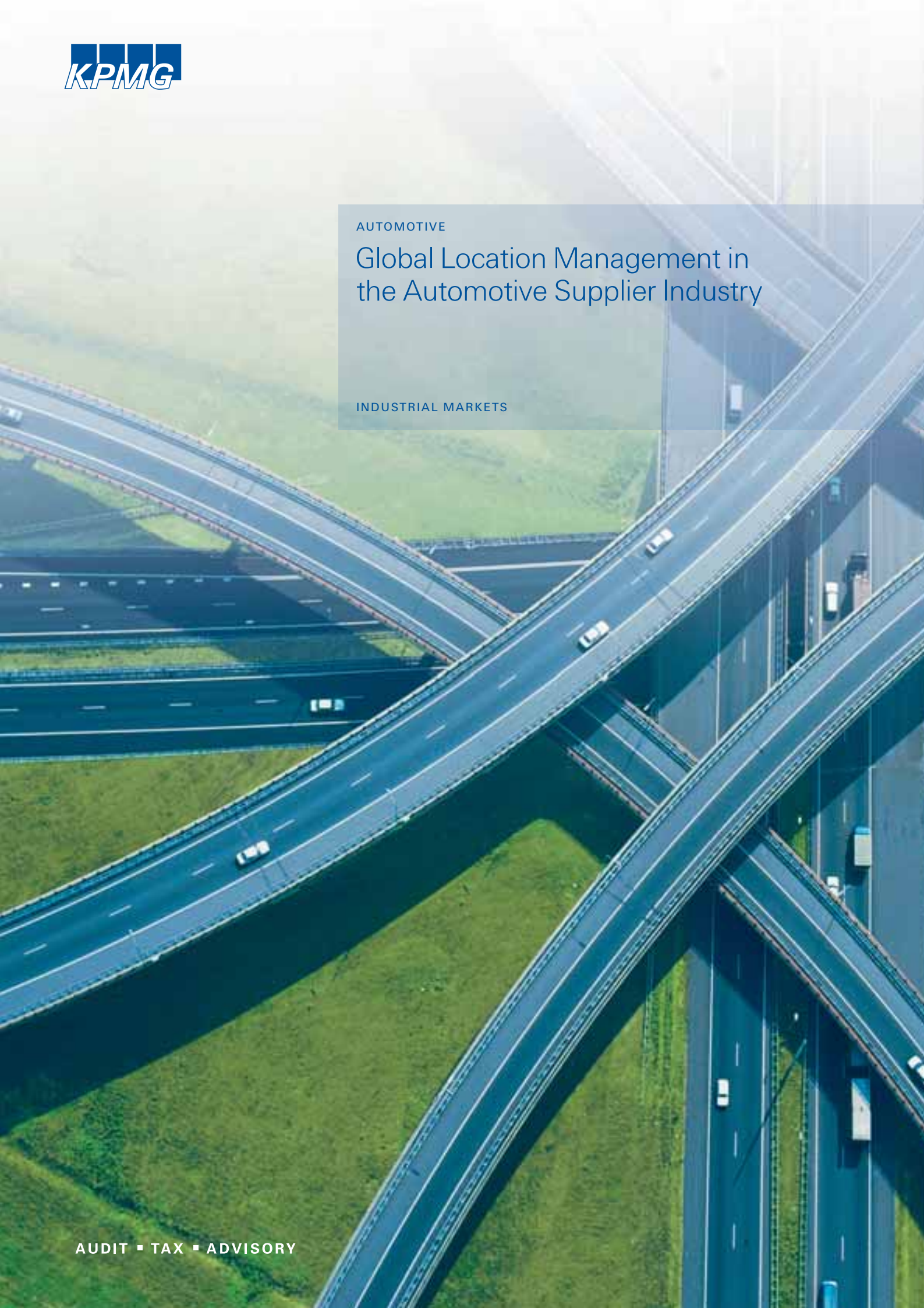

AUTOMOTIVE

Global Location Management in the Automotive Supplier Industry

INDUSTRIAL MARKETS

AUDIT ▪ TAX ▪ ADVISORY

Contents

Foreword

Globalization presents automotive supplier companies with many challenges. One of the largest of these challenges is the structuring, coordination and optimization of a global network of production plants.

In order to find out more about how the location structure of automotive supplier companies may be affected by customer requirements, how such companies find suitable locations for their production plants, how they monitor the performance of their plants around the world and how they adapt their location structure to rapidly changing market and competitive conditions, in the summer of 2005 KPMG International surveyed 131 automotive supplier companies in North America, Asia and Europe. The interviews were undertaken in cooperation with the market research institute TNS Infratest. This study is less concerned with providing an overview of location trends than with the actual methods and processes of location management. It focuses on the practical issues of how companies approach the overall coordination of their international locations.

Today's automotive supplier companies are obliged to be global players in order to safeguard their long-term survival. At many companies, however, integrated location management has thus far not been accorded the significance it deserves in times of ongoing globalization. The high level of willingness to participate in our survey and the great level of interest shown in the topic nevertheless demonstrate that issues relating to location management are currently at the top of many companies' agendas.

We should like to extend our thanks to all of the companies that participated in this survey for the contribution they have made to this study.

Hans-Dieter Krauss
Partner, Sector Head Automotive
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Executive Summary

Globalization has brought about far-reaching changes in the automotive supplier industry over the past 10-15 years. The impact of globalization is particularly evident in the sharp rise in the number of production plants now maintained by automotive supplier companies around the world. This has been accompanied by an increasingly dynamic rate of production relocation. The location structure of today's company has to be capable of rapid and flexible adaptation to changing market and competitive conditions. This has created particular challenges for companies to structure and coordinate their global location network.

In our global survey of 131 automotive supplier companies undertaken in cooperation with a renowned market research institute, KPMG International investigated various tasks relating to global location management. The issue of location management was subdivided into the areas of Location Strategy, Location Decision, Location Monitoring and Location Migration.

Location Strategy

Many automotive supplier companies find themselves in a dilemma between the requirement to follow customers (generally vehicle manufacturers) to their production locations on the one hand and the resulting investment risks on the other. Customer proximity requirements depend on the assembly concepts used by customers at specific locations and on the type of products provided by the supplier. Nevertheless, it is not necessary for every automotive supplier company to be located in close proximity to the customer's location. Almost all companies we spoke to, however, reported that they believe their customers' pricing expectations can only be achieved in the short-term by reducing costs, which represents indirect pressure on the suppliers to locate at least part of the value chain in countries with low labor costs.

A company's location flexibility can be influenced by various factors, such as the possibility of rapidly increasing or reducing capacities. Location flexibility is generally taken to mean a low level of dependency on individual customers, rapid reaction times to fluctuating order volumes and a general limitation of investment risk.

Factors affecting location flexibility should taken into consideration when developing location strategies and assessing potential locations. There are clear regional variations in terms of how significant and relevant the various factors are perceived to be. Labor market flexibility plays a major role for European suppliers, for example, whereas the terms and conditions of government incentive agreements are an important issue for North American suppliers, while real-estate flexibility is more important to suppliers from Japan and Korea.

Location Decision

The location decision and implementation process generally involves a very large number of different company departments. The complexity of location projects is frequently underestimated. Almost half of the companies surveyed had suffered delays in the location process, which in many cases were attributable to inadequate project management.

In many cases, companies also did not collect sufficient information concerning a variety of important local factors, such the reliability of the energy supply, the availability of employees and local wage levels, regional differences in trade-union influence and the quality of the local supplier base.

The position of location decisions within the organization differs from company to company. Only a few automotive supplier companies have a specialist for location decisions. Given the high investment costs for new plants, this finding is surprising. In general, many companies could formalize this area to help improve their location selection methodology and be better able to pass on and exploit the experience gained from previous location decisions to future projects.

Location Monitoring

The rising number of production plants to be coordinated worldwide has increased the requirements placed on location controlling and monitoring. Effective location monitoring can help meet important objectives, such as the identification of best practices or the internal awarding of production orders. Robust head-office controlling based on comprehensive data systems requires sufficient controlling resources at the decentralized units to collect the necessary information. This cost-benefit consideration represents a critical factor in the search for the right balance between centralized and decentralized controlling. It was not possible to identify a uniform approach to this challenge among the companies surveyed, and each company appears to have developed a highly customized and specific solution.

The rapidly changing market and competitive environment mean that it is imperative for location risks to be identified at an early stage. Proactive action with respect to risks requires an understanding of cause and effect relationships and sensitivities and a continuous monitoring of developments in the location environment of individual plants. Balanced scorecards can be a useful instrument to help improve the early warning function of location monitoring and are currently being introduced by several companies we spoke to.

Location Migration

Almost half of the companies surveyed have closed down a plant in the past five years. More and more companies are faced with the problems of having to reduce production capacities or completely close a plant. Although some companies attempt to limit their investment risk by a phased build-up of their international plants, few companies incorporate into the location decision-making process an assessment of specific factors that could affect their ability to reduce capacities or even to withdraw completely from a location in the future.

Important factors influencing the flexibility of a location can already be proactively taken into account during the process of evaluating potential locations for a new plant. Examples of factors that could be taken into consideration include the flexibility for adjusting capacity levels provided for by labor regulations, the resale value of land and buildings, and the

terms and conditions of property leases, service contracts and government incentive agreements. Our study identified several examples of companies that were trapped in locations that they actually wanted to close. In many cases, proactive planning could have allowed such situations to be avoided.

Conclusion – Integrated Location Management

Forward-looking location management requires a greater consideration of location flexibility factors, the early identification of location problems and the systematic and early planning of exit strategies. To help to fulfill these requirements, the various activities involved in global location management should integrated more closely and formalized more robustly overall. It may be conceivable, for example, to establish working groups or teams to focus on the improvement of internal processes, the allocation of responsibilities, the development of methods and tools and the coordination of the internal information flows involved in global location management.

The Challenge of Global Location Management

The number of production plants operated by automotive supplier companies has risen sharply in the past 10 to 15 years

The number of production plants operated by automotive supplier companies has increased significantly during the past 10 to 15 years.

