STRATEGIC PARTNERSHIP –
PRODUCTIVITY OF SERVICES

PRODUCTIVITY GUIDELINE

MICRO-/MACROECONOMIC ASPECTS OF SERVICE PRODUCTIVITY

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FRAUNHOFER VERLAG

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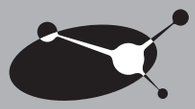

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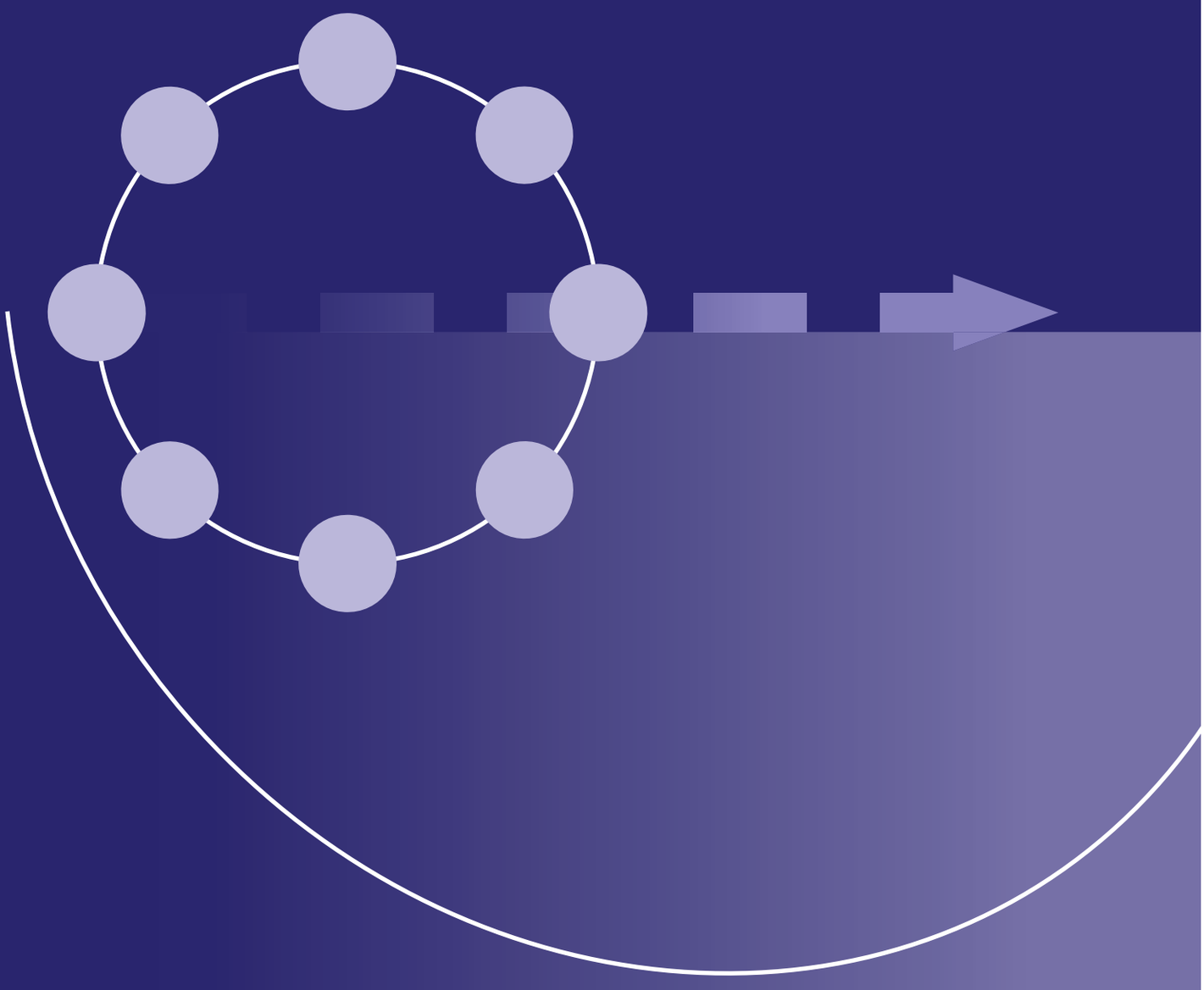
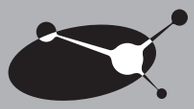




PRODUCTIVITY OF SERVICES

The strategic partnership »Productivity of Services« is a collaborative effort involving close cooperation between the industry, science and policy-making sectors. Initiated in 2009 by the Federal Ministry of Education and Research (BMBF), it provides impetus for the BMBF's funding priority of the same name. In that funding priority, which is part of the research program »Innovation with Services«, a total of 34 individual and collaborative research projects are working to develop strategies and instruments for measuring, structuring and improving service productivity. The strategic partnership is serving as a »meta«-project for the funding priority. Via a structured process, it facilitates comprehensive networking between the different research projects involved, as well as with additional experts. It thus provides valuable additional perspectives, both inward, within the group of the projects, and outward, toward a wider frame of reference. As a result, it helps to ensure that requirements from real-world practice enter readily into the ongoing development of the projects, that discussion between relevant stakeholders is initiated as necessary, that joint visions and solutions take shape and that valuable experience is exchanged.

In addition to forging overarching links between central issues of service productivity, the strategic partnership »Productivity of Services« also works to raise awareness of »service productivity« issues among a broad professional audience. What is more, it seeks to advance research and development overall relative to productivity of services and to consolidate and integrate findings and knowledge in this topic area. It thus facilitates and supports active networking between national, European and international activities in the areas of service research and innovation policy.

The Knowledge Network is the central organ of the strategic partnership »Productivity of Services«. It consists of eight working groups:

