

Olaf Plötner, Johannes Habel, Bianca Schmitz

# THE BIGGER PICTURE

Managing different businesses  
within a single company

BTM Center  
Solid Growth Series  
2020



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## **The Bigger Picture**

### Managing different businesses within a single company

In the following booklet, we present the fundamentals of corporate strategy – the strategy that reaches across all business units. We take an in-depth look at the opportunities for creating synergies among business units and the resulting challenges. This involves taking a particularly close look at the synergy effects of cross-border cooperation and its application in all three counter strategies (see Booklets 2, 3, and 4). It also addresses the issues of intercultural cooperation as well as the leadership and organizational opportunities for overcoming them. Finally, we consider future developments in politics, economics, and technology, and the influence they have on corporate strategic decision-making.

## THE FUNDAMENTALS OF CORPORATE STRATEGY

In February 2009, turbulence in the financial markets had reached industrial companies. Revenues sank dramatically. Basler AG, a hidden champion from Ahrensburg, Germany, was also impacted. Dietmar Ley – to whom the company's founder, Norbert Basler, had handed over management of the company – initiated a series of austerity measures. Salaries were frozen. Top executives took a 30 percent reduction in salary. Travel expenses were cut back, and advertising activity was reduced, but the cost savings did not compensate for diminished revenues. It was foreseeable that the company's financial reserves would soon be depleted. Yet, despite this painful insight, Ley was convinced that a significant staff reduction was unavoidable for maintaining the company's independence and saving it from bankruptcy.

At the time, Basler was divided into two divisions: the Solutions and Components business units. The latter produced and marketed digital cameras for industrial applications. Manufacturing industries used these cameras for product testing. Physicians used them to diagnose skin diseases. They were also used in ATM machines for facial recognition. The Components business unit offered a broad product spectrum, ranging from simple devices for €250 to advanced cameras for €1,500. In the premium segment, Basler was the world market leader, although the lower- and mid-price market segments were significantly larger. Basler shared these segments with other equally large medium-sized companies, most of whom still used analog technology in their cameras (see Figure 5.1).

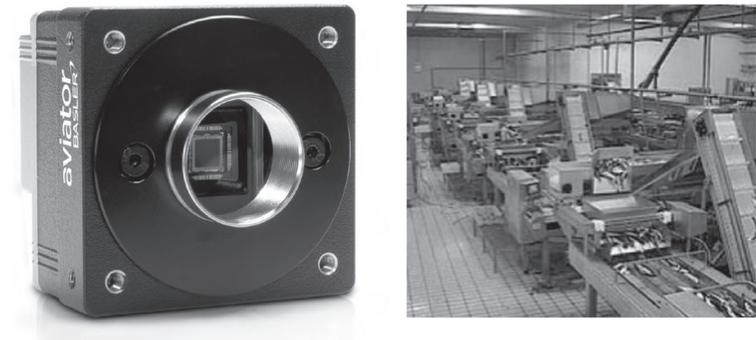


Figure 5.1: A Basler industrial camera (Components business division, photo left) and inspection system (Solutions business division, right) (source: Basler AG)

The Solutions business unit offered complete quality control solutions for industrial products. This is the business that had made Basler big; camera production had been added later. For customer-specific solutions, Basler cameras were implemented as components, which only represented a very small portion of the test system offerings. Basler purchased, configured, and installed all other components. This process was supervised by experts who were familiar with their customers' industries and related production processes. Among the customers that Basler focused on were optical media industries such as those that produced CDs and DVDs as well as suppliers of sealing inspection solutions and solar panel manufacturers. Basler was also the market leader worldwide for product quality-control solutions for optical media and sealing inspection solutions. Over the long term, however, these industries offered few growth opportunities. When it came to solar panels, Basler assumed that production volumes would increase, particularly because of high growth levels in China. Chinese competitors, however, had established themselves in their home market, where they were increasingly gaining market share.

The Solutions and Components business units had approximately the same number of employees and had achieved comparable earnings in recent years. In order to reduce the amount of personnel, Ley saw no other way than to substantially reduce the activities of one of the business units. He planned to take a portion of the cost savings, invest it in the other business unit, and ultimately lead a strengthened Basler out of the crisis. Yet, which business unit should Ley scale down, and which one should he build up?

Ley's challenge extends across business units. It goes well beyond what we have discussed in Booklets 1–4, in which only the strategy options for specific markets are examined. Many companies are active in more than one market and have several strategic business units. These business units address different target groups with different products. Each takes responsibility for its own profits and losses. When we use the term "corporate strategy," we are referring to the strategies for managing several cross-divisional business units.

At launch, most companies are only active in one business segment. If there is success with the first business segment, other areas are explored. Existing financial resources can then be used to expand the company's activities into other business areas. As a result, the company's initial strategic issues are always growth-oriented (i.e., "in which new lines of business would we like to grow?") and are not – as Basler did during the financial crisis – focused on withdrawing from particular business segments.

The entry into new business segments is called diversification. We distinguish between vertical, horizontal, and lateral diversification. Companies use vertical diversification to extend their portfolio offerings upstream and downstream along the value chain. This was the case with Basler when the company entered the camera components business in addition to its system solutions. With horizontal diversification, companies broaden their range with products along the very same value chain. This occurs when a bulldozer manufacturer adds a backhoe to its offerings. Finally, with lateral diversification, the business units do not have any relationship to one another. For example, India's family-run company Tata operates steel factories and hotels in addition to offering software and telecommunications services. It is also India's largest automobile manufacturer. Lateral diversification is often used by companies to improve their risk position, because if a company depends on the success of a single business segment, its very existence is threatened if that part of the market experiences a crisis. If the company is operating in several market areas, it can compensate for such challenges. This aspect is particularly relevant if we think about the solidity of a company over a long period.

Analysts and investors are now taking a more critical view of the argument for risk reduction in modern capital markets, in which huge investment funds have become the most influential shareholders. This is because mutual funds provide investors with a risk-optimized business portfolio as their core competency. They invest not only in different companies, but also in various sectors and regions. They expect companies to deliver high dividends and rising asset prices, not independent risk management through business diversification. We return later to explore the circumstances under which a fund might nonetheless invest in companies with diversified business portfolios.

Here we examine an industrial company's approach to dealing with the three central questions that executives must answer when designing their group strategy:

1. Which strategic business units should be part of the company? Should new ones be formed or purchased? Are there others that we should unload?
2. How should the company's resources be divided among the individual strategic business units? In which business units will we invest, and how much? Where will we cut back on funding or personnel?
3. To what extent should headquarters exert influence on the management decisions of strategic business units? Will they be granted broad autonomy? Or should we tell them which IT systems to use, which salary ranges are acceptable, and which travel policies apply?

With regard to points one and two, a matrix developed by the founder of the Boston Consulting Group (BCG), Bruce Henderson, has achieved wide recognition. It helped the BCG achieve its breakthrough into the international consulting market. This matrix provides an overview of a company's business divisions and simplifies the complexity of corporate strategic decisions (see Figure 5.2).

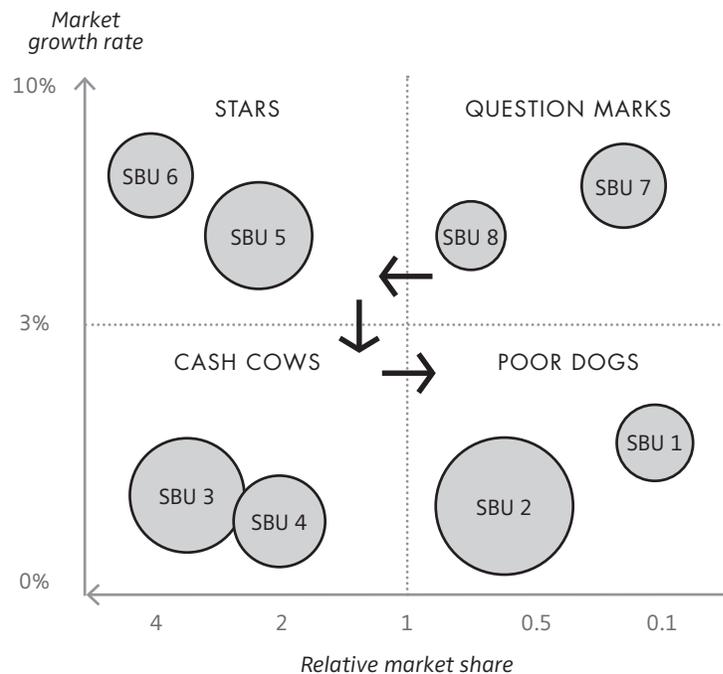


Figure 5.2: The BCG Matrix of a fictional company (SBU stands for strategic business unit)

The circles in Figure 5.2 represent business units, and their sizes correspond to the extent of the units' respective revenues. The horizontal axis shows a business unit's relative market share: A value of one means that the business unit generates as much revenue as that market's largest competitor. If that unit's market share is greater than one, then it is the market leader for that business segment. If the relative market share is less than one, then the largest competitor is generating higher revenues. The vertical axis indicates the average market growth rate. In the example above, then, the business

unit markets are growing. The positions in the lower part of the chart demonstrate below-average market growth.