At the same time, many supplier companies that could previously be classified as medium-sized companies have developed into global companies. A significant number of companies that had only three or four production plants in a small number of countries at the beginning of the nineties now have a production network of 20, 30 or more locations around the world. Some of today's 'mega-suppliers' operate location networks of 100 to 200 production sites.

Figures 1 and 2 show the development of five automotive supplier companies from Germany, Japan and Italy between 1990 and 2005 in terms of the number of their production plants and the number of countries where these plants are located. These companies are representative of the developments experienced by many automotive suppliers around the world.

Number of production plants over time	1990	1995	2000	2005
A) German manufacturer of window lifts and locking systems	3	8	14	25
B) Japanese manufacturer of cockpit modules and safety systems	8	11	23	34
C) Italian manufacturer of cast parts for the automotive industry	3	5	12	12
D) Japanese manufacturer of outdoor mirrors, belts and airbags	11	17	21	26
E) German manufacturer of gearboxes and clutches	7	7	10	15

Figure 1: Development of the number of production plants as illustrated by several automotive supplier companies
Source: KPMG International, 2005 Survey of Global Location Management.

Number of countries with production plants over time	1990	1995	2000	2005
A) German manufacturer of window lifts and locking systems	1	5	8	13
B) Japanese manufacturer of cockpit modules and safety systems	4	6	9	13
C) Italian manufacturer of cast parts for the automotive industry	3	5	8	8
D) Japanese manufacturer of outdoor mirrors, belts and airbags	5	8	9	12
E) German manufacturer of gearboxes and clutches	2	2	4	8

Figure 2: Development of the number of countries as illustrated by several automotive supplier companies
Source: KPMG International, 2005 Survey of Global Location Management.

The dynamic change in market and competitive conditions requires the continuous adaptation of location structures

Moreover, there are various indications that the lifespan of production plants is declining. Looking at plants closed in recent years, there are many examples of production or assembly plants with lifespans of only around five to ten years. Reasons for this development include the ongoing migration of locations from one low-wage country into the next low-wage country (e.g., from Hungary to Romania) and the fact that financial planning for new production plants is increasingly based on the (in many cases declining) product lifecycles of vehicle models.

The increasing complexity of the network of locations requiring coordination and the need to continually adapt location structures to dynamic changes in market and competitive conditions places high requirements on global location management structures.

We define the concept of location management as including all tasks relating to the design and optimization of a company's location structures. This includes the following activities and tasks:

Location Strategy	Location Decision	Location Monitoring	Location Migration
• Observe market and competition • Assess customer requirements • Assess production conditions	• Location analysis • Planning of location development • Implementation and commencement of operations	• Develop key metrics • Structure reporting • Assess location performance	• Adjust capacities • Transfer production • Close locations

Figure 3: Activities involved in global location management
Source: KPMG International, 2005 Survey of Global Location Management.

In practice, location management and the various tasks involved are rarely viewed as integrated activities. It is also important to note that location management is a cross-functional topic encompassing a very large number of company departments. The location decision and implementation process, for example, frequently requires the involvement of management, strategic planning, market research, finance/controlling, legal, production planning, personnel, sales, logistics, procurement and other departments. The large variety of corporate functions involved clearly demonstrates the organizational complexity of location projects.

Structure and Objectives of this Study

KPMG International carried out a global survey of the automotive supplier industry on the subject of "Global Location Management" between June and September 2005. The survey encompassed first-tier and second-tier automotive suppliers from Europe, North America and Asia. The study is based on a survey of 131 automotive supplier companies of various sizes. The survey was divided into 31 personal, open-ended interviews and 100 standardized telephone interviews.

The sample for the quantitative results consisted of 50 automotive supplier companies from Europe and 25 each from North America and Asia. Figures 4 and 5 depict the detailed composition of the quantitative sample of 100 companies.

The objective of the study was to ascertain how companies handle the various tasks involved in location management. This primarily involved addressing the following questions:

- What influence do customers have on the location decisions of their suppliers?
- How do automotive suppliers approach location decisions?

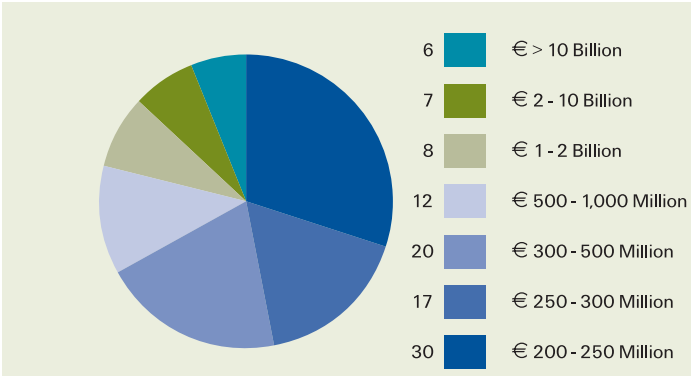

Figure 4: Number of companies questioned broken down by sales category
Source: KPMG International, 2005 Survey of Global Location Management.

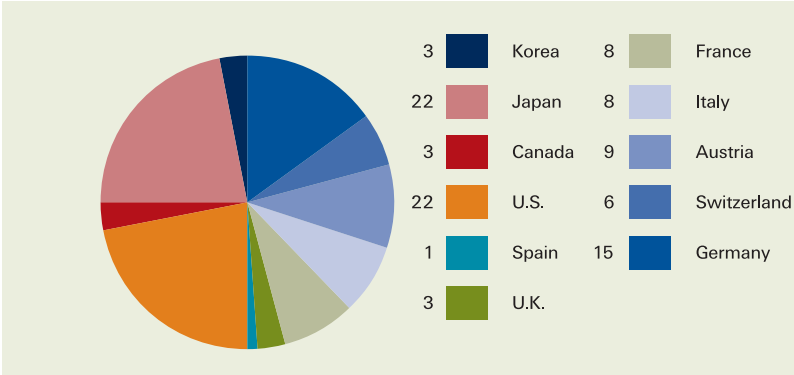

Figure 5: Number of companies questioned broken down by country
Source: KPMG International, 2005 Survey of Global Location Management.

- How do automotive suppliers monitor their production plants around the world?
- What challenges are involved in production relocation and plant closures?
- What benefits could result from an integrated approach to location management?

Location Strategy

"Location Strategy" includes scanning important growth markets, assessing the requirements placed by customers on a company's own location structures, analyzing the location decisions made by significant competitors and keeping track of developments in countries with potentially favorable production conditions (e.g., with respect to political stability in countries such as Ukraine, Russia or Serbia). In general, there are three motives driving automotive supplier companies to establish production plants:

- Market-driven location decisions (Presence in major markets (e.g., China)
- Cost-driven location decisions (Transfer of production to low-wage countries (e.g., Romania)
- Process / customer-driven location decisions (Location in direct vicinity of customer (e.g., supplier park)

It is often assumed that automotive supplier companies are obliged to follow their customers to certain locations and that they have very little influence on their own location selection. We wanted to investigate the extent to which location decisions made by supplier companies are actually influenced by customers.

Customer expectations have an influence on the location decisions of 88 percent of the auto-motive supplier companies surveyed. Sixty percent assess this influence as high or very high. Only 12 percent of the companies stated that the influence of their customers was low or insignificant.

Today's OEMs and large system suppliers expect their suppliers to be global players and to be on hand in at least the more important global markets of North America, Asia and Europe. Furthermore, many companies want their suppliers to be located in the direct vicinity of their own locations. Around one third of the companies surveyed had already been confronted with the requirement to locate in a supplier park. (Supplier parks are industrial zones directly adjacent to the manufacturer's plant in which several supplier companies undertake the production or final assembly of their products).

60 percent of automotive supplier companies assess the influence exercised by their customers on their location structures as high or very high

The regional breakdown of findings provided in Figure 7 clearly shows that Asian supplier companies generally see themselves as being exposed to a higher level of customer proximity requirements. Fifty-two percent of Asian suppliers stated that their customers wanted them to locate in supplier parks. One possible reason for this could be the traditional structures of cooperation between manufacturers and suppliers in Japan (the so-called 'keiretsu' structures). In general, Japanese manufacturers have increasingly loosened their

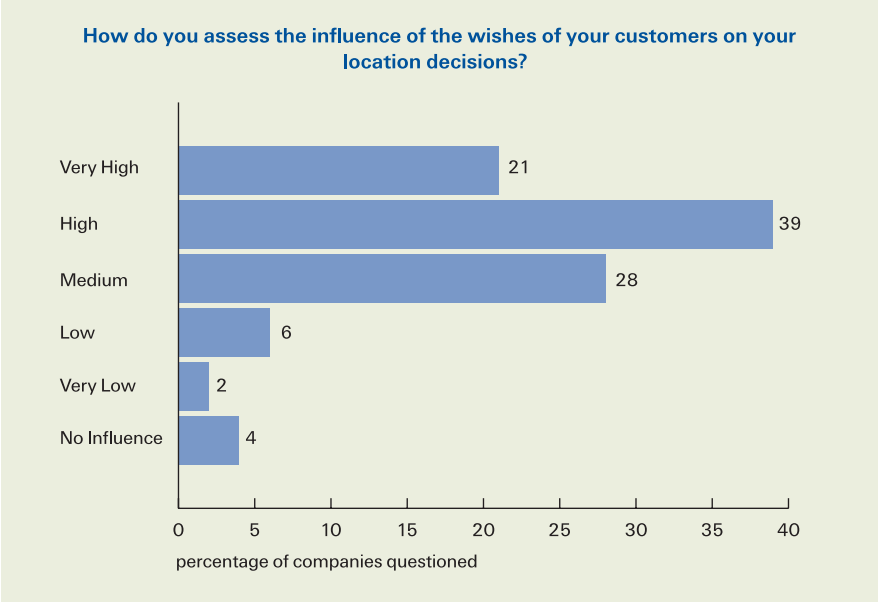

Figure 6: Influence exercised by customers on location decisions
Source: KPMG International, 2005 Survey of Global Location Management.