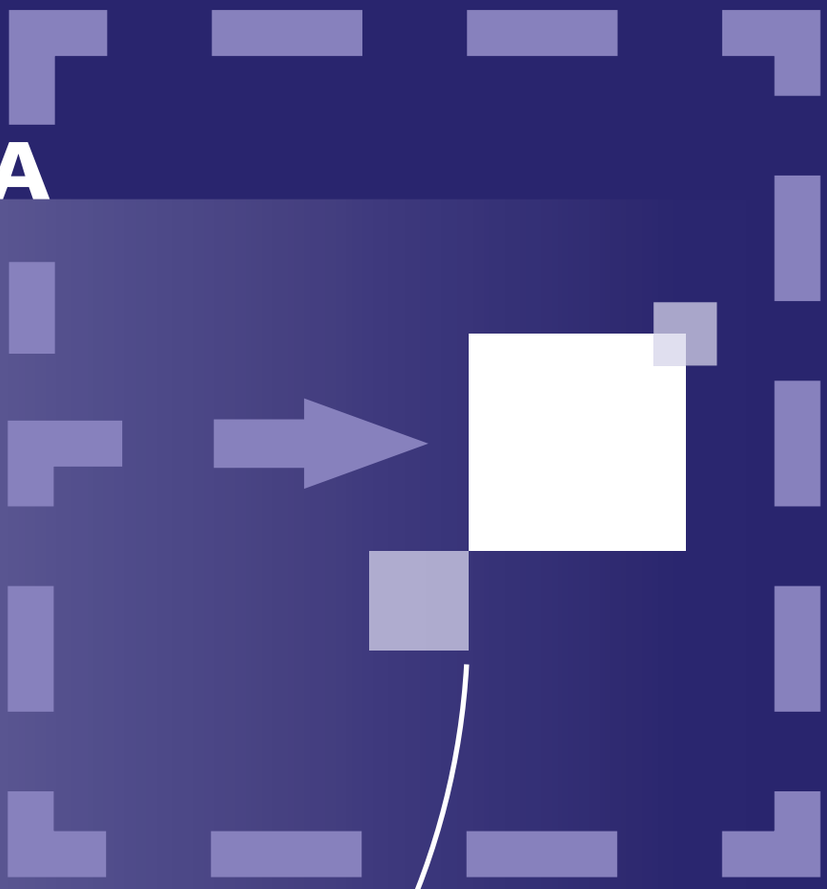
- Productivity of Service Systems,
- Productivity in Service Development,
- Productivity of Service Work,
- Service Productivity with Technologies,
- Controlling for Service Productivity,
- Service Productivity in SMEs,
- Micro-/Macroeconomic Aspects of Service Productivity,
- Scientific Base and Service Science.

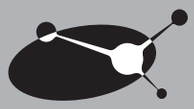
The working groups are made up primarily of representatives of the industry and science sectors, of intermediary institutions and of the projects supported within the funding priority. A total of 160 partners are actively involved.

Each working group's central product is a productivity guideline, produced via intensive exchanges and interdisciplinary cooperation among the various stakeholders involved. In preparing such a guideline for its specific topic, each working group has developed productivity scenarios, identified relevant practice-oriented examples and derived recommendations for action.

The Innovation Office of the strategic partnership »Productivity of Services« wishes you enjoyable and informative reading.

TOPIC AREA





MICRO-/MACROECONOMIC ASPECTS OF SERVICE PRODUCTIVITY

The topics of a) the importance of productivity in the service sector, and b) optimal ways of measuring such productivity have long been the subjects of much discussion and controversy. Although the service sector is quite heterogeneous, most pertinent empirical and theoretical studies agree in viewing service productivity one-dimensionally and in defining relationships between factors that influence input and output. Such perspectives are simplistic, however, and fail to take proper account of the service sector's great diversity.

The present guideline describes the work of the working group »Micro-/Macroeconomic Aspects of Service Productivity«, which deals with a range of issues concerning measurement and analysis of service productivity, on various levels, and which develops models for evaluating and structuring such productivity.

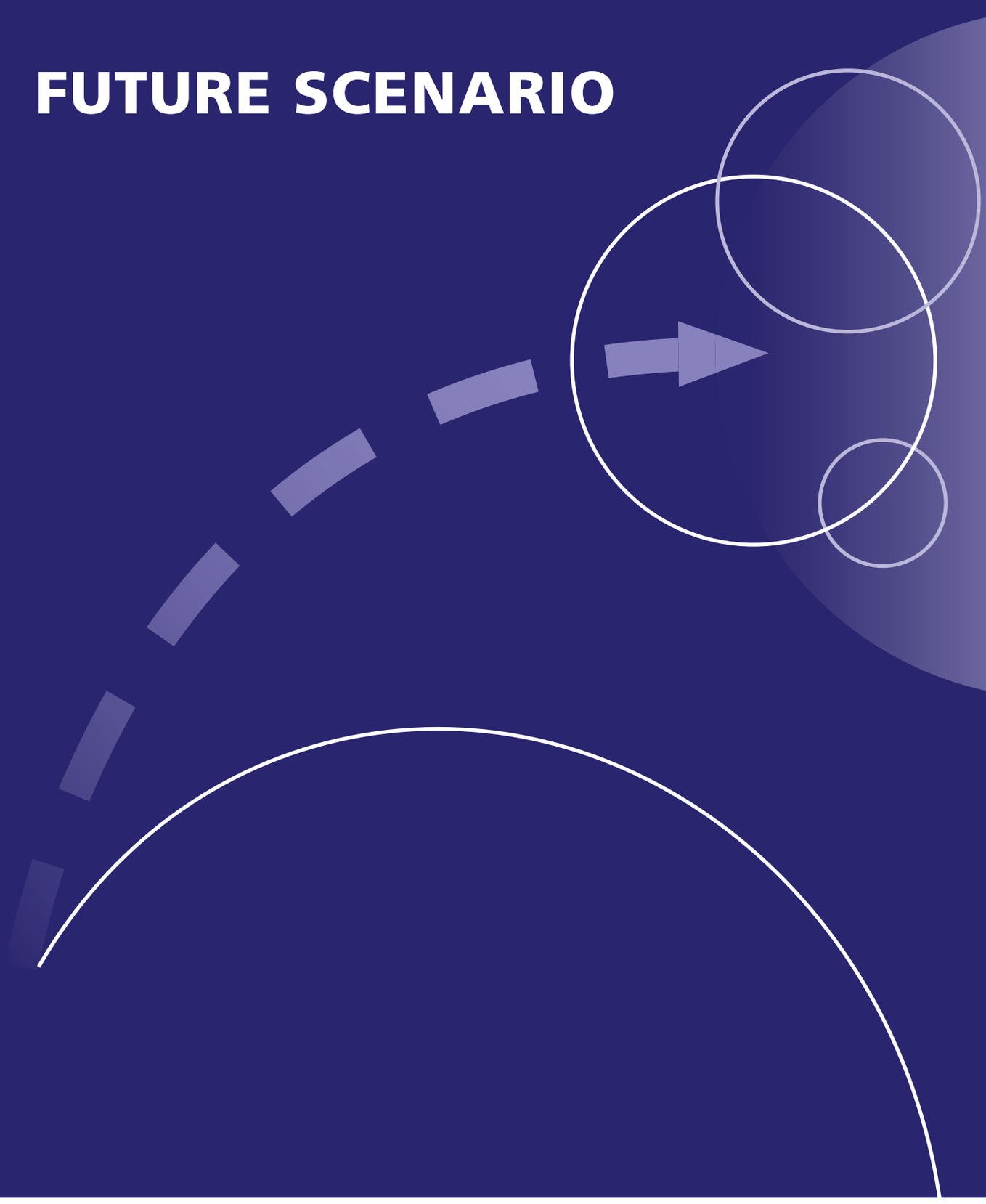
On a microeconomic level, it is often assumed that input and output factors are basically identical in terms of their characteristics, and that they thus can be considered and compared via a standardized approach. And yet such approaches, and the productivity indicators they generate, reflect only part of the actual productivity found in service companies. The special characteristics of services overall on a microeconomic level – especially those having to do with the integration of customers in the service-provision process – call for differentiated and possibly even separate procedures for calculating productivity. A productivity indicator applied to service readiness, for example, has to be differentiated from an indicator that reflects the actual provision of a service.