In addition, the BCG Matrix provides business unit portfolio management recommendations. Accordingly, new units are only established in markets with above-average growth. They start out small, and in order for them to grow, the company must invest in them. Ideally, this should continue until it becomes the largest unit with the highest revenues in that respective market. Because all new business units do not achieve this level of market success, the circles in the upper-right quadrant of Figure 5.2 fall into the "question marks" quadrant. Units that attain market leadership are placed in the "stars" quadrant, which we see in the upper-left corner. Yet, no market's growth lasts forever, as any market is subject to cycles. At some point, growth rates will fall and the business unit will sink into the "cash cows" quadrant. Because of their leading market positions, cash cows still generate profits, which should be used to improve the question marks quadrant. The withdrawal of resources, however, reduces the cash cows' market share. They then become "poor dogs." Business managers have to find the right time to sell off poor dogs.

Basler used this matrix in 2009 as an analytical tool to evaluate its own situation. Using the BCG Matrix, managers not only conducted an exhaustive analysis of the Components and Solutions business units, they also broke down their analysis into its constituent customer segments. It turns out that managers did not anticipate any growth in the optical media and sealing inspection solutions market segments. They had been assigned to the cash cows quadrant, even though they were not generating profits. Thanks to the Chinese market, the solar panels segment had grown, but Basler assumed that Chinese solar panel manufacturers would increasingly start buying the very testing systems sold by Basler from Chinese suppliers. This meant that Basler would not participate in that market growth. As a result, Ley decided to make significant reductions in the Solutions unit. The After Sales Service unit would continue to exist, but Basler would not make further investments in new acquisitions and research. The Components unit benefited from the freed-up resources, particularly in the rapidly growing low-cost camera segment – a business that still occupied the question marks quadrant in 2009. Thus, Basler built up production capacity there and secured a quantity-based cost advantage vis-à-vis other medium-sized competitors. Among other things, Basler used its premium sector digital know-how, which analog-based competitors had yet to establish. Thanks to this cost advantage, Basler achieved market leadership in the lower price segment. Based on this 2009 strategic decision, Basler was able to triple its revenues by 2018 and quadruple its profitability.

The recommendations for action offered by the BCG Matrix are nonetheless controversial. Critics question the presumption that a business segment should always pursue market leadership. The PIMS study mentioned in Booklet 1 did, indeed, demonstrate that a large market share promises high levels of profitability. Yet, the same study shows that this equally applies to business units with very small market share. Moreover, the BCG Matrix maintains that only companies with market-leading business units can have stars and cash cows. If a company does not have these types of business units, then it makes no sense for companies to work with the BCG Matrix, even if they are highly profitable.

In addition, the BCG Matrix does not specify how markets should be defined and how business units should be separated from one another. As a general rule, each division should have its own product–market combination and its own competitors. But what does this mean? If, for example, a vacuum pump manufacturer sold premium and no-frills products in China and Western Europe – and if that company’s competitors had a regional or quality-related focus – how many business segments should the manufacturer create? Should it have one unit for vacuum pumps, two for advanced premium and no-frills products, or four for advanced premium and no-frills products in Western Europe and China? There are no fixed rules here, but answering this question is crucial for assessing market share. That is why decisions must be made here on a case-by-case basis, as in the Basler example. As it stands, the company’s analysis did not examine strategic business units as a whole. Instead, it used sub-segments.

Regardless of how managers decide to differentiate business segments, corporate strategy logic always requires them to follow one rule: The whole must be greater than the sum of its parts. This means that cross-segment activity costs must always be outweighed by the benefits generated. The value of an individual unit must be lower than its value within the group. Figure 5.3 illustrates this connection.

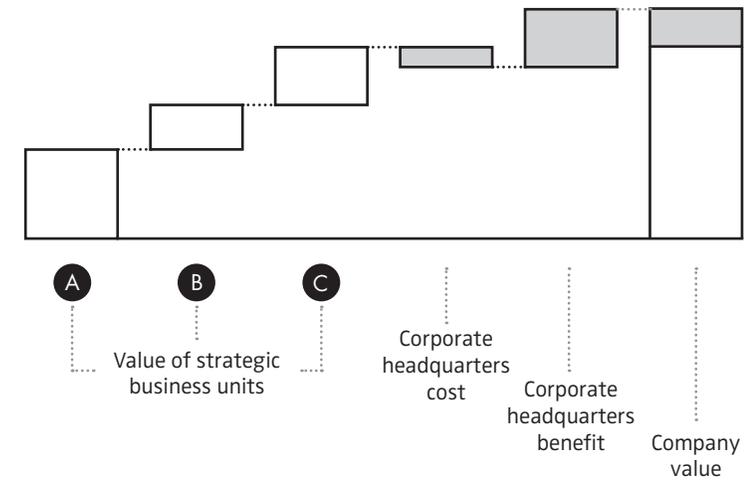


Figure 5.3: Financial logic for a corporate group’s strategic advantage, based on Hungenberg (2014)<sup>1</sup>

The advantage that a corporate headquarters creates is known as the “parenting advantage.” From a strategic business unit’s perspective, this advantage involves using synergies created by linkage influence. This can be the result of growing cost savings (1+1 = 1.8, so to speak), as well as additional revenues (1+1 = 2.2, so to speak). The latter emerge when business unit A’s customers, based on their good experience, show demand for business unit B’s products and become B’s new customers. Cost synergies exist when all business units procure the materials they need through a central purchasing department. This leads to discounts, which suppliers would not give to a single business unit. Additional cost savings can also be realized through the shared use of IT systems, M&A experts, and external finance instruments.

Synergies are among the reasons why investment funds, as mentioned above, buy shares of companies that are active in diverse business sectors. Of course, each business sector should achieve success on its own and generate economic value, but a company can also create added value through synergies. In doing so, each business unit should contribute to the synergies of a corporation. According to financial market logic, the company should be able to create its added value better than other owners. In this context, we refer to the “best owner.” This means that a strategic business unit should belong to the owner who creates the maximum amount of economic value. Against this backdrop, Siemens AG is examining its strategic business unit portfolio based on the following questions:

- Growth segment (*Does this business unit address a growth segment?*)
- Potential profit pool (*What is its profit potential?*)
- Competitive advantages (*What are its competitive advantages? Why Siemens?*)
- Synergetic value (*What should be the synergy contribution level?*)
- Paradigm shifts in technology and markets? (*Should we expect paradigm shifts related to technology or the market that justify the existence of this business unit?*)<sup>2</sup>

Siemens is a very good example of how large corporations have been scaling back, rather than building up, centralized structures in recent years. From a financial perspective, Siemens suffered under a so-called conglomeration discount for years. This meant that the stock market valued the company for less than the sum of its individual business units. As a result, several units were spun off in recent years. For example, Siemens sold a portion of its household appliance and lighting businesses. The company spun off its wind turbine business into the publicly traded company Siemens Gamesa Renewable Energy and brought Siemens Energy to the stock market in 2020. It transferred its medical business into a stand-alone company. Siemens also aimed to merge its rail business into a joint venture with the French company Alstom, but European antitrust authorities stopped this plan in 2019. Siemens' competitor GE has streamlined itself by selling off the divisions Consumer & Industrial and GE Capital. Several automotive groups are following the trend toward decentralization. Daimler AG and Volkswagen AG, for example, are spinning off their truck businesses to create separate publicly traded companies.

Many medium-sized companies try to avoid corporate structures in the first place, despite growth. We now refer back to the EOS example from Booklet 2. After launching in 1989, the company focused on what the emerging technologies were at the time for additive manufacturing (AM), including 3-D printing. It used them to cover its entire value chain. A billion-dollar market later emerged from this niche, with broad application across numerous industries. Instead of pursuing a corporate structure format, founder Hans Langer, together with other industrial partners, launched numerous new companies – each of which focused on profitable AM market niches. These companies were independent and not forced to cooperate with Langer. Under this scenario, Scanlab created new global market leaders, including today's leading manufacturer of Galvanometer scanners.