Asian supplier companies see themselves as being exposed to a higher level of customer proximity requirements

'keiretsu' structures in recent years. One Japanese automotive supplier, for example, which was originally 80 percent-owned by Nissan, followed Nissan to Sunderland in England in 1987. The 'keiretsu' structure has since been abandoned and Nissan now only has a 15 percent shareholding. The company still manufactures directly on site, but now also supplies other companies as well. The opening up of 'keiretsu' structures has also helped enable European and North American supplier companies to penetrate these previously closed networks. In spite of an increased loosening of 'keiretsu' structures, our findings nevertheless show that the culture of proximity to customers remains deeply rooted in Asia.

Customer proximity requirements depend primarily on the specific assembly concepts selected by the OEMs for their individual plants. A new vehicle model generally involves the development and configuration of new modules and systems, often in cooperation with selected supplier companies. Particularly those supplier companies that work together in close development partnerships with manufacturers and that perform extensive system integration are expected to be present directly at the customer's site or in an adjacent supplier park. High customer proximity requirements also apply to supplier companies with critical products for build-to-order or just-in-sequence production processes, i.e., products that can only be fitted with difficulty at a later stage. Headrests, for example, provide a simple illustration of a component that can easily be added at a later stage, whereas a missing center console could bring the final assembly procedure to a halt.

Customers expect the proximity to their suppliers to result in better quality control, greater flexibility and reliability of supply, as well as more efficient and faster processes. Many OEMs have already outsourced large parts of their manufacturing. External service providers are also increasingly performing services within the plant, such as painting and equipment

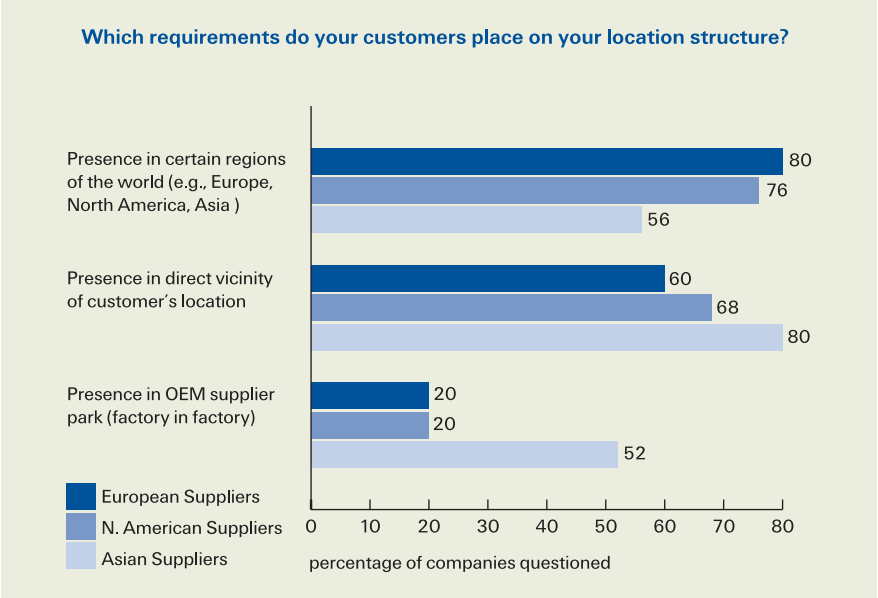

Figure 7: Customer requirements on the location structure of automotive supplier companies
Source: KPMG International, 2005 Survey of Global Location Management.

maintenance. In view of the declining share of in-house manufacturing, it can be difficult for OEMs operating in countries where local content requirements still apply (e.g., China or Russia) to fulfill such requirements. To contribute to local content requirements, supplier companies are not obliged to be directly present at the customer's location, but they do at least have to be located in the same country.

At the same time, our interviews also revealed that the pressure on many other supplier companies to produce in the direct vicinity of their customers has declined in recent years. Provided that they can safeguard the reliability of supply, quality and competitive costs, many companies are at liberty to decide from where to supply their customers. This is partly attributable to improved supply chain management systems, which have increased the reliability and flexibility of supply by means of enhanced processes and the faster and more intensive exchange of information between manufacturers, suppliers and logistics providers.

In the past, many supplier companies established plants to serve a single customer. Many automotive supplier companies are now at greater liberty to supply several customers from one plant to help generate higher volumes per plant and cost savings. There also seems to have been a decline in confidentiality requirements required by the OEMs. The close cooperation between many OEMs, such as the joint venture between Toyota and PSA in Kolin (Czech Republic), also demonstrates that strict separation and exclusivity are increasingly giving way to cooperation with the main goal of saving costs. Cost factors have returned to center stage in recent years, and many OEMs have recognized that a more efficient location structure can help enable their suppliers to generate cost savings which can then be passed on.

Benchmarks for automotive components are now generally based on cost structures in low-wage countries. In order to fulfill their customers' price requirements in the short term, suppliers often view the transfer of at least part of the value chain to low-wage countries as an effective solution. Some of the companies surveyed were made aware by their customers that they could improve their cost structures by expanding production in low-cost countries. In these cases, customer influence clearly has an indirect impact on suppliers' location decisions, without necessarily requiring any particular geographical proximity.

Supplier companies that are nevertheless obliged to fulfill customer proximity requirements are faced with several problems. One of the greatest difficulties was considered to be investment expenses and financing, uncertainty as to future order volumes from the customer and the lack of critical mass required for efficient production.

Many automotive supplier companies are now at greater liberty to supply several customers from one plant

A comparison based on company origin reveals that Asian supplier companies view the uncertainty surrounding the future location / production planning of their customers as representing the greatest difficulty (81 percent). Accordingly, 92 percent of Asian supplier companies stated that it would be useful for them to be involved in their customers' future location / production planning at an earlier stage. Overall, 73 percent of the companies surveyed could find it beneficial to be included in their customers' location planning.

Which problems do you encounter when a customer requests the establishment of a plant in its vicinity?

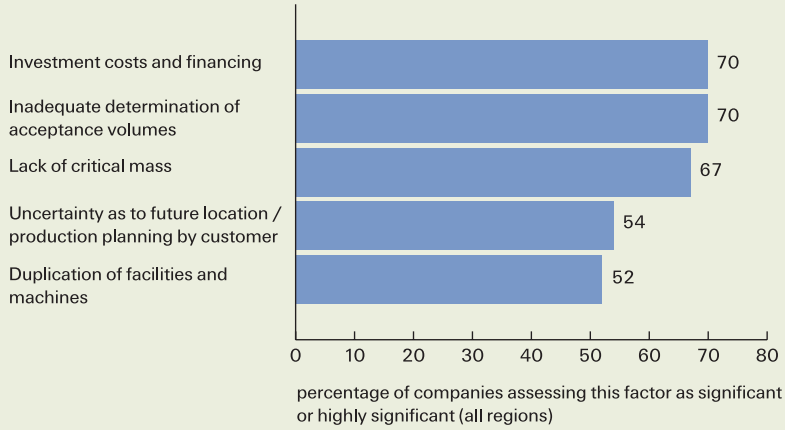

Figure 8: Problems for automotive supplier companies resulting from customer proximity requirements
Source: KPMG International, 2005 Survey of Global Location Management.

Location flexibility primarily means being able to rapidly expand and reduce capacities

In view of the uncertainties surrounding future order volumes, customer-driven (or 'following customer') decisions frequently involve the problem of dependency on one customer. We asked companies which factors they thought to be important in order to help reduce dependencies and to maintain a certain level of flexibility. Figure 9 shows that overall the "possibility of rapidly expanding or reducing capacities" and having a "central location for supplying several customers" are considered to be the most important prerequisites for maintaining flexibility.

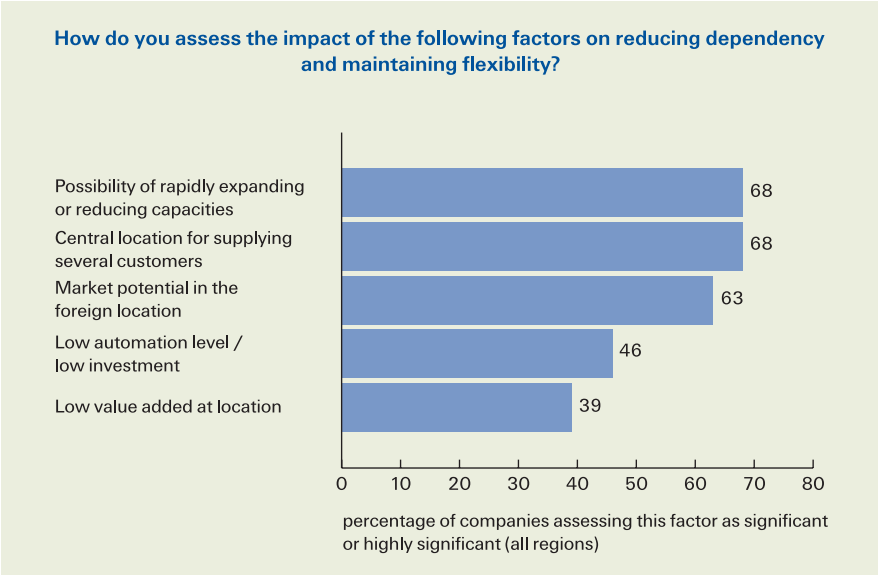

Figure 9: Possibilities of reducing dependency and maintaining flexibility
Source: KPMG International, 2005 Survey of Global Location Management.

Regional variations can be seen in the assessment of critical location flexibility factors

North American supplier companies placed the greatest importance on market and sales-related factors, such as having a "central location for supplying several customers" (72 percent) and "market potential in the foreign location" (68 percent). For the Asian companies questioned, in contrast, the "possibility of rapidly expanding or reducing capacities" (67 percent) and "low automation levels / low investment" (58 percent) were of particular significance for maintaining flexibility and reducing dependence on a single customer.