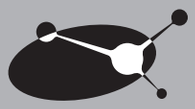
On a macroeconomic level, and in both goods and service production, value creation – and not quantities – is the output to consider. A well-known problem that occurs in this regard is that differences in prices, in addition to reflecting differences in quality, can also reflect differences in market power, demand structures and legal regulations.

Initial findings from the projects indicate that productivity in the service sector can be improved by improving technical equipment. Improvements in personnel training, and restructuring of service-provision structures, can also yield productivity improvements. The qualitative aspects of a service provider's output are evaluated especially by customers. The determinants customer satisfaction, customer-evaluated quality and customer loyalty are indicators for output quality.

In order to be able to derive recommendations for the political, industrial and scientific sectors, the working group begins by identifying relevant empirical surveys and deriving factors that influence service productivity. On that basis, a model is generated that takes account of the many different conceivable influencing factors, and of the heterogeneous characteristics of the service sector, and describes them as realistically as possible. The so-generated model makes it possible to simulate the impacts of political, economic and institutional measures on service productivity.

FUTURE SCENARIO





MICRO- AND MACROECONOMIC PERSPECTIVES

The working group »Micro-/Macroeconomic Aspects of Service Productivity« has developed two perspectives that together provide a comprehensive description of potential micro- and macroeconomic trends through 2020.

MICROECONOMIC PERSPECTIVES ON SERVICE-PRODUCTIVITY MEASUREMENT

Current situation, and a look at future lines of development

Most researchers agree that service productivity is difficult to measure at the company level (the micro-level). This is because the special characteristics of services (intangibility; integration of the customer in the service-provision process, etc.) play a central role at that level and hamper any measurement of input and output. Service companies often measure productivity in terms of findings obtained by industrial companies; i.e. they simply apply an industrial approach to such measurement. In so doing, they assume that input and output factors are basically identical in terms of their characteristics, and that they thus can be considered and compared via a standardized approach. However, such approaches, and the productivity indicators they generate, reflect only a part of the actual productivity found in service companies. That said, it must be noted that it is easier to measure the productivity of relatively standardized services, such as transport services, than it is, for example, to measure the customized services provided by business consultants.

On the whole, therefore, the special characteristics of services – especially their integration of the customer in the service-provision process – make it necessary to break productivity calculations down into sub-calculations. A productivity indicator applied to service readiness, for example, has to be differentiated from an indicator that reflects the actual provision of a service.

Service readiness is achieved by internally combining, and making available, all resources needed to provide the relevant service. The productivity of this process is something that the service provider achieves autonomously, and it is relatively easy to measure. The service-provision process functions on the basis of service readiness, as well as of the resources additionally used in production, sales and consumption. The customer's pertinent resources may also be counted as part of it. It is easy to understand that the customer can improve overall productivity by himself investing time, energy and capital in the service-provision process. On the other hand, the customer can worsen the company's productivity indicators by developing special wishes and requirements and calling for pertinent adjustments.

Customers will continue to participate in service-provision processes. Many producers have standardized as many of their interfaces to customers as possible. Such standardization reduces the risk that customers will be able to exert productivity-reducing influence. In addition, it leads customers to give basically higher qualitative marks to services in which a brief production period plays a critical role in the customer's positive perception of quality. In such areas, technologies support producers and customers in service provision (for example, check-in at the airport; services provided by robots). Highly individualized services, however, cannot function properly without close interaction between the customer and the producer. And yet various sub-processes of such services can be standardized, to enable the customer to access the service more quickly, and to make the service more reliable and more individualized (example: making doctor's appointments via the Internet). Such partial standardization enables a service provider to allow more time for individualized consultation and service provision. The service quality as perceived by the customer improves, and the productivity of the service company does not suffer.

Demand will continue to fluctuate in the future. Service companies have found ways of addressing demand fluctuation by optimizing their service provision. With the help of optimization programs, they can vary their business models and prices in ways

that enable them to control and adjust supply and demand, dynamically and at short notice, and via application of pricing models, process standardizations in sub-areas and clustering of customer types. Additional technologies will have to be developed before complex provider-customer dynamics and market dynamics can be suitably processed (e.g. in the area of electricity supply).

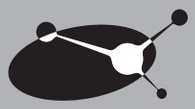
Employee qualifications, consisting of general skills, knowledge gained through experience and company-specific skills, play a central role in any service provider's service provision. In the case of individualized services, for example, interaction with the customer calls for special flexibility and know-how. In the future, indicators will be provided, and used, for measuring different forms of knowledge gained through experience, of training levels, of knowledge increases and of learning skills. In the process, both classical indicators, such as numbers of hours spent in further training, and new indicators (classification of employees on the basis of an experience matrix) will be used. In addition, internal environmental factors, such as working atmosphere and management style, will also be taken into account in describing and evaluating performance and productivity. To keep costs for further training under control, and to prevent any negative effects on productivity, employees will increasingly be trained online and via video and conference systems. Such »blended learning« strategies make it easy and affordable to offer regular updates.

Customers will be classified and segmentally integrated, in keeping with the degrees of integration they require, as well as with their experience and willingness to collaborate. Business models (with regard to prices and services) will be adjusted in keeping with such classifications. This will lead to extensive modularization of services and price models. Customers will enjoy full transparency with regard to price components, and they will individually compile their own services in the context of the clusters into which they fall. As necessary, customers will be offered supplementary training in using the services they receive. Here as well, learning sequences will be supported with the help of technologies.

Quality and customer satisfaction will be carefully viewed and treated as output factors. With the help of continuous-measurement concepts, they will be measured »on the job« (for example, via observation, video recording and automatic evaluations). Customer service will continue to be supported by special programs to foster customer loyalty. Providers of programs to foster customer loyalty will experience market consolidation and they will expand their cooperation strategies. Furthermore, customers will increasingly be systematically analyzed, in terms of their wishes and requirements, and on the basis of various data sources (Internet use, movement profiles, cellphone use, shopping patterns, etc.). Service-provision processes will include regular, automatic customer-satisfaction checks. Both customers and providers will have a range of options for providing feedback, via independent platforms (such as experts' platforms), and the feedback provided through such channels will lead to improvements. In the process, data security will receive high priority. Service providers will undergo regular, independent audits that will enable them to build customer trust by sending special quality signals. At the same time, service providers will seek to offer the greatest-possible transparency regarding their back-office and front-office processes.