Thus, there are reasons for not combining multiple business units under one corporate roof. A corporate headquarters' influence on strategic management decisions plays a critical role here. It involves a higher level of authority in the decision-making process, which makes it more time-consuming. At the same time, it does not foster manager motivation within the business unit. The more that people interfere at the top, the more time that is lost and the greater the danger of bringing the business unit's entrepreneurial spirit to a grinding halt. A company or division owner must weigh the advantages and disadvantages to find the optimal business management balance. Approaches range from financial investors, who merely give direction regarding financial targets and reporting systems, to corporations, which want authority over operational decisions – such as which class of airline service business unit managers are allowed to book.

We now take a look at the topic of synergy generation and the challenges in implementing the three counter strategies – discussed in the previous booklets – simultaneously across a globally distributed value chain. Whether or not a company has formally created the relevant strategic business units or national subsidiaries is not important. We are interested in how synergies can emerge from country- and strategy-specific differences.

## THE SYNERGY POTENTIAL OF GLOBAL COUNTER STRATEGIES

In 2012, the Chinese company Weichai, the world's largest manufacturer of no-frills engines for trucks and the 11th largest truck producer, acquired a 25 percent minority stake in Kion AG, a German manufacturer of premium-segment forklift trucks. Weichai also acquired a majority stake in Kion's high-pressure hydraulic systems.

Weichai was the most profitable subsidiary of the company Shandong Heavy Industry (SHIG). The company's other divisions produced machinery and vehicles for the mining, agriculture, and construction industries. With the Shantui brand, the company was the world's largest manufacturer of bulldozers (see Figure 5.4), closely followed by the American company Caterpillar. However, SHIG sold its no-frills products mainly in its home market. The company's few exports were still limited to China's neighboring countries, but SHIG wanted to change this over the medium term.



Figure 5.4: A Kion forklift (left); a Shantui bulldozer (right)

Weichai and the other SHIG companies produced most of their product components in-house, including axles, pumps, and gearboxes. High-pressure hydraulic systems were an exception. These expensive components were purchased from the Japanese company Kawasaki and other Western suppliers.

In 2011, Germany-based Kion AG was the world's second-largest forklift manufacturer after Toyota. It operated in more than 100 countries. The Kion premium segment brands Linde and Still had leading positions in many countries, yet the company earned 80 percent of its sales revenue in Europe. In China, the company acquired the no-frills company Baoli in 2010, but it had a relatively weak presence in this region. Kion assumed, however, that the demand for forklift trucks would increase by 25 to 35 percent in China over the next five years. Among the many parts that Kion produced

in-house were high-pressure hydraulic systems. Volkswagen AG supplied Kion with around 30,000 custom-made engines per year for forklifts. These engines were not powered by electric motors, but rather by internal combustion engines.

What would be the benefits of a collaboration between Kion and Weichai or SHIG?

- Weichai could help Kion gain a better foothold in China. Sales and service centers for trucks could be expanded to offer forklift trucks so that Kion would not have to build these centers on its own.
- Kion, in turn, could help Weichai build an international sales and service system. Emerging economies such as Brazil would be strong candidates. (Because of the emissions regulations in Western Europe and the United States, no-frills trucks were not yet being sold in these countries.)
- In addition, Kion would be able to help move Weichai's planned globalization forward. Kion could share its experiences with employee development and picking the right tax advisers in other countries.
- Kion could supply Weichai and other parts of the SHIG group with high-pressure hydraulic systems. The group, in turn, would retain the profits of these high-priced products. The demand for Shantui bulldozers alone would be enough to boost production volumes, which would allow Kion to achieve cost-cutting economies of scale in production.
- By combining the technology skills of Kion development engineers and the no-frills experience of the SHIG group, a no-frills, high-pressure hydraulic system, which was not yet available on the world market, could be developed.

Since the early 2010s, Chinese companies have increasingly acquired equity stakes in German industrial companies or have purchased them outright. This was the case with Weichai, which increased its stake in Kion from 25 percent to 45 percent in 2018. In terms of the synergy potential, most of these Chinese companies follow a similar logic: The German companies offer their globalization and technology expertise, as well as their premium brand reputations, to the Chinese groups. This, in turn, helps (former) German companies gain access to China's large revenue potential and to improve their financial positions. The last argument, by the way, was also relevant to Kion. The company had previously belonged to US financial investors KKR and Goldman Sachs. During the years that they owned Kion, they managed the company with high levels of debt.

Looking more generally at the cost synergy potential that results from cross-border cooperation, most companies focus on economies of scale. Suppliers can bundle orders into larger quantities for larger discounts. A company can also use its know-how more efficiently to realize cost advantages. This is the case when the customer behavior changes in country A are relevant in country B, or when the business expansion knowledge gained in country A can be used in country B. One example is Facebook. Its initial experiences in the United States benefited the company as it built its business in Europe. Another example is the machine maintenance contracts in the industrial sector. In Western countries, this type of contract has been established for years. Demand for them in emerging markets has yet to materialize.

In addition to cost advantages, cross-border cooperation can generate potential revenue synergies. They develop among customers, who are active in country A and who want to collaborate with the same suppliers. For this reason, several medium-sized automotive manufacturers who supply major car companies have established subsidiaries abroad. This allows them to internationalize their sales while they develop their local customer base.

We have now examined the synergy potentials of cross-border cooperation. Next, we turn to the potential benefits of simultaneously pursuing the three counter strategies we discussed in the previous booklets. On the one hand, we assume that the three strategies demonstrate key differences within their product–market combinations. On the other hand, they share overlapping touch points. One example is Kion. Since Weichai became involved with the company, it has been able to push ahead with its no-frills forklift offerings. At the same time, it has entered the complex service solutions business. By purchasing Egemin in 2013 and Dematic in 2016, for example, Kion acquired two companies that offer software and consulting for intralogistics solutions. This, in turn, helped Kion optimize its warehouse processes. Here, then, we find overlaps between both the solutions-focused and the classic forklift businesses. In addition, the products share interdependencies despite their different technologies. Companies that implement intralogistics concepts often need forklifts to do so. The use of forklift trucks, in turn, requires many companies to develop a software-based operational concept.

Similar developments can be found across other companies' product and service portfolios. In addition to its premium products, Trumpf manufactures no-frills laser machines under the brand JFY. At the same time, it delivers consulting and software-based solutions to optimize its customers' manufacturing processes under the brand TruConnect. Claas, Europe's largest supplier of farm equipment, sells in both the high-price and low-price agricultural machine segments. Furthermore, the company operates

365FarmNet, as discussed in Booklet 4. This digital platform assists farmers in optimizing their resource efficiency while reducing back-office management tasks. Siemens Building Technology goes one step further by using its complex service solutions to handle office building management functions. For Swiss banking company Credit Suisse, this involves more than 1,000 real estate properties. At the same time, Siemens Building Technology continues to expand its range of premium and no-frills products.

None of these companies see themselves as financial investors that run independent business units. Rather, they are groups that want to create cross-divisional synergies. So how can we pinpoint potential synergies when business units pursue different counter strategies?

If a company has already successfully marketed advanced premium products but would like to offer no-frills products, teams can rely on existing technical expertise for premium products. No-frills products provide even greater benefits if customers already know and appreciate the company's premium brand. This was the case with the Siemens no-frills fire protection systems, which were brought onto the market as Siemens Cerberus ECO, presented in Booklet 3. No-frills products can generate additional revenue synergies when customer contacts who have expressed an interest in significantly less expensive products can be leveraged. This is because these customers manufacture no-frills products in addition to advanced premium products.

Of course, the revenue synergies can go in the other direction. Even advanced premium products can receive synergy benefits through no-frills products. These advantages are particularly evident for customers in emerging and developing countries who, over time, will become interested in high-quality products beyond no-frills products. The transfer of technical know-how from the no-frills sector to the premium segment is also relevant. One example is GE's portable electrocardiographs. They were initially designed for emerging and developing countries. Over time, GE discovered that there was a need for portable electrocardiographs in industrial countries, too. Engineers used the no-frills product concept to develop corresponding premium products.

There are even mutual synergy benefits between advanced premium products and complex service solutions. When traditional industrial companies enter the complex services business, the new business sector benefits from the good reputations of established products. The same logic applies if a different brand name is used for both sets of offerings. Although Claas markets its data-driven platform under the 365FarmNet brand, most farmers know that Claas is behind this offering. As a result, the company is able to transfer the high-quality image of its agriculture machinery to

its new service offerings. This image transfer is important, since – as presented in Booklet 4 – it plays an excellent role in mitigating the perceived risk in purchase decisions for complex service solutions.

