Property and Industry Architecture," *California Management Review*, 50/1 (Fall 2007): 278-296.
13. See M.A. Schilling and K. Steensma, "The Use of Modular Organizational Forms: An Industry-Level Analysis," *The Academy of Management Journal*, 44/6 (December 2001): 1149-1168.
14. See <<http://investors.americanapparel.net/>>, accessed November 3, 2008.
15. This does not imply that all value-adding activities are owned by one player. However, it does mean that one player, to a high extent, controls and coordinates all the value-adding activities around a certain product or service.
16. See, for example, H.M. Dietl and S. Royer, "Intra-System Competition and Innovation in the International Videogame Industry," *Innovation: Management, Policy & Practice*, 5/2-3 (2003): 158-169.
17. For the following, see Dyer and Singh, op. cit., and the literature cited there.
18. See H.M. Dietl, S. Royer, and U. Stratmann, "Wertschöpfungsorganisation und Differenzierungsdilemma in der Automobilindustrie," *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung* (forthcoming).
19. See, for example, M. Boos, *A Typology of Case Studies, Research on Cases and Theories*, Vol. 1 (München/Mering: Hampp, 1992).
20. Opel is a European brand of the General Motors (GM) group. Opel cars are sold under the "Vauxhall" brand in the United Kingdom. The brands Opel and Vauxhall are used as synonyms here as the products are the same and Vauxhall is integrated into the Opel organization.
21. This triangulating procedure is the basis for a holistic picture of chosen architectures in the automobile industry and the impact on competitive advantage by minimizing the personal perspective bias and enhancing the data validity (see R.K. Yin, "The Case Study Crisis: Some Answers," *Administrative Science Quarterly*, 26/1 (March 1981): 58-65). Internal validity was further ensured by the fact that the three researchers analyzed the data independently from each other and compared and discussed their results among each other as well as with other academics and practitioners.

22. Entities that refer economically and legally to the brand are seen as integrated. Supplier relationships between the brand and the mother company (such as Opel with GM entities) or between brands of the same company group (such as Opel and Saab under the roof of GM) as well as between brands from another company group (such as Opel and Fiat) have to be interpreted as external relationships. However, relationships with actors from the same company group are naturally tighter compared with relationships with actors completely outside. This has to be taken into account regarding the measurement and interpretation of the variables that describe the integration of external actors later on.
23. The measurement of distribution depth is difficult because there are no quantitative data about total distribution value. The availability of quantitative data is highly limited with respect to car service, parts distribution and financial services as a wide spectrum of different actors is involved in these activities. Valid data about the value output of all the different actors are not available in this area. Reliable quantitative data are only available for new car distribution.
24. Profitable after-sales services and parts sale are gaining strategic importance for the entire car industry. Competition is, however, increasing due to new manufacturer-independent players and a liberalized after-sales market (e.g., sale of original equipment by OES firms). Manufacturer-independent repair and service chains such as A.T.U. or Pit-Stop and independent franchise organizations such as Temot International or AutoDistribution are global players with extensive distribution networks and tight links to original parts suppliers. Some vehicle manufacturers try to integrate independent repairers by cooperative partnerships or separate multi-brand franchise organizations. Other vehicle manufacturers deny any integration of independent actors and concentrate on competition with them.
25. The International Car Distribution Programme (ICDP) in 2006 analyzed the service contracts of the main makes in terms of the specificity requirements on the franchisee. The research was conducted in the European core markets of France, Germany, Italy, and the United Kingdom. Around 100 items were analyzed to explore the complexity and the related costs to fulfill the brand-specific franchise requirements. The "franchise complexity index" is an indicator of the control of the vehicle manufacturer over the dealer network. ICDP used a three-point scale that was recalculated for our use. See J. Kiff, *Authorised Repairer Standards*, ICDP Research Report 06/06 (Solihull (UK): ICDP, 2006).
26. Car retailing was traditionally characterized by brand-exclusive dealerships. Vehicle manufacturers were the system leaders in this framework. Today, multi-franchising is gaining a lot of importance in the course of the liberalization of car retailing in Europe (see Block Exemption Regulation 1400/2002). A general consolidation process towards big dealer groups is pushing this trend too. Multi-franchising is furthermore a consequence of shrinking profitability and the loss of market share of established brands (e.g., Opel and Ford in Europe). Car dealers try to compensate for lower new car profits and rising costs by additional sales units with other brands.
27. See Dyer and Singh, op. cit. See also W.G. Ouchi, "A Conceptual Framework for the Design of Organizational Control Mechanisms," *Management Science*, 25/9 (September 1979): 833-848.
28. Sako distinguishes between three types of inter-organizational trust building, such as building contractual trust, competence trust and goodwill trust. See M. Sako, *Prices, Quality and Trust: Inter-Firm Relationships in Britain and Japan* (Cambridge: Cambridge University Press, 1992). Trust is not a control instrument but one outcome of the control techniques, see D.M. Rousseau, S.B. Sitkin, R.S. Burt, and C. Camerer, "Not So Different After All: A Cross-Discipline View of Trust," *Academy of Management Review*, 23/3 (July 1998): 393-404.
29. See Dyer and Singh, op. cit. See also Ouchi, op. cit.
30. See T.K. Das and B.S. Teng, "Trust, Control, and Risk in Strategic Alliances: An Integrated Framework," *Organization Studies*, 22/2 (2001): 251-283. See also R.F. Spekklé, "Explaining Management Control Structure Variety: A Transaction Cost Economics Perspective," *Accounting, Organizations & Society* 26/4-5 (May/July 2001): 419-441.
31. See, for example, H. Mallad, "Erfolgsfaktor Kommunikation im Supply Chain Management unter besonderer Berücksichtigung elektronischer Medien," in B. Ebel, M. Hofer, and J. Als-Sibai, eds., *Strategie und Marketing in der Automobilwirtschaft* (Berlin/Heidelberg: Springer, 2003), pp. 660-672. Diez gives evidence for the relationship between supplier satisfaction and supplier's commitment towards the vehicle manufacturer. See W. Diez, *Marken Monitor 2005, 2006, und 2007: Händlerzufriedenheits-Monitor 2005, 2006, und 2007* (Geislingen an der Steige: Research Reports Institut für Automobilwirtschaft (IFA), 2005, 2006 and 2007).