A 2020 scenario: An education-service provider measures his productivity

Given the current situation in the labor market, every would-be employee needs to build his own, individual »competency brand« and ensure that he remains attractive for the labor market. Employees rarely stay with the same company for a lifetime anymore. And I, an education-service provider, also need to stay fit for the market. Needless to say, my services help my customers become, and remain, attractive employers and freelancers. I have a training certification – a top-level certification in the area of service-process analysis. To retain my top-level training certification, I have to reaccredit myself every four years. That involves taking an exam, as well as describing the sorts of projects, cus-



tomer evaluations, cost-benefits analyses of services, process assessments, technologies, quality standards, etc. encountered or carried out in my field of expertise. My customers come to me in order to gain a fresh, in-depth perspective on service processes at the highest level – and to earn education credit points for their learning efforts. Thanks to the high standards I maintain in my own certification, and to the high standards I apply to my own work, the education credit points I award are always well-respected. Needless to say, they do have their price.

Most of my customers are students. Customers register on the website operated by the umbrella organization I'm accredited with (and that website also presents a full array of information about me and my services) and then select from a range of course modules I offer. The entire registration and learning process is largely standardized. Students simply download their course materials from the website. While I do offer one-on-one advising and private lessons, those services have to be booked separately, and they are more expensive than courses provided to many students at a time, at predetermined hours. My customers are free to take a more active role in the course-structuring process. They can assume greater responsibility for researching the relevant literature, for selecting topics or for identifying project partners. And they can reduce their course fees by doing so.

Each student's educational record and progress is stored on a chip card. This makes it easy to see where a student is, in terms of background, prerequisites and coursework, etc., and it facilitates advising and individual attention and reduces overall coordination overhead. My course offerings are modularized, and they are normally combined on various defined integration levels. These structures facilitate my capacity planning. I offer special incentives, such as discounts on examinations taken in the off season, and carefully defined disincentives, such as additional costs for »office hours«, to help keep my peak-season workloads manageable.

The umbrella organization I belong to assists me with invoicing and administration relative to my customer base. The indicators I use to measure my output include failure rates, test results, earned educational qualifications, customer-satisfaction analyses, 360-degree feedback and my customers' own career progress. I measure my input in terms of the number of working hours I put in, my equipment costs and my costs for administration services (my organization handles all the invoicing for each customer and each instance of service use). The dynamic productivity model that my organization operates always shows me up-to-date figures for my productivity and performance indicators, and it helps me keep my database up to date. By carrying out simulations based on the model, using special tools, I can review planned new measures in terms of their probable short-term and long-term impacts.

MACROECONOMIC PERSPECTIVES ON SERVICE PRODUCTIVITY

The current situation, and a look at future developments

Productivity growth in the German service sector has been earning poor marks in recent years. In February 2012, »The Economist« magazine published an article entitled »German Services: Protected and inefficient«, adding its voice to a chorus complaining that the sector's productivity growth is being hampered by overregulation of service markets (in the liberal professions and in crafts, for example) and of labor markets. The International Monetary Fund issued similar assessments in its Staff Report for the 2010 Article IV Consultation and in its Country Report 06/17. The conviction with which such pronouncements are regularly presented by researchers, policy-makers and business news services contrasts markedly with the imprecision with which productivity growth in the service sector is measured.

By 2020, efforts to develop evidence-based economic policies should have access to better data – more robust and more comparable internationally – on input and output in the service sector. In addition, better findings regarding the extent of

various types of labor-productivity increases (increases in capital intensity, in quantities per input, in quality per input) should also be available, along with more-precise analyses of the relationships between regulation and the factors that influence productivity. Progress in the science of measurement in this area can also be expected by 2020. What is more, knowledge transfer between academic research, economic interest groups, statistical offices and policy-makers should be able to enhance techniques for interpreting economic indicators. Public discussion on this area currently exhibits little awareness of the assumptions under which real service output – i.e. output adjusted for inflation – can be measured, while statistical offices have been working intensively, over the past few years, to produce suitable deflators. By the year 2020, a better understanding of economic figures, compared to our current perspectives, could lead to the following sorts of revised conclusions for the German service sector (with variations from industry to industry):

- One service industry is already highly productive when compared internationally, and there is little evidence indicating that it could achieve further productivity gains via imitation.
- The productivity growth of one service industry when compared internationally has been underestimated.
- One industry has lower productivity growth, and the direct causes for this (low investments, little innovation, inadequate company structures and personnel qualifications), along with the possible impacts of regulation, are well known.

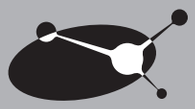
The most important aspects of productivity analyses for the service sector

The most frequently used macroeconomic measure of productivity is labor productivity, defined as value creation per employee or value creation per working hour. But since this productivity measure depends on the type and quantity of the relevant capital invested, a »multifactor productivity« measure has long been used as a way of evaluating the productivity of totalities of inputs. Both types of measures have been studied in light of many analyses of the German and European service sectors. Progress in measuring statistically recorded inputs and outputs, and in measuring still-unmeasured inputs and outputs, could yield new findings regarding growth of labor productivity and multifactor productivity in the German service sector. The ways in which regulatory indicators are interpreted, and the ways in which inputs and outputs are measured, need to be reviewed.

With regard to evaluation of inputs, in recent years the EU KLEMS project, financed by the EU's 6th and 7th Framework Research Programmes (FRP), and under the direction of the University of Groningen, has significantly advanced the international comparability of input measurement at the sector level. A continuation of the EU KLEMS project, along with methodological research relative to measurement of inputs, such as inputs of software, could help provide a more solid foundation for international productivity comparisons by the year 2020.

The largest problem encountered in measuring outputs is that of selecting suitable deflators. Output measurements should be able to show trends in service volumes over time. Such volumes increase as quantity increases, but they also increase as the quality of services increases. Along with quality information, price changes contain components that are determined by market power and cost inflation. Methods that are able to include quality components in volume are considerably more difficult to apply to services than they are to apply to goods. The EU's economic statistics regulation of 2005 requires national statistical offices to develop producer price indices for services, in conformance with certain minimum methodological requirements. Development and testing of such indices is expected to be completed by 2020. In addition, national accounts data based on the new indices are expected to be available for a number of years. Furthermore, academic research can help to illuminate – and thus make easier to understand – the quality measurement on which the indices are based.