The information gleaned from customers of complex service solutions can represent, in turn, valuable synergy effects for the advanced premium products business segment. This is how Claas, for instance, received valuable customer insights from 365FarmNet. The information gained from farmers' decision-making and usage patterns allowed Claas to provide its traditional equipment developers with product improvement ideas. In addition, insights can be derived from the customer information provided by complex service solutions. This information can reveal customer demand for new advanced premium products. Furthermore, to identifying synergy benefits, industrial company managers should ask themselves what would happen if they did not pursue both policy options. For example, if the data-based platform of a Claas competitor were to succeed in the market and if that competitor were to interfere with the interfaces between its platform and Claas' machines, Claas' traditional business could be threatened.

Until now, industrial companies offer few examples of synergy effects between complex service solutions and no-frills products. In principle, we might expect benefits similar to those mentioned above by combining complex service solutions and advanced premium products. Information that comes from complex service solutions, for example, can also be used to develop no-frills products. Similarly, complex service solutions can be offered to no-frills product customers. It would be interesting to take the simplification idea of no-frills products into the design of complex service solutions. This would reduce them to the essentials and convert information complexity into simple rules. Opportunities like these are currently being tested under the term "simplicity."

Once managers fully envision the potential synergies that come from cross-border cooperation and the simultaneous pursuit of all three counter strategies, we begin to understand why industrial companies want to fully exploit this opportunity. The potential benefits, however, obscure the fact that transnational management and the simultaneous implementation of counter strategies is difficult. The three central questions, then, that have to be answered are:

- How should we deal with cultural differences?
- How should the group structure itself organizationally?
- Which external factors should be considered?

## **THE GREATEST CHALLENGE IN SYNERGY IMPLEMENTATION**

In the early 1990s, IBM ran into financial difficulties. In the past, the company had achieved success, particularly because of its high-quality IT hardware, such as PCs, servers, mainframes, and associated software products. However, competitors caught up with IBM. They developed a quality advantage in less sophisticated product segments. At the same time, they had a cost advantage over IBM. Lou Gerstner, the CEO who joined IBM in 1993, was forced to strategically realign the company. He streamlined the traditional product portfolio and sold the PC unit to Lenovo in 2005. He then expanded IBM Global Business Services, which developed and implemented comprehensive IT solutions. In doing so, Gerstner had complemented IBM's premium products with complex service solutions.

For IBM customers, solution purchases had strategic importance. Top managers were usually in charge of the purchase decision. To serve this target group, IBM wanted to build a strategy consulting team that would compete with companies such as McKinsey and the Boston Consulting Group. The new group's strategic consulting expertise, combined with IBM employees' traditional IT expertise, promised to deliver sustainable competitive advantages.

In 1993, IBM began building the legally independent business unit IBM Consulting Group in Europe. To fill the new organization, IBM recruited a number of experienced managers away from other large consulting firms. They received salaries and bonuses similar to those they had received at their former consulting firms. As a result, their incomes were well above those of their colleagues in other IBM divisions.

Sustained success remained elusive for the IBM Consulting Group. It did not realize the expected collaborative synergies from consulting and IT specialists. By 1996, the IBM Consulting Group's independence was dissolved, and the group's resources were further reduced. According to former CEO of Europe Erich Clementi, this was largely because of the differences between the IT and consulting business cultures. Even later, he was still convinced that collaboration between both groups made sense from a strategic perspective. IBM had nonetheless not been able to bridge the cultural differences.<sup>3</sup>

By the term "culture," we refer to a system of rules and habits that influence human coexistence and behavior. These rules are based on values. They guide people from the same culture to approve certain behaviors and reject others. When we talk about different cultures in everyday life, we often refer to regional differences. For example, we might compare and contrast Chinese and American cultures. Although within this framework, we want to examine the far-reaching cultural differences of people within

a business context. This is how specific value systems have developed within certain industries. Likewise, individual companies can exhibit unique cultural characteristics. Individual value systems can even exist within certain groups in a company. Keaveney observed differences among employees in the development and sales departments of industrial companies. Within these very same groups, he also observed similar sources of misunderstandings and collaboration problems.<sup>4</sup> Our primary interest, however, is in cultural differences among employee groups whose work involves different counter strategies. Although there are no comprehensive empirical studies, the long-standing experience of the authors in cooperating with industrial companies supports the following statements:

- Business segments for advanced premium products represent the core values of quality and reliability. Product promises must be kept with customers as well as colleagues. Perfection is worth more than speed. Tradition is valued, and employee technical expertise is particularly well-regarded. As a result, R&D departments are important.
- By contrast, the business units for no-frills products are infused with a focus on costs. Smooth processes play a vital role. The functional areas of purchasing and manufacturing have a high level of influence. Business employees who exercise control functions receive a high level of power and respect.
- The primary focus of complex service solutions is on the customer. Employees who work closely with customers and are successful in sales enjoy high status. Managers approach innovation with an open mind. Emphasis is placed on speed and flexibility in dealing with customers, as well as in managing internal processes.

Figure 5.5 illustrates the different value priorities of the three counter strategies.

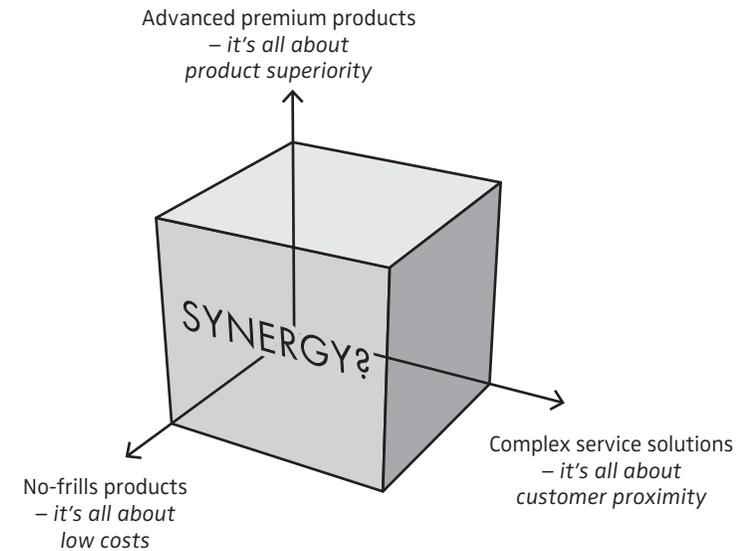
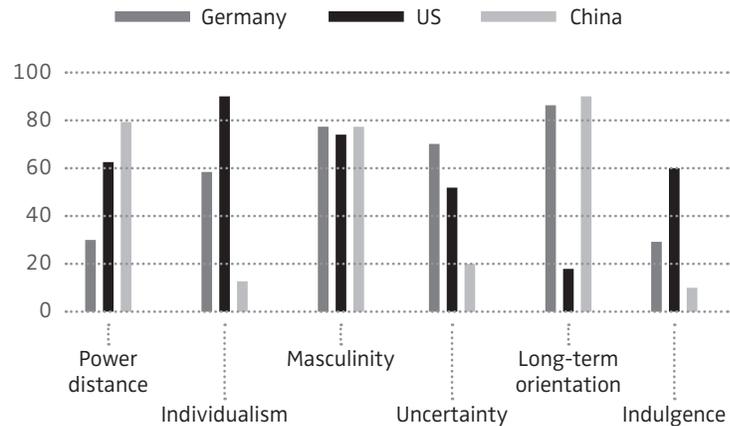


Figure 5.5: The different value priorities of counter strategies

Cultural differences are reinforced when a global company's employees come from different regional cultures. Hofstede's widely accepted conceptual framework illustrates this phenomenon.<sup>5</sup> Over the course of his work from 1967 to 2010 – most of which is based on research at IBM – Hofstede defined six categories for identifying the major regional characteristics. Figure 5.6 shows these categories relative to China, the United States, and Germany.