32. See Automotive News Europe and SupplierBusiness, *OEM-Supplier Relations Study 2006, 2007, and 2008* (Oberpfaffenhofen: Annual Supplier Relations Study, 2006, 2007, and 2008); L. Buzzavo, G. Maramieri, C. Pizzi, and G. Volpato, *DealerStat—Dealer Satisfaction Performance. Survey on Dealer Satisfaction in the Relationship with the Carmaker 2004, 2005, 2006, and 2007* (Venezia: Research Report of Quintegia and Università Ca' Foscari, 2004, 2005, 2006, and 2007); Conseil National des Professions de l'Automobile, *CAP Réseaux—La Cote d'Amour, Les Résultats de l'Enquête CAP Réseaux 2003 to 2007* (Paris: CNPA, 2003, 2004, 2005, 2006, and 2007); W. Diez, op. cit.; B. Ebel, H. Utikal, and M. Hofer, *From Cost-Plus Pricing to Value Management: How Automotive Suppliers Can Improve their Profitability* (Bonn: Reihe Automotive Management, Simon-Kucher und Partners, 2007); B. Ebel, H. Utikal, and M. Hofer, *Quo Vadis Automobilzulieferer?* (Bonn: Reihe Automotive Management, Simon-Kucher und Partners, 2005); L. Ratledge, *Dealer Attitude Survey 2001, 2002, 2005, and 2006* (Rugby: Survey Results, 2001, 2002, 2005, and 2006); W. Meinig, *Supplier Satisfaction Index 2001, 2003* (Bamberg: Forschungsbericht der Forschungsstelle Automobilwirtschaft, FAW, 2001 and 2003). Dealer satisfaction and manufacturer–dealer relationships are analyzed in these annual studies. Dealer satisfaction is measured on a six-point scale, which is recalculated for our use.
33. See A. Fein, *Die Preissenkungs-Forderungen der Automobilhersteller 2006, Marktanalysen und strategische Ansätze für Zulieferer*, Research Report (Stuttgart, 2006). See also W. Meinig, *SSI—Supplier Satisfaction Index, Der Zufriedenheitsindex der Automobil Zuliefererindustrie* (Forschungsstelle Automobilwirtschaft (FAW), Universität Bamberg, 1995, 1998, 2001, and 2003).
34. See W. Diez, *Automobilmarketing: erfolgreiche Strategien, praxisorientierte Konzepte, effektive Instrumente* (Landsberg/Lech: Verlag Moderne Industrie, 2001), pp. 577-578.
35. See Motor Presse Stuttgart, *Die besten Autos 2005* [Best Cars 2005] (Motor Presse: Stuttgart, 2006).
36. This balance seems to be reflected in the fact that none of Toyota's suppliers went bankrupt between 1999 and 2008, a period of many bankruptcies among the world's leading automotive suppliers. For more details see T.J. Sturgeon, J. Van Biesenbroeck, and G. Gereffi, "Value Chains, Networks and Clusters: Reframing the Global Automotive Industry," *Journal of Economic Geography*, 8/3 (2008): 297-321, at 309-310.
37. These investments will result in high costs of serving multiple producers. See Sturgeon et al., op. cit., p. 308.
38. The work of Whitley who analyzes the effect of institutional contexts on international coordination and competition may be an important basis for this line of research. See R. Whitley, "How and Why are International Firms Different? The Consequences of Cross-Border Managerial Coordination for Firm Characteristics and Behaviour," in G. Morgan, P.H. Kristensen, and N. Divides, eds., *The Multinational Firm* (Oxford: Oxford University Press, 2001), pp. 27-68; R. Whitley, *Business Systems and Organizational Capabilities: The Institutional Structuring of Competitive Competencies* (Oxford: Oxford University Press, 2007).
39. See M.E. Porter, "What is Strategy?" *Harvard Business Review*, 74/6 (November/December 1996): 61-78; D. Hambrick and J. Fredrickson, "Are You Sure You Have a Strategy?" *The Academy of Management Executive*, 15/4 (November 2001): 48-59.
40. Regarding the risks of outsourcing, see, for example, Y. Shi, "Today's Solution and Tomorrow's Problem: The Business Process Outsourcing Risk Management Puzzle," *California Management Review*, 49/3 (Spring 2007): 27-44; M.R. Weeks and D. Feeny, "Outsourcing: From Cost Management to Innovation and Business Value," *California Management Review*, 50/4 (2008): 127-146; S. Tadelis, "The Innovative Organization: Creating Value Through Outsourcing," *California Management Review*, 50/1 (Fall 2007): 261-277.

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