The largest deficits in collection of macroeconomic data have to do with surveys of intangible capital. This is also the survey area in which the largest efforts are being made. Intangibility is a characteristic that lies at the heart of the very concept of



»service«. In the economic category of intangible capital investments, official statistics currently include only computer programs (software and databases), exploratory wells and copyrights.
INNODRIVE (Intangible Capital and Innovations: Drivers of Growth and Location in the EU) and COINVEST (Competitiveness, Innovation and Intangible Investment in Europe), two programs funded by the EU in the FRP 7 framework, are working to close this gap. The two programs include databases with initial approximations for other types of intangible capital. The additional categories include scientific research and development, company-attached human capital, expenditures for product development in the finance sector, innovative architectural and industrial designs, expenditures for market research, expenditures for brand-building advertising and company-owned and acquired organization capital. The INNODRIVE and COINVEST projects both provide information about intangible capital investments at the macroeconomic level. By 2020, comparison-supporting, methodologically revised data on intangible capital at the sectoral level could be available for developed economies that would be able to illuminate the role of intangible capital with regard to productivity in the German service sector. Furthermore, progress in carrying out statistical surveys of intangible capital will have been made, in cooperation with companies that have an interest of their own in quantifying their intangible capital assets.

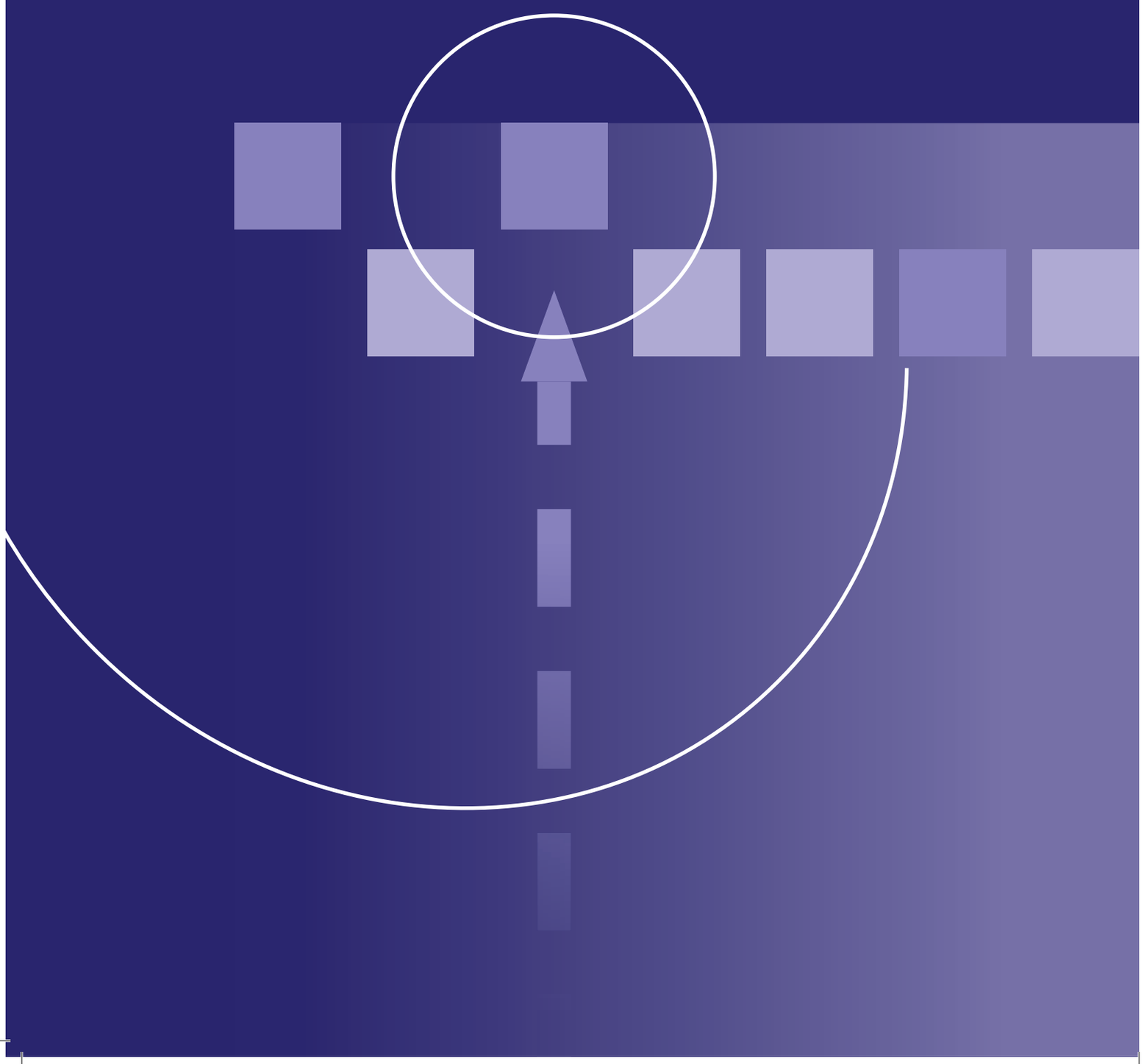
If the discussion on service productivity and regulation is to produce truly new findings, productivity measurement techniques, as well as standards for pertinent regulation and for interpretation of regulation, will have to be reviewed. With regard to recommendations that are based on sectoral econometric analyses, it must be remembered that while statistical relationships hold on the average, they do not necessarily hold in individual cases. In the coming years, the well-known correlations between regulatory indicators and productivity growth should be reviewed, in light of current and revised productivity data, and should be supplemented with individual-case studies of individual industries.

SUMMARY OF BOTH PERSPECTIVES

At the microeconomic level, the possibility of interaction with customers creates major uncertainties for the service-design process. For this reason, interfaces to customers will tend to become more and more standardized. While individualized, non-standardized services will of course remain available, they will be available only at extra charge. Electronically supported process analyses can show current capacity utilization levels. Peak loads can be adjusted or smoothed out with the help of dynamic modeling. Modularization of services, standardization of interfaces, individualized invoicing and maintenance of constant data availability all generate additional expenses and, in sum, necessitate extensive investments. Such expenses and investments have to be taken into account in any description and calculation of productivity.

At the macroeconomic level, evidence-based economic policy-making should have data on input and output in the service sector that are more robust, and more comparable internationally, than are currently available data. In addition, our understanding of the extent of various types of labor-productivity increases (increases in capital intensity, in quantities per input, in quality per input), and of the precise relationships between regulation and the factors that influence productivity, needs to be improved. In addition to bringing progress in the science of measurement in these areas, knowledge transfer between academic research, economic interest groups, statistical offices and policy-makers should be able to enhance techniques for interpreting economic indicators.

EXAMPLES OF MODELS



EXAMPLE OF A MICROECONOMIC MODEL

A few simple examples suffice to illustrate the importance of intensive study of the service sector and of its productivity. In one example, call-center agents have to be able to handle each incoming call within three minutes, in order to be able to handle a specified number of calls per day. In another, to speed up their processes at checkout, discount stores have a policy that prohibits employees from accepting loose change from customers. To develop productivity-measurement instruments that companies can apply in practice, one has to begin by basically considering the causal chains at work in various relevant measures. The following section presents an example that illustrates this relationship.