**Power distance:**

Degree to which a society accepts that power is distributed unequally

**Individualism:**

Degree of a society's integration of each individual within groups

**Masculinity:**

Degree to which a society values assertiveness and material rewards for success

**Uncertainty avoidance:**

Degree of a society embracing unexpected or unknown events

**Long-term orientation:**

Degree to which a society fosters virtues oriented toward future rewards

**Indulgence:**

Degree to which a society values freedom to fulfill its human desires

Figure 5.6: Cultural differences according to Hofstede<sup>6</sup>

In practice, Hofstede's systematic approach was well-received, but he encountered opposition within the academic community, as he did not use representative samples. Meanwhile, other approaches were developed to address regional cultural differences.<sup>7</sup> Of particular interest are the studies of Brett, Behfar, and Kern, which shed light on cooperation within multicultural teams in global companies.<sup>8</sup> The authors have identified the following factors that create four major obstacles to multicultural collaboration:

- Language difficulties
- Different ways of dealing with hierarchies
- Different speeds in decision-making
- Different forms of direct and indirect communication (i.e., the extent to which opinions are expressed)

**HOW SHOULD COMPANIES HANDLE CULTURAL DIFFERENCES?**

Brett, Behfar, and Kern offer suggestions on how to deal with these differences. First, managers should make differences transparent so that all stakeholders are aware of them and accept them as legitimate forms of diversity. Second, teams and tasks should be structured to avoid interpersonal conflicts as much as possible. This includes building sub-teams that harmonize well with each other, and whose work can later be brought together by using mediators or "network brokers."<sup>9</sup> Third, in the case of cultural conflicts, top management interventions are recommended that provide clear guidance based on the values that apply within the organization. As a fourth and last measure, the authors recommend an exit. This means that employees who cope poorly in a multicultural environment over the long term should leave the relevant team.

To avoid an exit scenario, managers should take care in choosing the appropriate employees before forming multicultural teams. Managers can use the core evaluation criterion "cultural intelligence" (CQ) as a basis for identifying appropriate employees. This concept applies the earlier insights of Earley, Ang, and Tan.<sup>10</sup> According to these researchers, CQ reflects a person's ability to recognize the cultural characteristics of other people, and to interpret and adapt their own behavior accordingly. To illustrate, Earley and Mosakowski reported on how an American manager perceived the way that ideas were presented in an international team. Two German engineers criticized ideas clearly. American managers concluded from this that Germans are abrasive and rude. With the necessary degree of CQ, according to the authors, the American colleague would have recognized that Germans draw a distinction between expressing an opinion about an idea and about the people presenting it. They would have understood that the German colleagues did not want to hurt anyone's feelings. Moreover, a manager with a high CQ would have been able to estimate which portion of this behavior could be attributed to German culture, and which portion to engineering-specific culture.<sup>11</sup>

Interestingly, CQ seems to be less pronounced among successful executives. They build their careers by first proving themselves within a less diverse cultural environment. This is where they gain their initial leadership experience. The successes they build here are often the foundation for receiving higher leadership positions with functional and transnational responsibilities. It is here that CQ deficits become apparent. Earley and Mosakowski discovered that the very executives who thrived in cultures with little diversity had enormous difficulties in leading intercultural teams. CQ is not innate, but it can be learned. Earley and Mosakowski have developed a method for measuring CQ as well as training methods for teaching them.

This approach is particularly relevant, as it is not just limited to regional cultural differences. It can also be applied to cultural differences across industries, companies,

and business strategies, although the root causes of existing cultural differences among employee groups cannot be readily determined. A CEO whose company was part of a German-Chinese joint venture in the truck industry summed up for the authors of this booklet his bewilderment over the organization's inability to collaborate: "I am well aware that the groups do not get along. Whether this is because of the German-Chinese cultural differences, the respective corporate cultures, the different business strategies, or simply the two bosses' personal idiosyncrasies, I don't know yet."

As mentioned above, supervisors should intervene when teams or employees are involved in an ongoing multicultural conflict. This is a sensitive matter if the conflict is based on underlying differences in ethical views – that is, when the decision has to be decided on moral grounds on the basis of right and wrong. Ethical differences happen less because of the pursuit of different business strategies, but rather when a company operates in several regions of the world. Imagine a Canadian manager who comes from a culture that considers customer gifts to be a form of attempted bribery. Imagine now that this very same manager leads a salesforce in a Middle Eastern country and forbids his employees to give customers gifts. The local employees will disagree with that direction, not only because they fear disadvantages in winning sales contracts, but also because they feel that the direction discriminates against their culture. For them, gifts are an expression of politeness. To appear empty-handed is an affront. Alternatively, how should the sales director deal with this situation? How does his group supervisor (i.e., the member of the executive board who is responsible for sales) decide this question?

The problem can be assessed from two different dimensions that represent the polar attributes of a particular scope of action. To begin with, managers can pursue a policy of cultural relativism, in which the ethical values of other cultures are, in principle, accepted equally. Accordingly, a global corporation would follow the respective ethical norms of the culture in which it operates. The Canadian manager would have to respect the Arab gift-giving culture, and the ban on gifts would be lifted accordingly.

The second option would be to follow the dominant ethical code of a specific culture, usually that of the company's home country. For a Canadian company, all actions that are considered unethical in Canada would also be considered unethical in the foreign branch offices. The board would decide in favor of the new sales director and follow their lead. The literature refers to the second approach as ethical absolutism, sometimes referred to as ethical imperialism, because the home culture's ethics are viewed as superior and forced upon others.

In practice, companies should move flexibly between these two polar extremes. This is the approach that was developed by Donaldson<sup>12</sup> in the 1990s and based on three basic rules:

- Core values are defined as minimum standards that are binding for all regions of a company.
- Traditions are respected.
- Ethical decisions are made depending on the context.

Core values should be linked to ethical guidelines that already apply in most cultures, even if a violation is dealt with differently. There is a broad global consensus, for example, that employers must protect the health of employees and not allow them to come into contact with toxic substances.

North American companies, in particular, often document their ethical rules in a code of conduct that forms part of a compliance management system. Donaldson found that although this set of rules is repeatedly made known to employees, they are rarely familiar with it. In addition, policy guidelines in North American and European companies tend to emphasize the values of their home country. By doing so, they encounter misunderstandings and resistance, particularly among employees who work in other cultures.

Companies should keep a universal, basic rule definition to a minimum and give managers leeway to take unique, regional values into account when making business decisions. The amount of discretion managers can use depends on the context. Permissible gifts in the Middle East would, for example, depend on the gift's value, when the customer received the gift, and the nature of the gift giver's relationship to the customer. Even in the Arab world, some gifts go beyond generally accepted courtesy standards and are considered bribery.

Particularly in difficult-to-assess ethical conflicts, senior managers should include middle managers in the decision-making process and take their arguments into account. This is how to achieve broad, internal acceptance. Managers can create case studies as an internal communications tool for particularly relevant decisions. These case studies can show the problem definition as well as the solution chosen by management. If a case study needs to be examined without actually identifying the people involved, the process can be anonymized. Such case studies should be made

available to interested staff members, for example via intranet or in internal publications. If similar problems arise, they can be discussed with the employees.

Openly communicating ethical issues in a company is especially useful in organizations that shift between cultural relativism and absolutism. This is because employees do not always understand positions that steer a middle course, particularly as they can change over time. These positions are marked by ambiguity, and inconsistencies have to be accepted. This requires everyone involved to be aware of the company's internal communication process. Managers who cannot negotiate the ambiguities of a global environment should ask themselves if they are the right fit for the role.

### HOW SHOULD COMPANIES ORGANIZE ON A GLOBAL SCALE?

The classic industrial company has a headquarters. Firstly, it is the place from where organizations manage their corporate activities, such as accounting. Secondly, the top managers of the lines of businesses are frequently located there. They are divided into organization units by function and – if foreign market activities have reached a significant size – by region. This type of organizational level may be aligned with more than one characteristic. This results in a matrix organization or an even more complex organizational structure, as shown in Figure 5.7.

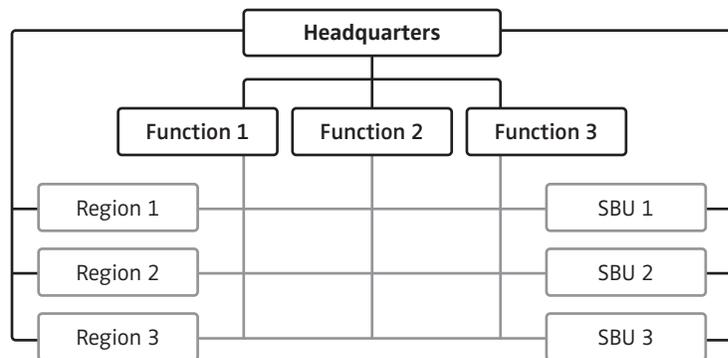


Figure 5.7: Multidimensional organization chart of an industrial company

All organizational structures address the key questions of who makes which decisions and who has the authority to enforce them. In global industrial companies, there is a

classic area of conflict in internal decision-making authority. It exists between the core function and product divisions on the one hand, and foreign regional subsidiaries on the other. The former tend to favor standardization to save costs; the latter want to take their local, country-specific market characteristics into consideration. Regional managers often complain that centralized product decisions do not meet region-specific customer requirements. The national subsidiaries of several companies in the mechanical engineering industry complain that centralized development creates products that are too complicated and oversized. In other mechanical engineering companies, regional managers complain that quality and safety standards for their markets are not being sufficiently met. Many also object to the detailed process design guidelines or find that the amount of internal reporting that is expected by headquarters is exaggerated.