As shown by the results, the ability to rapidly expand and reduce capacities is a determinant of location flexibility, which is in turn dependent on various other criteria. Overall, the factors affecting the ability to rapidly expand or reduce capacity levels were assessed as follows:

- Availability of qualified workforce capable of immediate deployment without extensive training (74 percent)
- Redundancy conditions and procedures (74 percent)
- Availability of space for expanding capacity (71 percent)
- Legal provisions governing flexibility of working hours (65 percent)
- Government incentive terms and conditions (57 percent)
- Influence of works council and trade unions (52 percent)
- Lease terms for property and buildings (32 percent)
- Potential for resale of land and buildings" (30 percent)

The responses provided by suppliers from different regions revealed interesting variations.

Figure 10 depicts the two factors rated most highly by companies from Europe, North America and Asia.

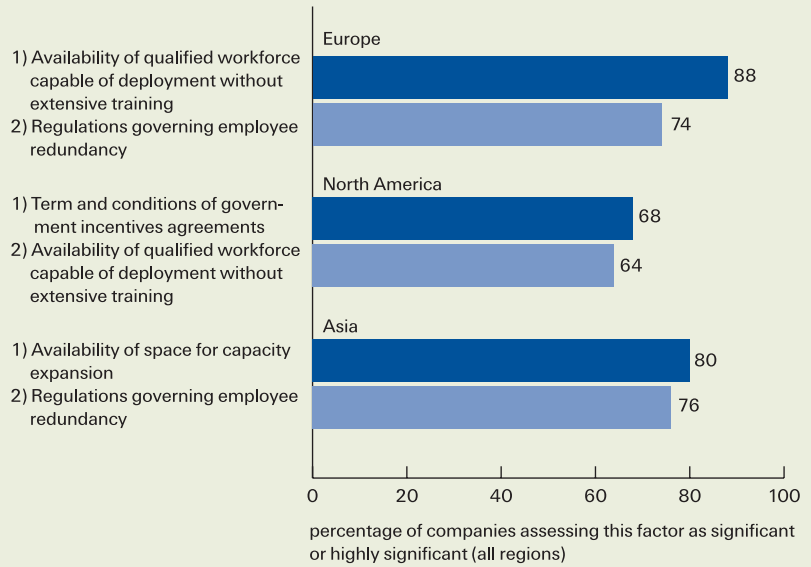

Figure 10: Factors affecting ability to rapidly expand or reduce capacity levels
Source: KPMG International, 2005 Survey of Global Location Management.

For European companies, labor market factors were considered to have the greatest impact on flexibility levels. In addition to the availability of a qualified workforce (88 percent) and the possibility of reducing personnel (74 percent), the flexibility of working hours (72 percent) is also considered to be a key factor. This focus on labor-market factors reflects current political discussions concerning labor market flexibility in many West European countries. The World Bank regularly compiles a "Hiring and Firing Index" assessing labor market flexibility in 155 countries. India, which is currently being investigated by many companies as a potential location, is among the countries with the highest barriers to employee redundancies and most efforts at introducing reforms have so far failed. Not surprisingly, the U.S. is among the countries at the top of the index.

"Redundancy conditions and procedures" and "flexibility of working hours" were accordingly viewed as being relatively insignificant by the North American companies in our survey. By contrast, North American companies placed the greatest importance on the "terms and conditions of government incentive agreements". This finding presumably reflects the widespread use of incentives in many U.S. states.

Asian suppliers, on the other hand, rated the "availability of space for expanding capacity" as the most important factor in affecting the ability to expand and reduce capacities. Alongside labor-market factors, real-estate factors played the most significant role for Asian companies. The "potential for resale of land and buildings" was also viewed as being comparatively important by the companies questioned in Japan and Korea.

Outlook: Location Strategy

Following customer decisions represent complex and strategically important decisions. Automotive suppliers have to carefully weigh the investment risk if they decide to follow an individual customer to a new location against the risk of losing that account if they do not follow the customer. Location flexibility is an important element in a company's location strategies. Investment risk can be reduced at least in part by taking location flexibility factors into account when developing location strategies and assessing potential locations. Customer requirements with respect to reliability, quality and especially costs also have a significant impact on a supplier's location strategies, even though such requirements do not always require suppliers to be located in the direct vicinity of customers and many suppliers are fully responsible for their location decisions.

Moreover, the survey revealed that suppliers are influenced by their domestic environment. This explains the different views with regard to the critical factors affecting location flexibility, such as labor-market flexibility in Europe, government incentive terms in North America and real-estate issues in Japan and Korea.

Location Decision

The location decision-making process is not generally viewed as being extraordinarily difficult. Delays nevertheless arise on a frequent basis

As part of their location strategies companies have to assess whether it makes sense from a sales, competitive strategy and revenue perspective to follow a customer to a foreign market. They must also determine which countries should be monitored as potential production locations and which growth markets may represent opportunities in future. These assessments provide the basis for decisions regarding new production plants and starting the process of evaluating potential locations.

We wanted to find out how companies make location decisions in practice, who is involved in the decision-making process, which methods are used and what difficulties are encountered along the way.

Companies consider the "Great deal of time required from project members over and above daily business responsibilities" and "ensuring professional and stringent project management" to be the greatest difficulties (Figure 11).

In general, the location decision-making process is not considered to be very difficult. Nevertheless, 43 percent of the companies surveyed reported having experienced delays in the process. The reasons stated for such delays include:

- insufficient data collection
- lack of a clearly defined strategy

The subject of "location decisions" has not yet been formalized at companies

- negotiations with governments and local authorities
- financing problems
- lack of a consensus within the company
- lack of resources for developing a decision-making template
- generally underestimating the processes and time involved
- the synchronization of projects running in parallel
- short-term changes in market conditions and customer expectations.

Some of these factors, such as short-term changes in competitive and market conditions, or exchange rate fluctuations, are not foreseeable. Other factors, such as an inadequately formulated strategy, insufficient data collection or project management problems, could be avoided by adopting more systematic planning measures.

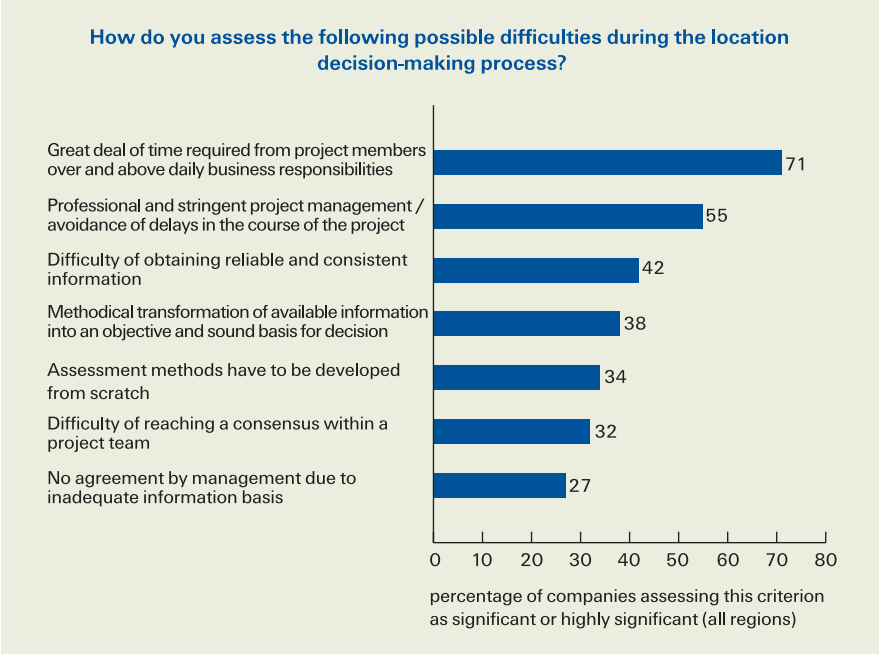

Figure 11: Difficulties involved in the location decision-making process
Source: KPMG International, 2005 Survey of Global Location Management.

Many of the difficulties encountered in making location decisions can be attributed to the low degree to which companies have formalized this process. Despite the high number of location decisions taken by many companies in the past decade, only 16 percent of the companies surveyed stated that they had a specialist for location decisions. Of the 31 automotive supplier companies interviewed in person, only one company had a department focused primarily on global location and investment decisions. The diverse functional position of the project managers for location decisions reinforces the impression that the approach for selecting locations varies significantly from company to company.

The following are examples of the titles of the project managers for location decisions of the companies in the survey:

- Managing Director
- Director of Strategic Planning
- Director of Global Production
- Director of Business Management
- Director of Finance / Controlling
- Director of Procurement
- Director of Sales and Export
- Vice President of Marketing
- Vice President Operations
- Corporate Planning Manager.

In general, companies approach each location decision project individually and assemble project teams on an ad-hoc basis. This approach is understandable to the extent that each location decision involves different requirements for the new location and plant involved. However, many companies seem to lack continuity with respect to a partial standardization of methods and processes or the transfer of experience from previous projects within the company.

The financial projections for new plants are increasingly being made on the basis of project duration

Location decisions are frequently initiated by the business divisions and supported by various head-office divisions, such as strategic planning, market research, legal affairs, production planning and controlling. Capital expenditure budgets and cost estimates compiled in connection with a business plan generally form the basis for the decision. Many companies address the uncertainty surrounding future order volumes at the new location by making use of scenario-based investment budgets.

In the case of purely customer-driven location decisions, new plants are now increasingly being budgeted in line with project duration, which is generally based on the lifespan of a vehicle model. The average lifespan of a vehicle model is currently approximately six to eight years, although considerable variations can be seen between manufacturers and model types. Financial projections generally include an additional two years for development. Although it is difficult for supplier companies to be able to offer competitive prices on the basis of cost estimates that reflect model lifespan, many suppliers aim to have such calculations accepted more frequently by their customers.

Local factors in particular are frequently not examined in sufficient detail in advance

The use of non-financial location assessment tools, such as scoring models, is not yet very widespread. The difficulty involved in obtaining indepth and reliable data for assessing and comparing alternative locations is frequently underestimated. Specifically local factors in particular, such as the reliability of energy supply, the availability of employees and local wage levels, the influence of trade unions and the quality of the local supplier base are often not adequately assessed in advance.