A first causal chain that is of relevance with regard to a service company's service readiness can be derived for human capital (see Figure 1). To produce innovations (= technology), a company requires well-trained personnel. A number of interrelationships can be derived from this basic fact. Where well-qualified employees work in providing a service product, then certain activities (such as after-the-fact adjustments) within the service readiness category can be reduced, since well-qualified employees can understand complicated subjects more quickly, and develop solutions more precisely, than can less-well-qualified employees.

Of course, other input factors, in addition to human-capital qualifications, also influence a service company's productivity. In particular, employees' job-satisfaction and motivation levels, which in turn depend on a range of factors, have a measurable impact on service readiness. The effects of motivation on service readiness are similar to those of human-capital qualifications (see Figure 2 for an overview of the relationships involved).

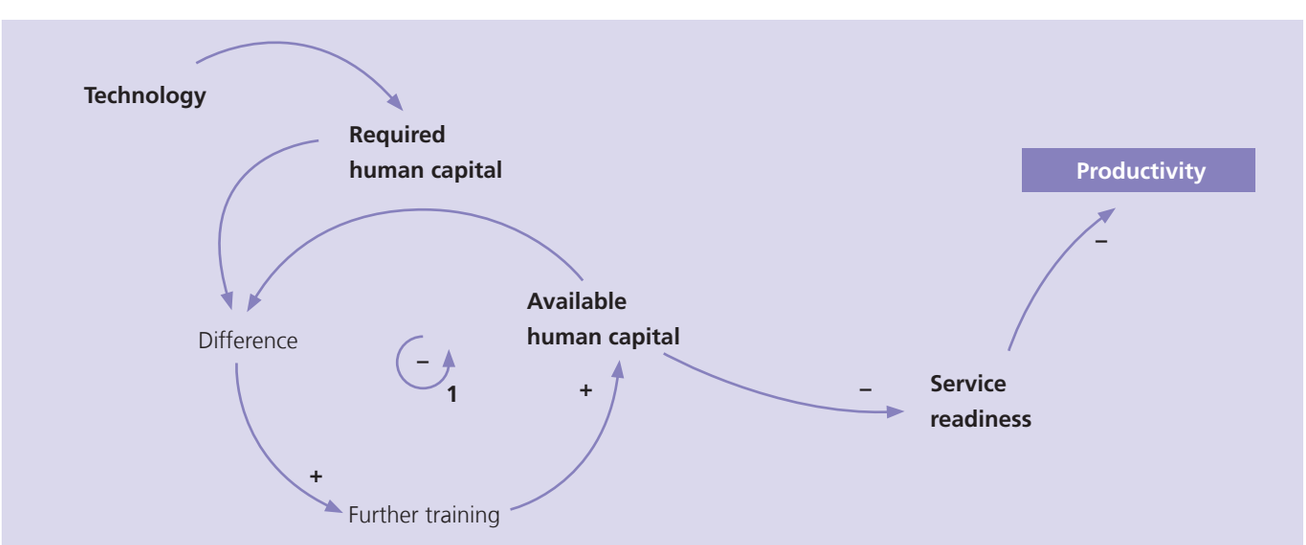


Figure 1: Relationship between human-capital qualifications and productivity in the service sector

In the case of services with close customer contact, additional input can become necessary when the customer's requirements are beyond the scope of the service provider's basic service range. Individualized solutions and customer-specific adjustments require additional effort. In the past, many service companies have responded to these challenges with extensive standardization and have used »self-service« as a way of reducing their customer contact. On the other hand, researchers have not yet reached a common understanding of the influence of customer-specific adjustments on productivity. Reasons why specific adjustments for customers could have a negative impact on productivity are seen in the considerable effort that such adjustments can require before customers are satisfied. In addition, high production and sales costs can occur that cannot be offset via suitable pricing policies, because customers are unwilling to pay any additional costs. Cooperation or co-provision by customers, however, is seen as having a positive impact; it can lead to productivity gains in service companies.

The qualitative aspects of a service provider's output (i.e. the service itself) are evaluated especially by customers. The determinants customer satisfaction, customer-evaluated quality and customer loyalty are indicators for output quality. A service and its results tend to have an immediate impact for customers. Service provision and service results play a central role in satisfaction of customers' requirements. The better the customer's needs and wishes are fulfilled, the more satisfied he will be. When service quality, or service-provision quality, is increased, customers can become willing to pay more for a service or to use the service more often at a consistent price. A number of studies have highlighted a positive connection between (available) human capital and quality as perceived by customers. Their authors describe how well-trained employees are better able to anticipate customers' wishes and expectations and better able to find suitable solutions. There also seems to be a positive connection between customer contact and customer satisfaction; service providers who cultivate close customer contact are better able to serve customers' wishes and needs. The following Figure 2 schematically highlights the above-described relationships.

As the figure shows, productivity depends not on any single input or output factor, but on numerous factors, all of which interact. Productivity thus occurs not through causal chains, pure and simple, but through causal cycles. To understand such cycles, and to reveal any hidden service productivity, one must apply innovative visualization strategies. The example presented here calls attention to a simulation tool that companies can use in order to pre-validate causal chains and feedback loops of different measures for increasing service productivity.