Yet, if country-specific products and processes were developed for all countries, a company with global operations would lose transparency. It would also make the cost of complexity too high. Managers must follow certain international standards because of legal requirements in the country where the corporate headquarters is located. In this respect, the right balance between global standardization and local adaptation must be found for both product management and process guidelines. The following rule generally applies: Globalize as much as possible, localize as much as necessary. But what type of organization should managers use to best implement this rule in practice?

Management professor Peter Li proposes the idea of the “second home.”<sup>13</sup> In his view, two core criteria are important for finding a balance between standardization and regional adaptation. The first criterion addresses the cultural differences between industrialized and developing countries. Industrialized countries are characterized by very formal institutions in terms of market, law, and politics. Emerging market institutions are often informal and rely, to a large extent, on personal relationships. The second criterion – and one that plays a key role for Li – deals with challenges in the higher and lower price customer segment ranges. We previously discussed no-frills products and advanced premium products in this context. Based on his two core criteria, Li proposes that global companies establish two headquarters. The first should be responsible for no-frills products and located in an emerging market; the second should be responsible for advanced premium products and complex service solutions and be headquartered in an industrialized country. If only one corporate headquarters exists for both market segments, Li is concerned that the culture in the home market will be too dominant and impede the creation of alternative business approaches.

If there are two corporate headquarters, the one in the emerging market should react flexibly to changes in requirements. The other headquarters should provide better

efficiency and economies of scale in an industrial country. Li believes that the similarities between markets are so great in emerging economies, where no-frills products are sold, that a corporate headquarters located there can benefit from the resulting synergies. He sees similar potential synergies in the corporate headquarters of industrialized countries, which are responsible for advanced premium products and complex services solutions. If there are premium customers in emerging markets and no-frills customers in industrialized countries, then managers should categorize customers based on their willingness to pay, not by their region.

Li uses the principle of yin and yang to explain the relationship between the two corporate headquarters. That is, both corporations recognize each other's identity, consider it complementary to their own, and join together in what Li calls a "holistic oscillation." To achieve oscillation, the senior management of the two corporate headquarters should each consist of about one-third of the executives from the other culture (see Figure 5.8).

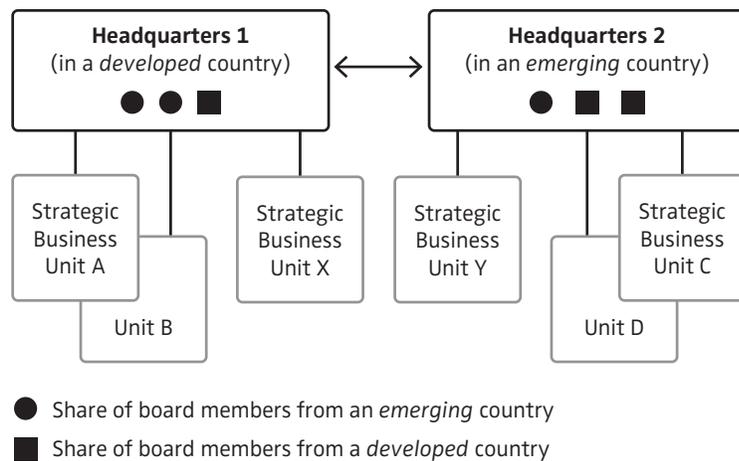


Figure 5.8: The "second home" concept according to Li

The Chinese computer company Lenovo is an example of the second home concept. The company has headquarters in Beijing, China, and Morrisville, USA. Senior management positions are occupied by Americans as well as Chinese. Lenovo grew through multi-billion-dollar acquisitions, including the acquisition of the IBM PC business in 2005 and Motorola Mobility in 2015. The success of the acquisition suggests that the second home concept played a positive role in this context.

Wilo has had a positive experience with this approach. We introduced this medium-sized company in Booklet 1; it manufactures pumps and pump systems for the building services residential water management and industrial segments, and it generates annual sales of €1.5 billion in more than 70 countries. In addition to its headquarters in Dortmund, Germany, Wilo successfully started a second home in Beijing, China, in 2019. In the next five years, it intends to establish a third headquarters in the United States, as there is a need for pumps that are more sophisticated than those made for developing countries, but simpler than those made for Europe. Another reason for the vision to create a third headquarters lies in the conviction of Wilo's president and CEO, Oliver Hermes, that the corporate conditions of American, European, and Asian companies will increasingly diverge from one another in the years to come. For him, there will be three "tectonic plates" in the future, with their centers being located in the United States, Europe, and China – all of which will operate more independently of one another in their respective regions.

Due to the specifics of the American market, Wilo's organic growth approach has been less successful there in recent decades than in other countries. It was not until the acquisition of the American pump manufacturers Weil & Scot in 2017 and American-Marsh Pumps in 2019 that the trend was reversed, thanks to the corporate freedoms granted to them by Wilo.

It is worth noting that acquiring companies from other cultures is particularly challenging. When a deep understanding of the other culture is necessary, managers begin well before the acquisition process to properly interpret the information provided by both parties. After the purchase, the difficulties continue as interventions by the new owner, which arise from the owner's culture, sometimes conflict with the culture of the acquired company but have to be accepted nevertheless.

Against this backdrop, buyers of foreign companies from another culture are encouraged to show restraint in trying to influence local processes, resources, and structures. They should give the new division as much independence as possible. Companies from emerging markets such as Geely, Tata, and Lenovo, which purchased premium companies in Europe and North America, largely follow this rule. Companies in industrialized countries that conduct acquisitions in emerging markets find it more difficult to show restraint – the example of Wilo mentioned above is an exception, not the rule.

In 2017, a particularly radical organizational restructuring took place at Haier. It went well beyond the business strategy of the second home concept and culture-specific aspects. Established in China, Haier is the world's largest manufacturer of household

appliances, including washing machines and dishwashers. The company largely dissolved its Chinese headquarters, and as many as 10,000 managers with key functions were fired. Instead, there are now about 200 independent business units that compete with each other on the market and are even allowed to acquire one another. The headquarters only plays an investor role with a few core internal functions. They include the maintenance of a group-wide platform that shows employee availability and previous performance reviews. For CEO Zhang Ruimin, the restructuring was necessary to meet the demands of new information and communication technologies, increase customer proximity, and accelerate decision-making processes.<sup>14</sup> The decision to radically decentralize was, therefore, primarily because of the speed of change in the market. This, in turn, came in the wake of technical developments, which in Haier's industry are referred to under the term "smart home." A company, as Zhang envisions it, is a polycentric group of networked business units. Its organization is more akin to that of a financial holding company than a traditional industrial company (see Figure 5.9).

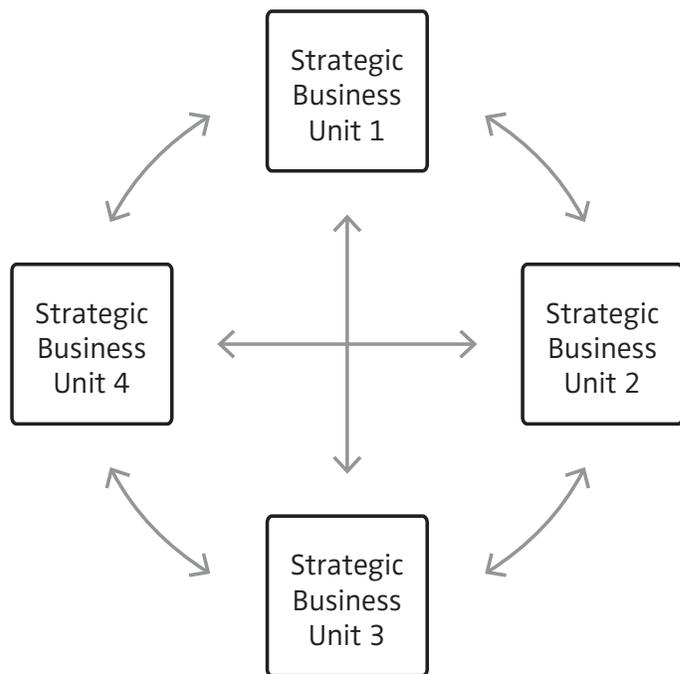


Figure 5.9: Schematic representation of a polycentric corporate organization

## WHICH EXTERNAL FACTORS SHOULD BE CONSIDERED?

Companies that want to operate successfully under the motto "People, profit, planet" are integrated into a political framework. This framework is designed to guarantee the balance between entrepreneurial freedom and social stability. It should tackle global problems such as environmental pollution, crime, and overpopulation, just to name a few.