Some of the companies surveyed found that the supplier base in China was inadequate and were obliged to import significantly more parts than had originally been planned. Some companies encountered difficulties in recruiting adequately qualified employees, particularly engineers, within the vicinity of larger-scale industrial parks in China. As a result of frequent power failures in China, it was also necessary for some companies to make subsequent investments in back-up electricity-generating facilities.

Eastern Europe too, has recently experienced significant increases in labor costs in the areas surrounding the larger cities and in the vicinity of industrial parks. One company found, for example, that information obtained on wage costs in a certain part of the Ukraine was no longer valid six months later.

The importance of being aware of local conditions is shown by the example of a company that opened a plant in the United Kingdom and took on young employees. The company found that the motivation and skill levels of the workforce did not meet requirements and the company subsequently completely replaced its entire workforce with older employees. By talking to other companies on site, it may have been possible to gain some prior insights and avoid this costly mistake.

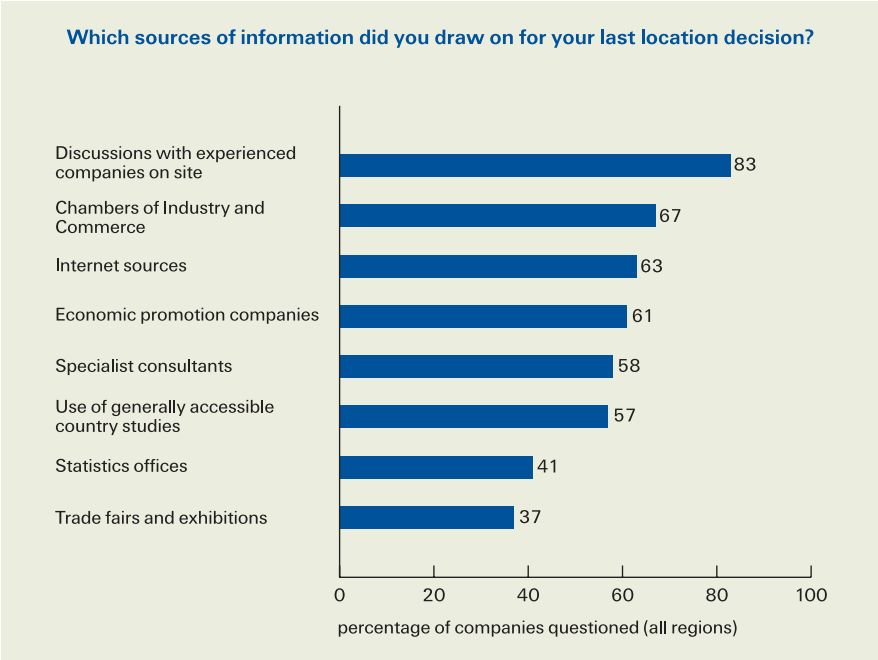

Figure 12: Use of information sources for location decisions
Source: KPMG International, 2005 Survey of Global Location Management.

Experience gained by other companies is especially valuable

The companies surveyed rated "discussions with experienced companies on site" and "Chambers of Industry and Commerce" as the most important sources of information for their location decisions. Around 58 percent of the companies drew on support from specialist consulting companies.

Early identification of location problems can be improved

When asked which of the information sources they used had the greatest influence on their final location decisions, 82 percent of the companies named specialist consultants, 75 percent mentioned discussions with experienced companies on site and 56 percent referred to investment promotion agencies. The relatively high level of influence exercised by investment promotion agencies on such decisions is surprising. Although these agencies can provide useful information concerning investment conditions and incentives, their primary aim is to present their location in a particularly positive light. Information provided by investment promotion agencies can therefore be relatively subjective and should be treated with caution.

Outlook: Location Decision

Location decisions are critical to a company's performance and represent long-term binding decisions with a significant impact on the future success and ability of the company to survive. Such decisions certainly differ in terms of their strategic background and the requirements of specific projects. Nevertheless, companies frequently lack stringent project management that clearly structure and regulate the decision-making process, allocating responsibility for various tasks and setting out which resources are to be committed at which stage of the process. Such a structure could make a considerable contribution towards avoiding costly oversights and delays in the location process.

In comparison with the handling of many other strategic decision-making situations, the methodology used for selecting locations generally shows a low level of continuity or standardization. Each location project is approached differently and the experience gained from previous location decisions is frequently not documented or handed on. The topic of location decisions could generally be more strongly institutionalized in companies, e.g., by appointing internal specialists or establishing specific processes and working groups.

Location Monitoring

The growing scale of global location networks has placed increasing requirements on efficient and effective centralized monitoring of production plants. Location monitoring (the terms monitoring and controlling are used interchangeably in this section) involves continually observing and comparing individual plants and locations. Figure 13 depicts the most important goals pursued by the supplier companies questioned in Europe, North America and Asia when undertaking a comparison of locations.

The main aims of European and North American companies in comparing locations are to recognize location problems at an early stage and to identify best practices. The findings

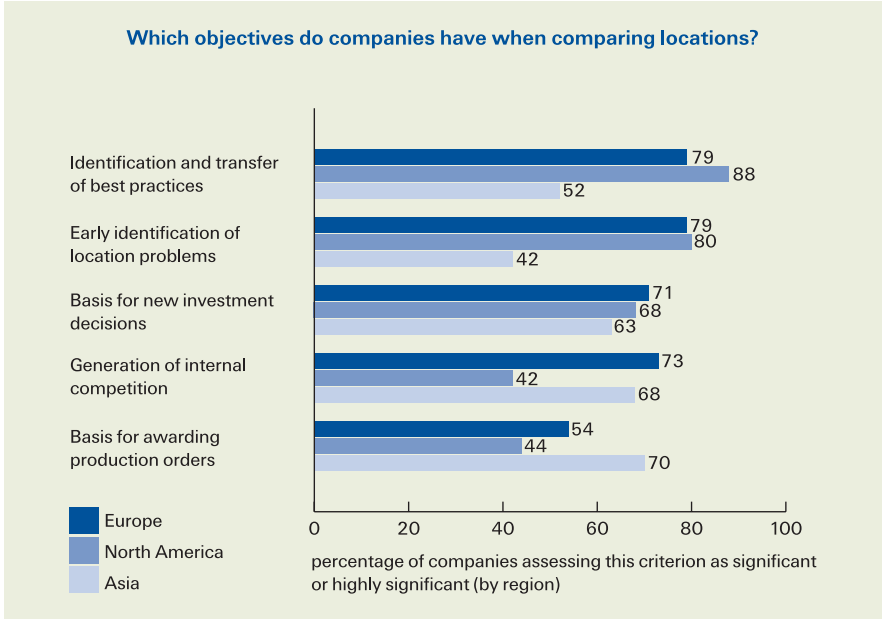

Figure 13: Aims of a comparison of production plants
Source: KPMG International, 2005 Survey of Global Location Management.

show that companies consider the early identification of location problems to be very important. In practice, however, 'firefighting' in response to changes in key metrics is more frequent than early prevention.

In order to facilitate proactive action in this respect, cause and effect relationships have to be better researched and sensitivities calculated in order to derive early indicators for changes in the company's performance. Moreover, developments within the environments of specific locations are rarely monitored systematically in the context of location controlling. Developments in the local employment market or pending changes in tax legislation are examples of environmental developments that could be identified and taken into account at an early stage in ongoing location management. A high level of employee turnover at the company, for example, might be an early indication of wage increases. At an earlier stage, an ongoing monitoring of location conditions could have highlighted a decline in local unemployment rates as an early warning for a possible rise in personnel turnover.

Figure 13 also shows that Asian supplier companies primarily compare their plants in order to make decisions on awarding production orders and to stimulate internal competition.

76 percent of the companies surveyed reported that there is internal competition between plants for production orders

A key problem in comparing the productivity of various locations lies in identifying comparable parameters. Companies generally develop highly specific in-house metrics in this respect, and a comparison is often only possible at a relatively high level of aggregation. Examples of metrics used include costs per man-hour, kilograms of output per day, production volumes per employee or cost per kilogram of output.

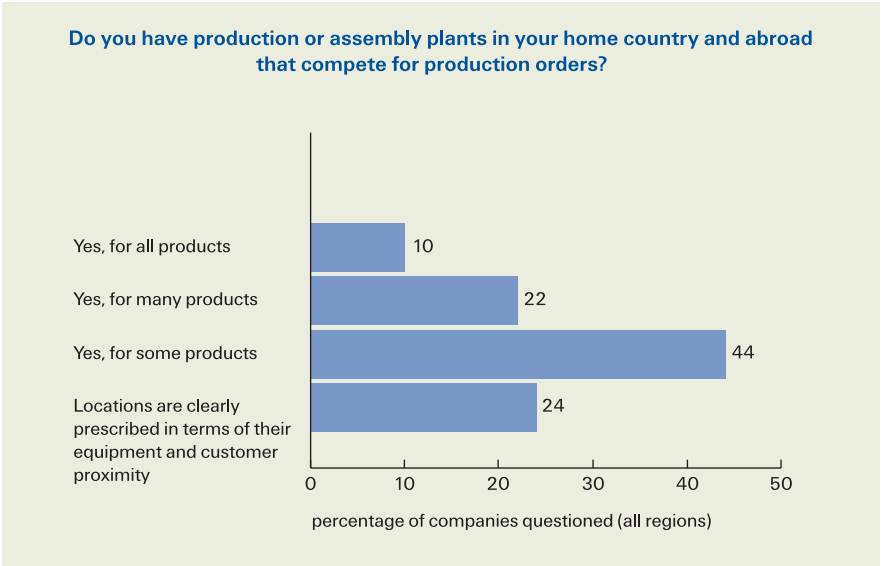

Figure 14: Competition for production orders
Source: KPMG International, 2005 Survey of Global Location Management.

Companies also have different attitudes with respect to how transparent location comparisons should be. Some of the companies surveyed argued that all plants should be able to see the benchmarking in order to stimulate open competition. In other companies, the comparative figures are only seen by the group head office. Decisions made by companies on this issue are primarily a function of corporate philosophy and culture.