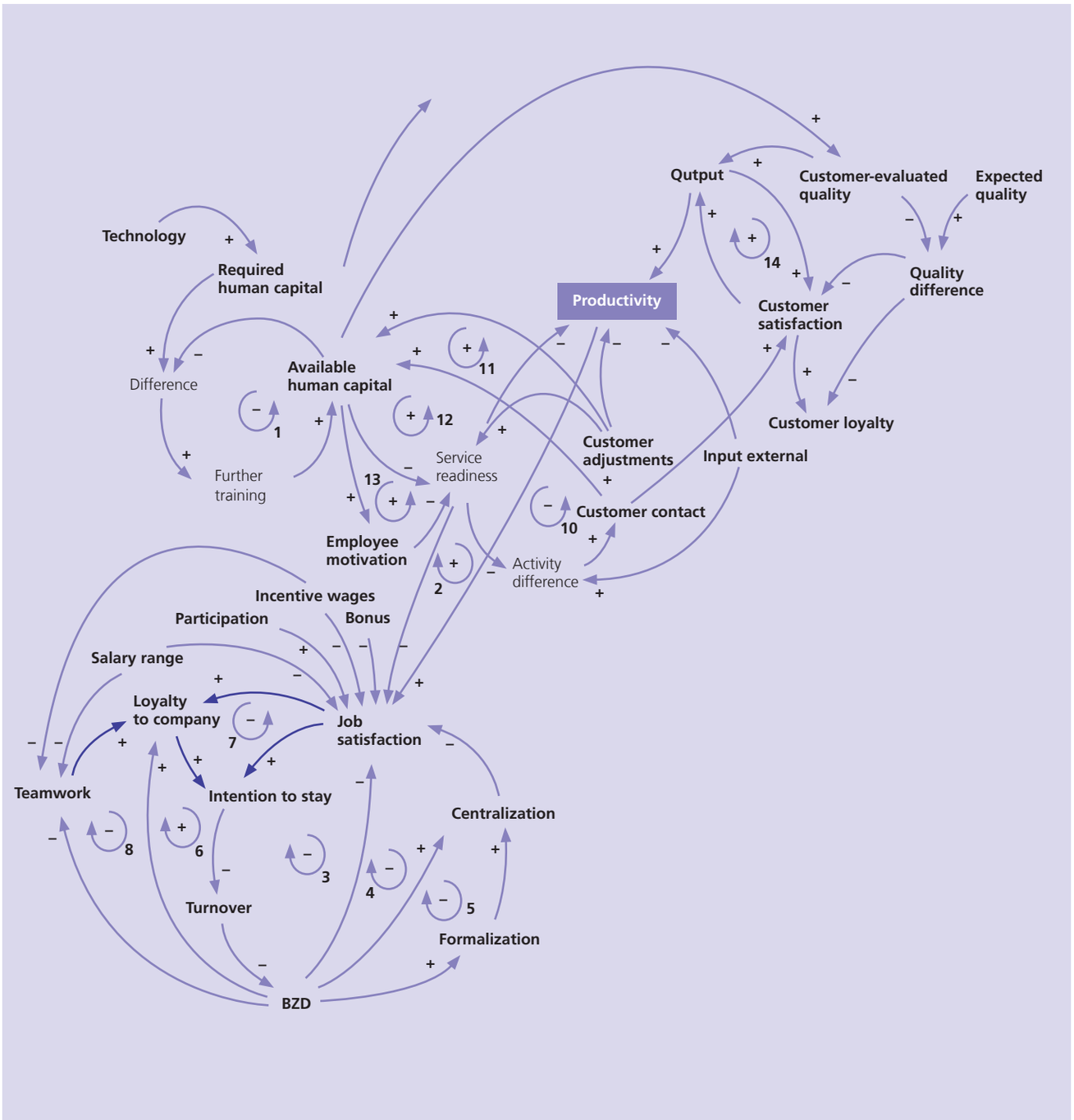
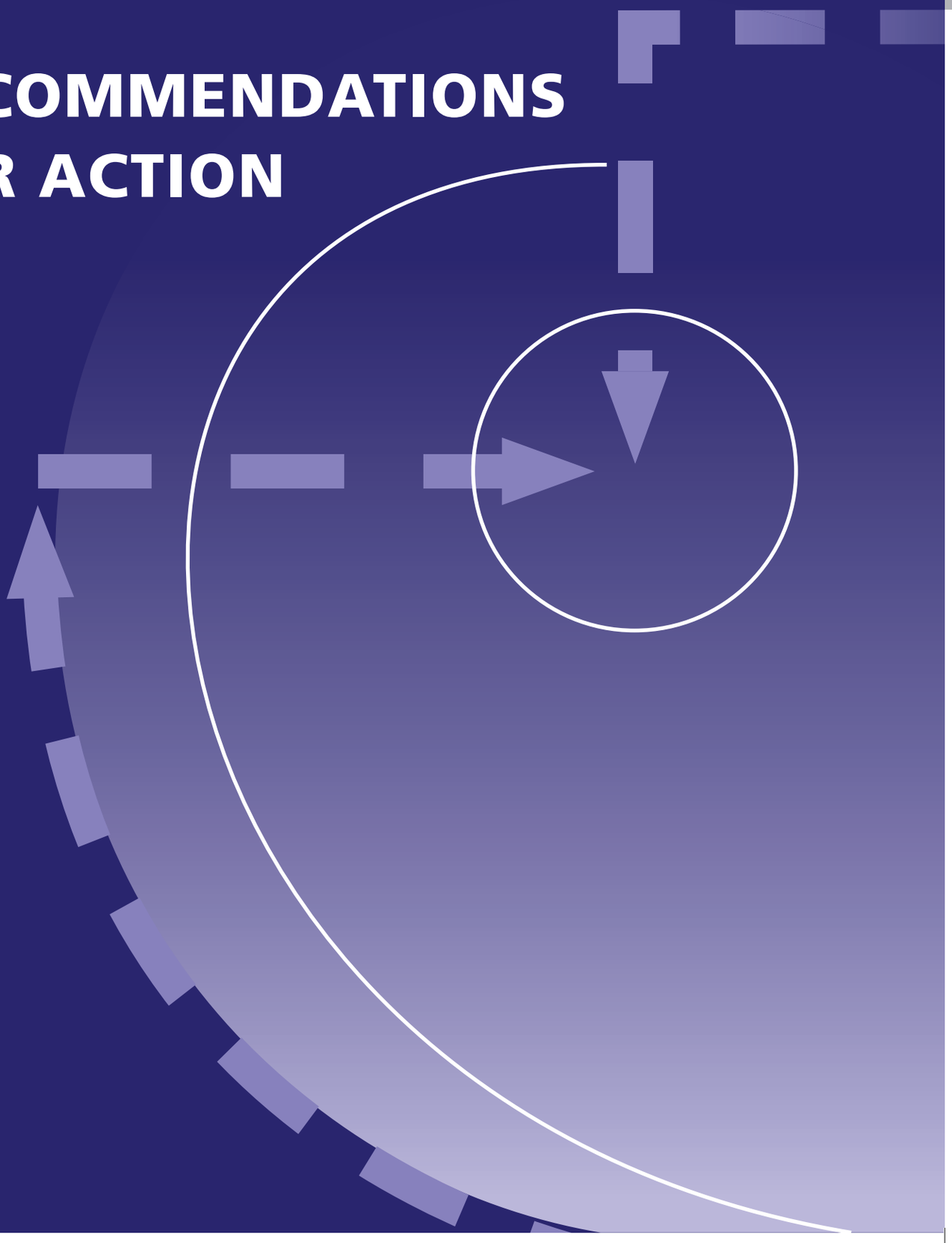
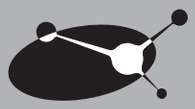


Figure 2: Example of a microeconomic system-dynamic productivity model

RECOMMENDATIONS FOR ACTION





PATHWAYS FOR IMPLEMENTING MICRO- AND MACROECONOMIC MODEL ANALYSES

As the projects have shown, suitable study of the literature, and suitable workshops and discussions with experts, can provide valuable information relative to implementation. Since no overarching methods are yet in place for such implementation, it must proceed on the basis of close cooperation between researchers, statistical offices, business practitioners and policy-makers. The following has emerged:

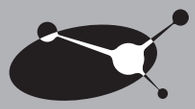
- Microeconomic productivity models that differentiate between efficiency management, effectiveness management and capacity management – in connection with balanced-scorecard methods – can provide a suitable framework for identification and evaluation of methods and indicators for productivity management at the company level,
- In performance management, many service providers orient themselves to process- and quality- management standards such as ITIL, ISO and EFQM. Consequently, such standards must be taken into account in any implementation,
- The strategic orientation and specific aspects of the business models used in different sectors have to be taken into account,
- The demand for suitable methods for managing productivity in specific industries – such as »IT Professional Services« – is especially high,
- Simulation models at the micro- and macroeconomic levels can serve as management instruments. Such use must be preceded by a range of preliminary work, however (standardization of definitions, standardization of data collection and processing, orientation to international standards, etc.).