Since the late 2010s, however, several political developments have stood in the way of cross-border cooperation. An example would be the America-centric policies of President Donald Trump, who won the US presidential election in 2016 with the slogan "America first." We find similar nationalistic tendencies, for example, in Turkey, Brazil, Poland, and Hungary. In Germany and France, like-minded parties have been launched by right-wing conservatives and turned away from global interests. The resistance against globalization is also on the rise on the left. Networks such as ATTAC (Association for the Taxation of Financial Transactions and Citizens' Action), for example, organize protest actions during international summit meetings. If one or both of these wings should become stronger in the future, the question arises as to how global companies can respond.

Founded in 1600, the British East India Company – at the time still called the English East India Company – was proud of its national roots. It worked closely with its home country's political institutions and even developed its own corporate flag, which was designed to demonstrate the company's close relationship to the homeland outside of the United Kingdom. Today, only a handful of companies still celebrate their national origins. Among the exceptions are Harley-Davidson and Victorinox (see Figure 5.10).



Figure 5.10: Left: Flag of the East India Company (1801–1851); right: Swiss Army Knife by Victorinox

German companies have long labeled their export products with the label “Made in Germany.” Many companies are now dropping this explicit reference. At Mercedes, the label now reads “Made by Daimler.” One reason for this is the fact that vehicle production for the global market would be too inefficient – and probably no longer possible – if manufacturing were limited to Germany. The company has also taken the aforementioned socio-political developments into account. If Germany were to lose worldwide favor, Mercedes would have to fear losing sales abroad if the company emphasized its German origins. An example is the French supermarket chain Carrefour, which was boycotted in China in 2008 in the wake of political tensions between France and China.

As political nationalism continues to grow, exporting companies must do more than avoid the impression that they are directly linked to their homeland. Rather, it makes sense for the company to be perceived as an economic partner with domestic roots in those countries where it wishes to do business. Before engaging in activities, however, managers should ask how such perceptions occur in the first place. When is an international company considered to be a domestic entity?

In politics, business, and society, there are no clear answers. Ownership is sometimes used as a criterion: The public may consider a business to be American if the owners are American. At first glance, that is understandable because profits flow to the owners. Ultimately, they have management and decision-making authority, but at second glance, this approach has weaknesses. Many global companies, particularly joint-stock companies, have owners with different nationalities. According to this reasoning, Alibaba, which went public on the New York Stock Exchange in 2014, is not a Chinese company. In fact, a Japanese bank is currently Alibaba’s largest shareholder; the second-largest is the US company Yahoo!. Even Siemens would not be a German company using this standard, as not even one-third of its shareholders are German. Or, consider a winery in the Bordeaux region. It still produces the same wine, even though it has been bought by a Chinese businessman. Should we suddenly consider the company to be Chinese?

Other criteria that are used for determining a company’s nationality include the country in which the headquarters is located, as well as its corporate tax residence. In part, the nationality majority within the senior management team or the country in which the most value creation occurs also plays a role. In each of these cases, observers could argue for or against a company’s national designation. From a political point of view, the value-added criterion is attractive, as it is linked to the creation of jobs and gross national product. When nationalism is on the rise, politicians are more likely than ever to emphasize the value-added criterion for this very reason. Companies that want

to be seen as a local business partner should distribute value-creation processes within the countries in which they operate. Hans-Paul Bürkner, the former CEO of the Boston Consulting Group, summed up this development with the quote: “In the future, corporations have more to localize – all over the world.”

This growing, politically driven nationalism has been exacerbated by the Corona pandemic in 2020. In many countries, there has been mounting public opposition to dependence on the global supply chain. At the same time, there has been a corresponding demand for greater national independence in crisis-sensitive product manufacturing. A common counterargument is that this type of independence threatens to erase efficiency gains that have been achieved through a global division of labor. Because of wage harmonization among the world’s major economic regions, a global division of labor today has fewer advantages than before. As a result, leveraging global shipping to achieve “wage arbitrage” cost advantages is not as rewarding as it once was.

There are other reasons to boost regional value creation. Customers’ desire for greater product customization and increased delivery speed are among the most important. At the same time, modern technologies make it possible to pursue more opportunities locally (e.g., 3D printing). Instead of shipping spare turbine parts around the world, suppliers can produce them on location with a 3D printer. This makes items available to customers more quickly. Highly competitive companies have recently emerged in developing countries, where they have created supply networks. Accordingly, intra-regional trade has outpaced global trade since 2013 – a trend that is particularly evident in the Southeast Asia region.<sup>15</sup> As a final point, the transport of global goods is receiving mounting public criticism for the high CO<sub>2</sub> emissions generated. For critics, there is a growing need to localize value creation to achieve climate protection goals. Over time, the public will increasingly shift its criticism toward those companies that actually ship goods and blame them for creating emissions in the first place.

The following figure summarizes the influencing factors that support an increase in local value creation and a corresponding reduction in the transport of global goods.



**Drivers for slowing down the global trade of goods / strengthening the local value added of companies:**

- Increasing nationalism in politics (reinforced by Corona pandemic 2020)
- Fewer salary differences among the economically most relevant regions in the world
- Increasing number of regional suppliers / ecosystems in emerging economies
- New technologies (e.g., 3D printing)
- Customer expectations for shorter delivery times and higher product individualization
- Public criticism of transport of goods due to climate protection

Figure 5.11: Developments pushing corporate localization of value-added activities

The fragmentation of corporate value creation fits with the trend of decentralization that we have outlined in our polycentric organization diagram above. Instead of operating a diverse set of business segments under a decentralized management structure, as Haier did, a number of companies plan to increase the level of independence of their local business entities. This can take place either on a national level or continental level. The latter is illustrated by the abovementioned example of Wilo, a company that introduced three headquarters globally.

Beyond its region-specific commitment, a company must meet transnational demands. Within a political context, this can be tricky. How should a company behave if the US government requires non-US businesses to stop doing business with Iran? It requires excellent local knowledge and diplomatic skills to convey the relevant messages in the appropriate tone and at the right moment. Against this backdrop, John Chipman, director of the International Institute for Strategic Studies, advises global companies to establish a professional foreign policy post similar to those used by national governments.<sup>16</sup> Using "corporate diplomacy," companies can build close bonds with a country's government and society, as well as follow international policy developments.

This recommendation implies that companies should try to influence political developments. That is, companies should craft their own positions on important public policy issues and make them clear in politics and society. Today, many companies would rather remain neutral for fear of economic consequences, but according to Chipman, businesses should reconsider this position in the future. Given the increased interference of nationally oriented governments in entrepreneurial activity, Chipman believes that companies should contribute more in shaping public and political opinion.

Let us return to the increased localization of global companies, as well as the broad set of related technical requirements. The growing regionalization of value creation is linked to an organization's decentralization, although the separation of local business units and decision-making powers makes it difficult to create synergies. Companies are counteracting this problem by using modern information and communication technologies. This is in line with ongoing trends. From 2005 to 2017 alone, the amount of cross-border bandwidth in use increased by a factor of 148.<sup>17</sup> By contrast, cross-border trade actually declined during the same period. Modern information and communication technologies are the core element of Industry 4.0. Although practical implementation is still to come, hardly anyone doubts that industrial development is moving in this direction. More and more data is being collected, transmitted, and analyzed, and artificial intelligence (AI) will play an ever-greater role. In the previous booklets, we highlighted the opportunities of these technologies. We now take a look at the challenges that global industrial companies face.

First and foremost is the issue of rising economic crime, which has grown in all regions in the world (see Figure 5.12). Based on a survey from 2020, cybercrime is for industrial companies the second most relevant source of economic fraud, with asset misappropriation being number one and bribery/corruption number three.<sup>18</sup> The risk of cybercrime is not only a problem for suppliers in the industrial sector – it also encourages customers to resist sharing data with suppliers or to avoid joining digital networks.