Figure 14 shows that at 76 percent of the companies, plants are able to compete for production orders. By contrast, 24 percent of the companies stated that the question of what is produced where is already clearly determined on account of customer proximity or the equipment available at the various factories. It should be noted, however, that most of the companies reporting competition between production plants for production orders (44 percent), stated that this competition only applied to "some" products.

Every decision concerning the awarding of production orders represents a location decision. However, when awarding production orders, the focus is on internal performance comparisons, whereas a search for new locations primarily involves an analysis of environmental factors. In addition to cost and productivity comparisons, other aspects, such as current capacity utilization rates at the various plants and capacity expansion potential, play a role in the awarding of production orders.

There are different approaches used for determining how to allocate new production orders (Figure 15).

Companies generally deploy a mixture of the three approaches. The head office uses performance comparisons and information about specific locations from its existing controlling system, requests more indepth information or even initial cost estimates from

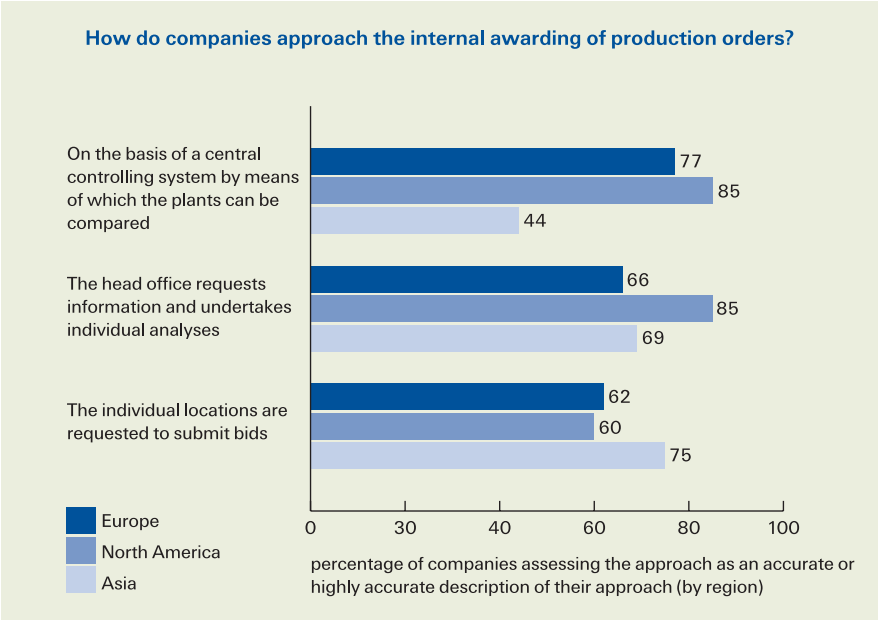

Figure 15: Approaches to awarding production orders
Source: KPMG International, 2005 Survey of Global Location Management.

the locations in question and then undertakes project-specific analyses on the basis of this information. For companies where many locations compete with one another and production orders are awarded frequently, such analyses can involve a considerable amount of time and effort on the part of the head office controlling department. The more information on performance comparisons already included in the location controlling system, the lower the amount of time and effort involved, and the more rapidly the analyses can be undertaken and decisions reached.

An alternative to this approach involves asking the foreign locations to provide extensive bids. These can be comprehensive than cost estimates and include a description of the future potential of the location (e.g., as in a business plan). An average of 65 percent of the companies surveyed across the regions stated that they requested bids for decisions on awarding production orders. However, this finding does reveal the scope and quality of such bids, i.e., whether they simply involve cost estimates or extensive business plans.

Companies are looking for the right balance between decentralized and centralized controlling structures

From an organizational perspective, location controlling involves a search for the right balance between centralized and decentralized controlling structures. Key questions are to what extent information should be collected at individual locations and how controlling tasks should be divided between the head office of the company and business divisions or other decentralized units.

The right balance between centralized and decentralized structures is highly dependent on company-specific factors, such as the size of foreign locations and the resources available, the size and structure of the business divisions, the autonomy of the plant and the general

corporate philosophy / culture of the company in question. In view of these company-specific factors, it is difficult to make any general recommendations as to the structuring of location-controlling systems. In general, location-controlling systems should contribute to saving resources, as well as being effective and easily comprehensible, while performing a monitoring function and identifying opportunities for improvement.

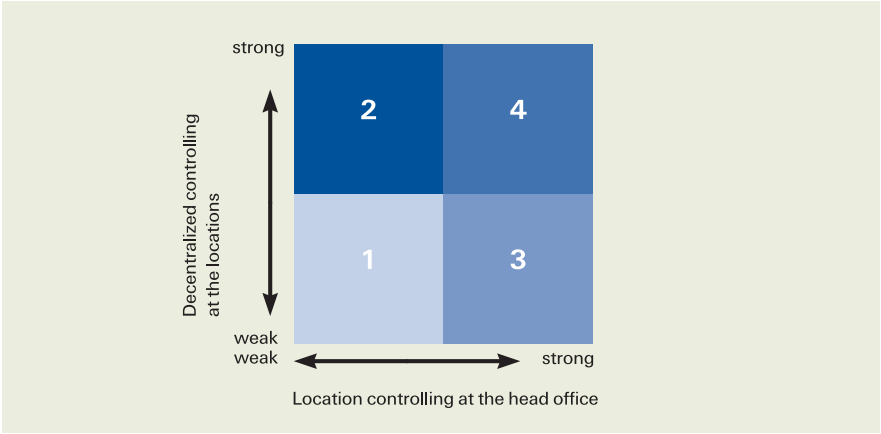

Figure 16: Balance between centralized and decentralized controlling structures
Source: KPMG International, 2005 Survey of Global Location Management.

The alignment of controlling structures at the companies surveyed was widely spread across all of the fields depicted in Figure 16. Field 1 represents a form of controlling based solely on the reporting of income-statement and balance-sheet items. Medium-sized companies in particular often have relatively small assembly plants at their foreign locations, with fewer than 100 employees and one managing director. This director could be overwhelmed by a reporting system requiring the local collection of extensive amounts of data. Companies in Field 2 have relatively strong decentralized controlling departments, which oversee the plants on the basis of their own analyses and also have a comparatively high degree of autonomy over new investment decisions. In this case, the head office manages the plants distributed across the various locations primarily on the basis of key earnings figures. Field 3 represents companies that have robust controlling departments at their head offices, that not only consolidate the results but also undertake extensive performance comparisons between the plants and make all significant investment decisions for the locations. In this case, there is the danger that decentralized controlling structures with inadequate resources could be overburdened by a large-scale system for gathering performance metrics. Finally, Field 4 depicts a form of controlling in which the local units act with relative autonomy and are in a position to optimize their own plant on the basis of robust controlling measures. The head office controls the location network by means of an extensive metric system used for comparing location performance and identifying best practices. Although this version basically represents an extensive controlling system, its use for companies has to be viewed from a cost/benefit perspective.

Well-equipped decentralized controlling units generate high overhead costs for smaller plants. Larger plants operating with a high degree of autonomy in a regional market, by contrast, require robust controlling structures. It should also be noted that new plants generally have to deal with a large number of operating problems during the start-up phase, which means that extensive reporting obligations can represent a heavy burden. One possible solution involves gradually increasing reporting requirements for locations as operations are ramped-up.

Figure 17 shows several key metrics that are used by companies for location monitoring.

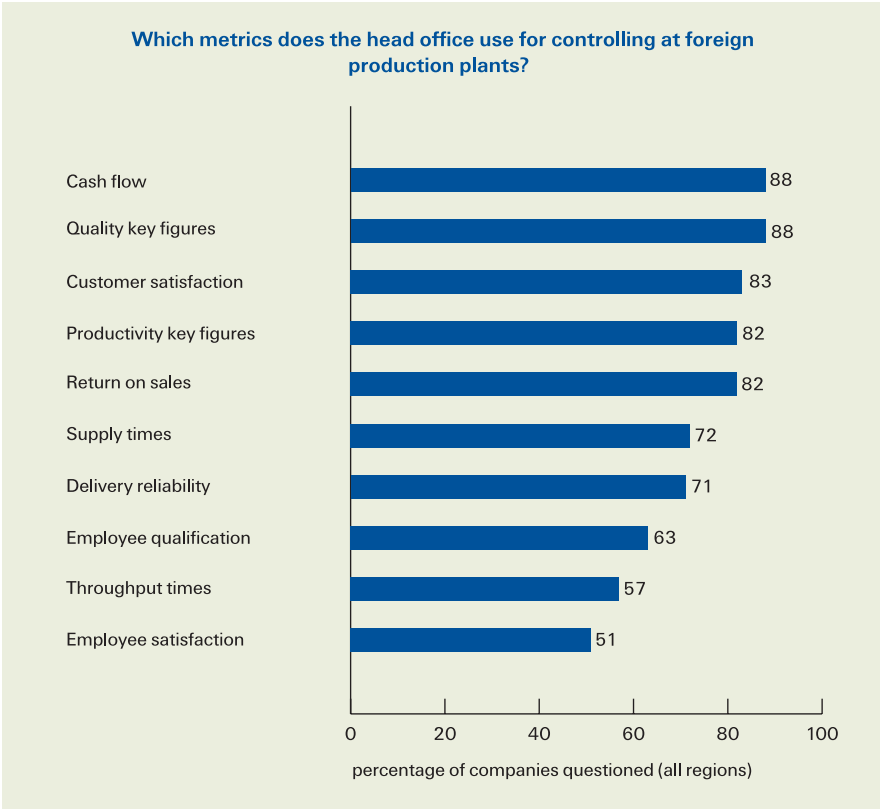

Figure 17: Use of selected metrics for controlling purposes at foreign locations
Source: KPMG International, 2005 Survey of Global Location Management.

Location controlling is based heavily on the income statements of the individual locations. Virtually all companies now have an IT-based standardized controlling system that helps enable the automatic consolidation of results. Further IT tools are often used to analyze the results. At some companies, this evaluation of key figures is still based on Excel. This form of controlling primarily involves analyzing earnings-based figures, such as cash flow, return on sales, ROI or EBITDA. However, there are differences in the extent to which locations are controlled on the basis of their earnings or on the basis of their costs. Around 56 percent of European and North American supplier companies control their locations using value-driven key figures (such as Economic Added Value). The equivalent figure for Asian companies is a mere 21 percent.