Concrete steps for implementation of microeconomic model analyses thus focus especially on model design, on data collection and on development and communication of best-practice experience. Microeconomic estimates can be used in cases in which a measure for output (such as labor productivity, in terms of value creation per employee), and various measures for input (labor, capital, advance services, service readiness, etc.), are available for numerous individual (service) companies. Ideally, such data will be available for several years in succession, thereby making it possible to apply panel-estimation and system-dynamic methods. Microeconomic data are now available for numerous companies. At the same time, not all surveys cover all of the variables required for productivity measurement. Additional efforts now need to be made to obtain a complete, consistent database, so that analyses can provide a maximally distortion-free picture of the actual productivity structures in German companies. In addition, qualitative case studies need to be conducted, so that best-practice analyses can be carried out on the basis of selected examples.

The macroeconomic labor productivity of services is now seen as an economically significant growth factor. On the macroeconomic level, as on the microeconomic level, relevant models (including measurements and causal chains) and data collection procedures are still at inadequate stages of development. Implementation will thus be oriented primarily to calculation of real value creation – i.e. adjusted for inflation – per working hour. This is because this is an area in which the above-described problem of measuring quality – a problem found in all analyses and model concepts – especially applies. With non-standardized services (such as consultation), it is especially difficult at the macroeconomic level to determine when a price increase reflects better quality and when it is due to cost inflation or market power (and thus tied to a changed productivity indicator).

European data on service productivity are currently available for selected service sectors. Any comprehensive measurement will necessitate further steps, such as those that are to be taken in the framework of the project »Productivity of IT-based Services (ProdIT)«: Measurement and analysis of gross production value, advance services, price indices, and labor and capital investments, in selected individual service sectors. Furthermore, findings need to be obtained regarding the possible measurement errors and quality improvements being made in the area of services.

On the basis of such considerations, then, final productivity scenarios can be calculated, and the impacts of different instruments at the micro- and macroeconomic levels can be analyzed and – at least in part – calculated.



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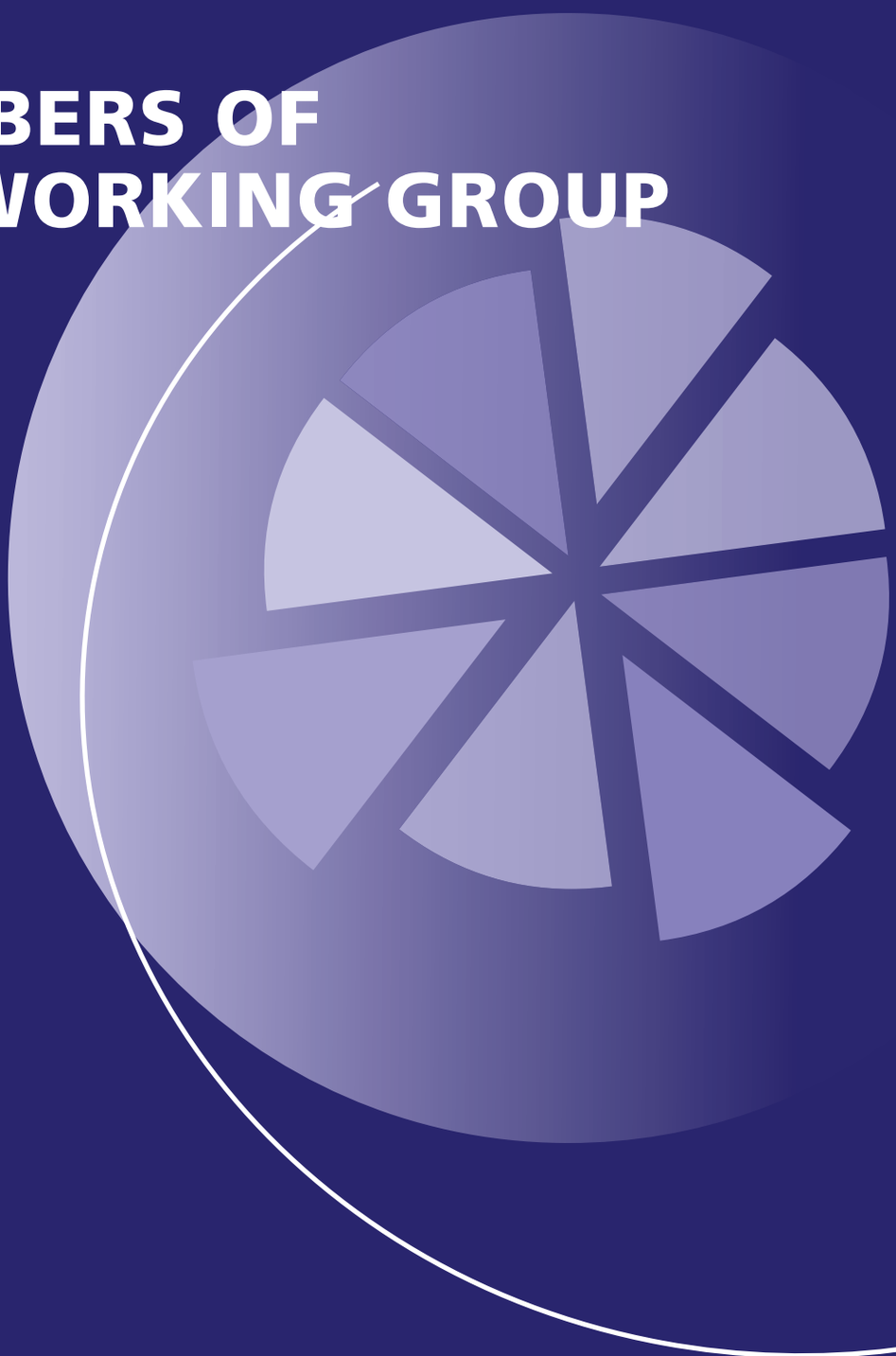

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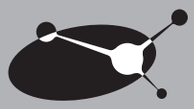
STRATEGIC PARTNERSHIP –
PRODUCTIVITY OF SERVICES



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