Figure 5.12: The reported rate of economic crime has increased across all regions (source: The PwC 2018 Global Economic Crime and Fraud Survey)

On the one hand, know-how can be stolen because of cybercrime. On the other hand, IT systems can be manipulated by hackers in such a way that a company's processes are either impaired or brought to a standstill altogether. In the case of so-called ransomware, hackers inform the affected companies that their networks have been attacked and that they must pay a fee to unlock and reclaim their corporate data. However, as a rule, malware creeps into a company's IT systems unrecognized. With new technologies, such as blockchain memory logic, experts are working to counteract cybercrime in IT networks. Although in recent years, companies have increasingly been forced to invest in protective measures. These related costs are expected to continue to rise.<sup>19</sup>

Individual countries and regions have introduced increasing amounts of regulation, which is another contributing factor to the continually growing costs of globally distributed IT networks. One example is the General Data Protection Regulation of the European Union (EU), which was introduced in May 2018. It has redefined the way companies deal with European customers' data and also applies to companies that are not based in the EU. An e-commerce law that came into force in China in June 2017 has necessitated far-reaching changes in the way companies do business in that country. Whereas the changes in the EU were mainly focused on strengthening customer rights, the new law in China has, above all, given the state a stronger role, particularly the Cyberspace Administration of China (CAC). Since 2017, companies operating in China must process all of the data they collect within the country's borders. If companies use cloud services outside of the country's borders, there is the bare-minimum requirement of mirroring the related data so that it is stored in China. Rules on content have been introduced, and compliance is subject to review by the CAC as the testing and licensing authority. We can assume that the trend toward country-specific regulations like these will increase, and with them the related administrative costs for companies in the IT sector.

Another cost risk resulting from the growing use of software and data-related services is the increasing market power of the small number of vendors in this sector. Large IT companies such as Microsoft, Google, Alibaba, JD, and Amazon are in strong positions of power. They would like to expand that power even further.<sup>20</sup> The trend toward consolidation is so strong that several countries' antitrust authorities are investigating these players on the suspicion that they hold a dominant market position. Industrial companies are in danger of being exploited by IT companies, which have the ability to exert excessive market power. The automotive supplier Bosch, for example, would be very concerned if the Chinese e-commerce platform JD – the world's largest car marketplace – changed its current trade structures. Its more than 400,000 repair shops in the country would no longer be able to use the company's large network of distributors and wholesalers to buy spare parts such as windshield wipers and spark plugs. Instead, they would have to place their orders on the JD platform. At first glance, it might be more cost effective for Bosch to only work with one dealer at a time. A closer analysis reveals a greater risk. After achieving a dominant market position, JD could increase its platform usage fees. At the same time, it could lower prices for product manufacturers such as Bosch.

Industrial companies also run the risk that deep-pocketed internet companies could enter product manufacturing themselves, making them new competitors. In 2018, for example, the European Commission's Directorate-General for Competition investigated Amazon. The e-commerce giant had allegedly used some of the data services it offered

to its industrial customers to identify attractive business opportunities and then launched its own product offerings. Amazon has indeed brought dozens of its own brands onto the market over the past few years, which is a problem mainly for smaller product manufacturers. It is nearly impossible for companies of this size to seek protection from antitrust authorities; such cases are expensive and take years to resolve. By the time smaller companies can prove the abuse of a competitor's dominant market position, many of them have often already disappeared from the market. As a consequence, these small companies can no longer benefit from official intervention.

The time aspect is the focus of the fourth and final problem. Today, industrial companies must deal with each of these growing challenges: cybercrime, state regulation, and the market power of IT suppliers. The fourth challenge, the socio-political resistance to data-based technologies, is only now emerging. Currently, the development of data-based technologies has received a positive reception and has led to economic optimism across large segments of society. One of the few opposing voices came from the late Nobel physics laureate Stephen Hawking, who warned that robots could soon exceed humans in their ability to think and act. In a next step, they could turn against humanity. Such doomsday scenarios may seem overly dramatic. They have been voiced repeatedly since the beginning of industrialization but have never come true. Nevertheless, we can observe that the dangers of digitization have raised public awareness. In Western countries, the scandal surrounding Cambridge Analytica has catalyzed this concern. In 2016, Cambridge Analytica was accused in the media of using data analysis to influence political decisions, including the vote for Brexit and the outcome of the US presidential election. That accusation grew louder when it became clear that Cambridge Analytica had used the data of Facebook customers without their knowledge.

In Asia, the skepticism surrounding data-based technologies is currently less pronounced, even though their use there sometimes substantially interferes with the private sphere. In 2018 in the Chinese city of Rongcheng, for example, the Chinese government had already begun collecting data on residents as part of a "social credit system" – a points system that measures good behavior. It forms the basis for decisions on access to privileges, such as the purchase of airline tickets. Cameras were installed in the streets of Rongcheng to record rules violations, make a corresponding human match with recognition software, and transfer the related identifying information to a social credit database. Although the citizens of Rongcheng currently accept these actions, it may lead to growing skepticism about data-based monitoring in China at some point – perhaps even resistance to data-based technologies.

If positive public sentiment over data-driven technologies turns skeptical or even hostile, companies will have to question their current usage concepts. The further

development of Big Data and AI, which companies still use today as a mark of distinction, could then result in reputation loss. Good employees would leave, and the very business models upon which these technologies are based could disappear. It is possible that such threatening scenarios will not occur and that data-based development will continue unabated. A study by Grace et al. predicts that 100 years from now, strategic decisions might be made by AI instead of managers.<sup>21</sup> That prospect, of course, is no less of a threat.

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## THE AUTHORS

**Olaf Plötner** is a professor at ESMT Berlin and the director of ESMT's BTM Center. His research and teaching focus on strategic management in global B2B markets. His work is reflected in his most recent book, *Counter Strategies in Global Markets*, published by Palgrave Macmillan, Springer, and SDX Shanghai. His research has been portrayed in journals such as *Industrial Marketing Management*, the *Journal of Business and Industrial Marketing* as well as in leading international media such as CNN, the *Wall Street Journal Europe*, the *Times of India*, *Frankfurter Allgemeine Zeitung*, *China Daily Europe*, *People's Daily (China)* and the *Financial Times*. Olaf is a visiting professor at the Darden School of Business at the University of Virginia and the China Executive Leadership Academy Pudong (Shanghai).

**Johannes Habel** is an associate professor of marketing at the C. T. Bauer College of Business, University of Houston. His primary areas of interest are the digital transformation of the sales function and sales psychology. His research has been published in some of the world's most renowned academic marketing journals, such as the *Journal of Marketing*, the *Journal of the Academy of Marketing Science*, and the *International Journal of Research in Marketing*. Beyond academic research, Johannes has published case studies with Harvard Business Publishing and The Case Centre as well as managerial articles with journals such as *Harvard Business Manager* and *European Business Review*.

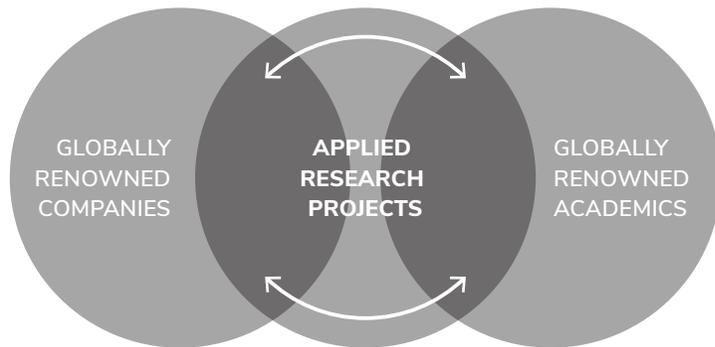
**Bianca Schmitz** is a program director and head of sales and operations for executive education at ESMT Berlin as well as one of the founding directors of ESMT's Hidden Champions Institute. Her research has been published in journals such as *Industrial Marketing Management* and the *Journal of Family Business Management*. Beyond academic research, Bianca has published a number of case studies and managerial articles on hidden champions and digital transformation.

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## The BTM Center facilitates the successful cooperation between business executives and academic management experts

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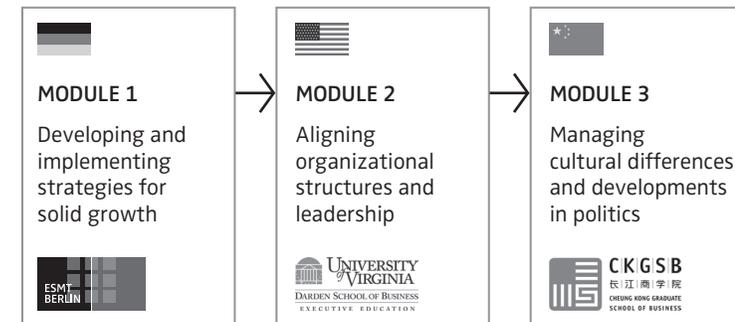


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Prof. Dr. Olaf Plötner, btm@esmt.org

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### Target group:

The BTM program assembles an international group of senior managers who share similar competences and business environments. They all come from industrial companies that are active in global markets.

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**BTM Center**

ESMT Berlin  
Schlossplatz 1  
10178 Berlin  
Germany

Phone: +49 30 212 31 1561

Email: [btm@esmt.org](mailto:btm@esmt.org)  
<https://esmt.berlin/btmc>