In addition, many companies monitor a range of quality indicators (e.g., ppm rates, complaints), customer satisfaction and productivity metrics (e.g., value added / employee, costs / hour, production volume / employee), process-based figures (e.g., supply times, delivery reliability, throughput times) and employee-based metrics (e.g., indicators for employee qualification and satisfaction levels).

There are differences in the way in which these key figures are recorded. At some companies, the figures are requested directly from the locations by the head-office controlling department. At other companies, data on personnel and production are requested and monitored by the relevant head-office departments. In the second case, some companies mentioned that the transfer of this data to the central controlling department could be improved. By contrast, a number of companies have management information systems that contain all important data and metrics for the individual plants.

Several companies are in the process of introducing a balanced scorecard

The survey revealed that companies already request a series of metrics that could be assigned to the four basic perspectives of a balanced scorecard (financial, process, customer and employee perspectives). A balanced scorecard is a management and controlling system that translates the vision and strategy of a company or a part of a company into specific measurable targets and actions.

It also was apparent, however, that the balancing of the perspectives required by a balanced scorecard is not yet being fulfilled and that controlling remains overly focused on financial aspects. Financial key figures are without a doubt one of the most important indicators of a company's performance. At the same time, however, they represent lagging indicators of the company's performance. Some of the companies surveyed were in the process of introducing a balanced scorecard or of developing their controlling systems in the direction of balanced scorecards. A balanced scorecard generally constitutes a valuable instrument for strategic location controlling. On the one hand, a balanced scorecard places some requirements on decentralized controlling structures, which can be a burden on foreign locations, particularly very small ones. On the other hand, a balanced scorecard should also provide greater structure to the process of collecting data and, by focusing on a small number of key metrics, simplifying the process of location monitoring.

Many companies we spoke to lack a number of factors that could help enable them to develop a balanced scorecard for location monitoring, including clear orientation of their data collection toward strategy and goals, an improved linkage among metrics based on understanding of cause and effect and a more balanced structure for requesting information. These are the key elements that differentiate a balanced scorecard from monitoring systems in use today.

Outlook: Location Monitoring

The rising number of production plants and increasing complexity of production networks place high demands on location controlling structures. One of the most important aims of location controlling include the early detection of location problems and the identification of best practices. Robust controlling by the head office based on extensive metrics requires sufficient controlling resources to be in place at the decentralized units in order to collect the necessary information. This cost/benefit consideration represents a critical factor in the search for the right balance between centralized and decentralized controlling.

Dynamic changes in market and competitive conditions require location structure to be adjusted on an ongoing basis. The early identification of these changes should be further improved. A balanced scorecard could be one instrument for making the collection of data more targeted and for enhancing the early identification of location risks through an understanding of cause and effect relationships. Some companies are already in the process of developing a balanced scorecard for their location monitoring activities.

Location Migration

The objective of location monitoring is to continually monitor and optimize location structures and involves decisions to relocate production between locations or possibly to close down plants.

48 percent of companies have closed down a plant in the past 5 years

The reduction of production capacities and especially closing down plants are unpleasant topics. In comparison with expansion projects, plant closures attract a low level of attention and there is relatively little information available on this topic. The results of the survey show that many companies are currently confronted with the issue of plant closures. 48 percent of the companies surveyed across many regions had closed down one or more plants in the past five years.

Within our survey sample, North American supplier companies had closed down plants most frequently (68 percent), followed by companies from Europe (46 percent) and Asia (33 percent).

Supplier companies continue to strive for a long lifespan for their plants. Attempts are made to sustain the competitiveness of some plants, for example by investing in a higher degree of automation. Dynamic market and competitive changes have nevertheless repeatedly led to plant closures both in home markets and abroad.

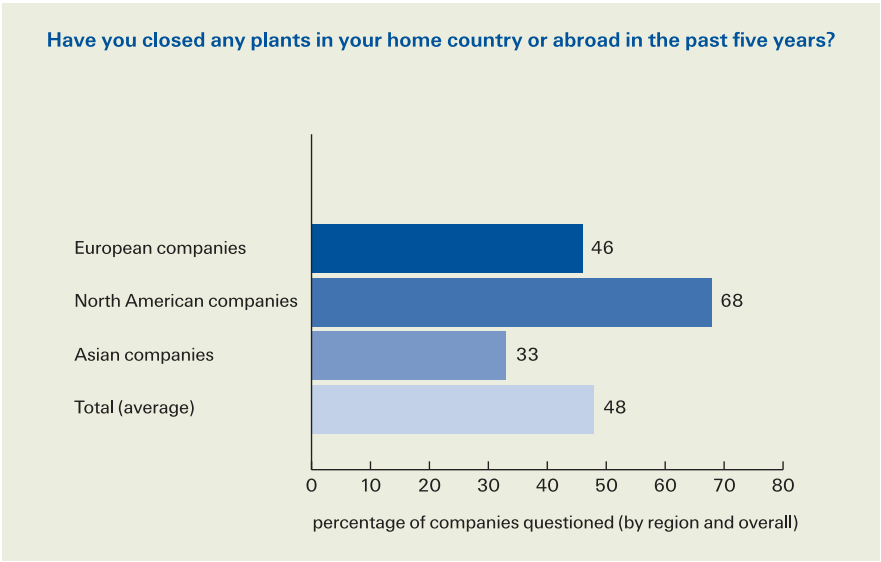

Figure 18: Number of plant closures in the past five years
Source: KPMG International, 2005 Survey of Global Location Management.

The following are some of the main reasons for the high number of recent plant closures.

- Ongoing migration of companies from Western industrialized countries to countries with lower wage costs
- Second-stage migration from a former low-wage country (e.g., Hungary) to a new low-wage country (e.g., Romania)
- Excess global capacity, resulting from the opening of new plants in growth markets such as China
- Process and customer-driven plants are increasingly being planned and calculated on the basis of model lifespan
- In some cases, mergers and acquisitions have led to a regional duplication of plants
- Some companies have been consolidating plants in specific regions to reduce costs.

Figure 19 shows the specific factors that have contributed to companies to reduce production capacities or to close down entire plants.

The "changes in local order situation" factor was accorded the greatest significance as the reason for closing a plant or considerably reducing production capacities. One company interviewed for this study had built a new plant in Brazil as a result of a significant contract with a key customer. When the agreed order volumes were never reached, the plant had to be closed down only three years after being set up. In China, some companies have already had to curtail production capacities or consolidate their locations as local sales volumes have not developed as expected.

Changes in wage and non-wage labor costs were considered to be almost as significant as the local order situation as reasons for closing down a plant or significantly reducing

Some regional consolidation of locations can be observed

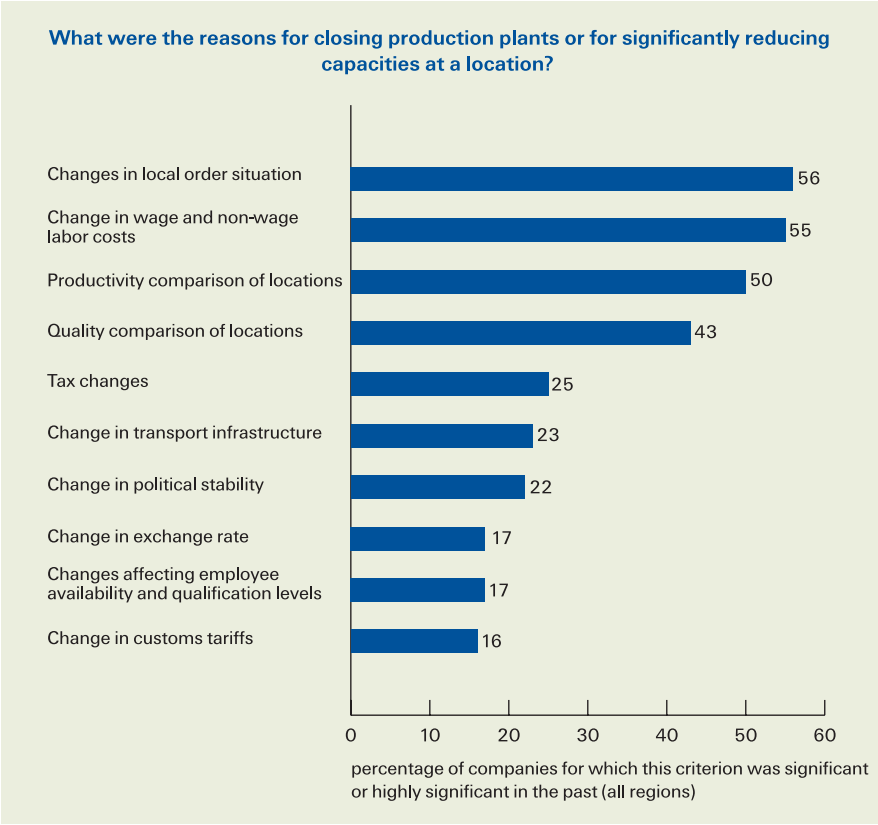

Figure 19: Factors affecting plant closures
Source: KPMG International, 2005 Survey of Global Location Management.

production capacities. Companies with highly labor-intensive products, such as wire harnesses, are obliged to react with particular speed to any changes in wage and non-wage labor costs. As a result of labor costs, some companies have now relocated part of their production from Hungary to Romania or the Ukraine. Mexico is also no longer considered to be a low-cost location and attention is already shifting to other Central American countries, such as Honduras. In Asia, companies from Korea and Japan are also increasingly requesting their suppliers to expand their production activities in China. In general, companies are getting more confident about opening plants in less developed countries.

Some companies are attempting to regain a greater consolidation of their production plants within a particular country or region. Examples of location consolidation within a single country mentioned in our interviews included Brazil, Mexico, China, Spain and Germany.
The consolidation of locations on a regional basis usually involves the closure of a plant and the relocation of at least part of its production to another plant.

Consolidation is primarily aimed at reducing overheads by merging plants, generating cost reductions as a result of higher volumes per plant, and in many cases achieving a reduction in excess capacities.

Advances in the development of flexible machines and facilities have now made it easier to produce a wider range of products on a single machine and in some cases in a single plant. Especially those companies with a large number of locations are pursuing the objective of being able to offset fluctuations in capacity utilization rates at individual plants more flexibly within their network of production locations. Efforts to increase plant flexibility generally also involve considerations regarding the potential for consolidating location structures.

However, the potential benefits of regional location consolidation and business park or campus concepts also involve several drawbacks, such as reduced entrepreneurship, more complex management structures at the newly integrated plants and the danger of 'overheating' regional labor markets.

Once a decision has been made to close down a plant, the company concerned is faced with a variety of tasks. The main challenge involves finding the right balance between economic interests and social responsibility. The time and effort involved in the closure of a plant is frequently underestimated. Figure 18 shows which tasks are particularly problematic from the point of view of the companies surveyed.

The closure of a plant involves a great deal of time and effort

Which tasks undertaken in connection with an extensive reduction in capacity or plant closure are particularly problematic?

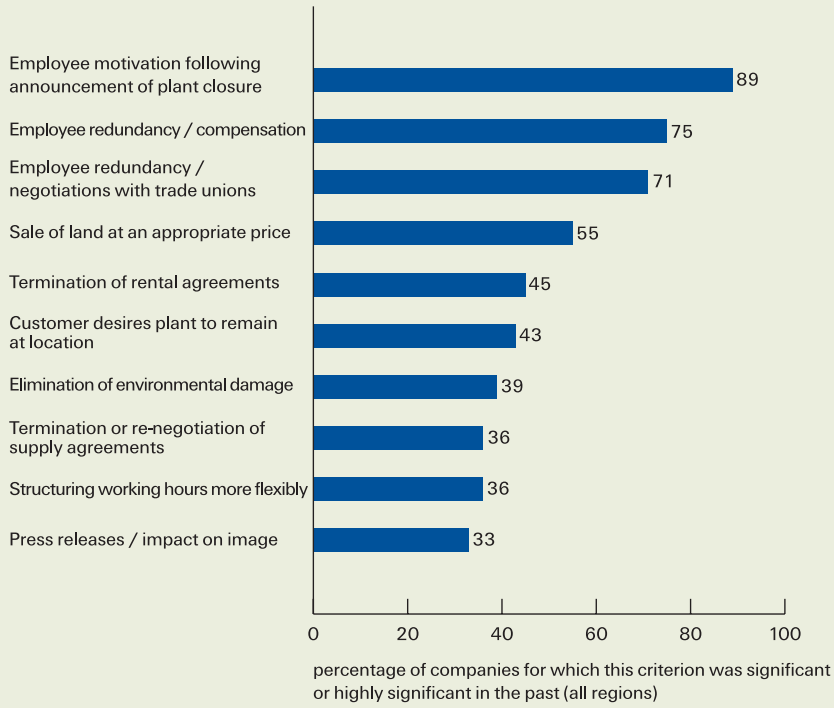

Figure 20: Tasks relating to a reduction in capacity or plant closure
Source: KPMG International, 2005 Survey of Global Location Management.

In addition to those tasks directly related to the closure of a plant, such as:

- the timing of the announcement of the closure
- the preparation of PR and communication activities
- the preparation of severance plans for employees
- negotiations with trade unions and works councils
- the termination of rental and supply agreements
- the remediation of environmental damages
- the sale of land and buildings.

The closure of plants can often also involve the relocation of production to other plants. This results in further tasks, such as:

- the distribution of production among other production plants
- the transfer of quality measures to the new production locations
- the auditing / certification of processes at the new plant
- obtaining supply approval from the customer for each individual product
- adaptation and conversion of IT systems.

One company reported that it had taken more than half a year before the customer approved the production process for a relocated product. Particularly in cases involving a large variety of components, the approval process can be highly time consuming and expensive. Another company reported that its central HR department was tied up over a long period with the preparation and negotiation of employee severance plans and hardly had any time for other tasks during this time.

Plant closures affect a large number of interest groups. It is therefore important to plan at an early stage how the needs of these groups, such as employees, government officials, local authorities, works councils, trade unions and other production plants within the company, can best be met under the given circumstances. Plant closures therefore require the systematic development of exit strategies that identify and set out the consequences of the plant closure, as well as the careful preparation and planning of the forthcoming tasks.

When opening a new plant, few companies think about the possibility of its closure at a later date

Investments in new locations are risky projects, particularly for medium-sized companies in which any failure could endanger the performance of the entire company. Many companies therefore try to keep the level of investment as low as possible at the beginning and pursue a strategy of step-by-step or phased internationalization. This gradual approach can take several forms, such as licensing or entering joint ventures with the objective of a takeover at a later stage, using older, fully depreciated machines to be replaced at a later date by new machines and a higher degree of automation, or an initially low level of value added in the foreign location (e.g., only final assembly) with an increase in the level of value added at a later stage. These approaches general focus on limiting or gradually increasing the capital committed to the new foreign plant.

Location flexibility criteria should be taken into account when assessing location factors and opening new plants

However, few companies consider factors that could affect the possibility of a future reduction in capacity or a complete withdrawal from the location. One company reported that a property lease in the U.S. included severe contractual penalties in the event of any premature termination and that this was one of the reasons why the plant had not yet been closed. In Ireland, one company had signed a long-term government grant agreement that prevented a premature withdrawal. In Spain, one company had to pay severance amounting to more than two years of annual salaries on closing its plant. Another company interviewed for this survey has not succeeded in selling its land and buildings more than two years following the closure of a plant in Germany.

Companies can proactively consider important factors impacting location flexibility when evaluating potential locations and establishing new plants. This involves, for example, assessing the flexibility of labor regulations with regard to capacity adjustments, accounting for resale potential when building new plants or acquiring land, avoiding long-term commitments and penalty clauses in rental, service and incentive agreements, or taking into consideration ease of relocation when investing in machines and equipment.

In our discussions, we encountered individual examples of companies planning proactively for potential future closures. One company ensured that reinforcements for overhead cranes were installed when designing its plants, even though these were not required for its own production activities. The aim was to increase the utility of the building for other industrial companies and thus to enhance its resale potential. Another company was enhancing the transferability of its machines by developing 'plug and play' concepts. Moreover, several companies stated that they had only rented their production premises for the duration of the supply contract for a particular model.

Outlook: Location Migration

When developing new production plants, few companies give thought to the possibility of future cutbacks and the complexity of the tasks involved in such moves. However, the developments seen in recent years show increased momentum in terms of the development and subsequent closure of locations and in the relocation of production capacities (location migration). A whole series of factors facilitating the reduction of production capacities could already be taken into account when assessing location factors and establishing new production plants.

Plant closures involve a wide variety of tasks and a high degree of time and effort. Companies should therefore address the development of exit strategies at an early stage. Many companies lack any model to guide them or checklists that could offer support in systemically approaching the highly complex, time-consuming and unpleasant task of closing down a plant.

Conclusion – Integrated Location Management

Global location management is a cross-functional topic. There are many areas where the individual tasks involved in global location management and presented in this study intersect (Figure 20). In practice, however, companies rarely view and coordinate these task areas in an integrated manner.

Integration of the tasks involved in global location management

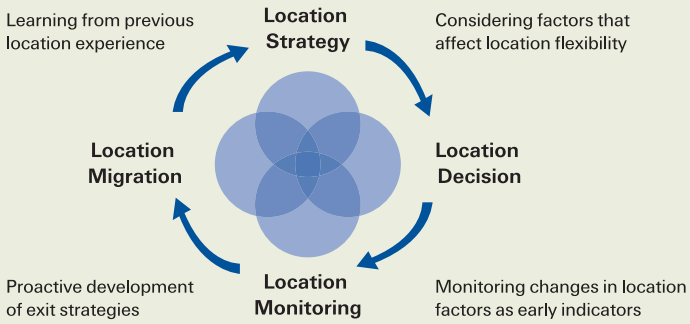

Figure 21: Integration of the tasks involved in global location management
Source: KPMG International, 2005 Survey of Global Location Management.

"Location Strategy" and "Location Decision" are related in terms of location flexibility. Location flexibility is generally taken to mean a low level of dependency on individual customers, a high capability to react to fluctuating order volumes and a general limitation of the risk involved in the investment. A considerable number of the factors affecting the location flexibility of a new production plant are factors that can be taken into consideration during the location decision-making process.

"Location Decision" and "Location Monitoring" are related in terms of the early identification of location risks. Many location risks have their origin in a change in location factors. Sources of information for monitoring and evaluating locations can already be identified during the location decision-making process and could be used for ongoing location monitoring.

"Location Monitoring" and "Location Migration" are linked by the proactive development of exit strategies. Location monitoring should identify any adjustments required in the location structure at an early stage and trigger the development of exit strategies wherever necessary.

Finally, "Location Migration" and "Location Strategy" are linked by the tasks of learning from previous location decisions and plant closures and ensuring that such experience is factored into new location strategies and decisions.

These are just some examples of interrelationships between the various activities involved in global location management presented in this study.

Global location management frequently involves decisions about very high investment volumes. The companies surveyed invested an average of between one percent and five percent of their annual turnover in new plants, and the new production locations are of critical importance to their performance.

Except possibly in the case of very large companies that have to coordinate 50 or more production plants, we are not arguing for the establishment of new head-office departments or functions, which could cause additional overhead expenses. We do believe, however, that smaller companies should designate location specialists or set up working groups to address the improvement of internal processes, the allocation of responsibilities, the development of methods and tools and the coordination of internal information flows.

The objectives of forward-looking location management are increased consideration of location flexibility, early identification of location problems and the systematic planning of exit strategies. For companies to be able to meet these objectives, they have to integrate the various activities involved in global location management more closely and provide a more robust organizational framework for these to take place.

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Designed and produced by KPMG's Global Markets Design Services

Printed in Germany

Publication number: 101105 November 2005