The Productivity Triangle of New Integrated Care Service Concepts:

A multi-dimensional approach to assess the productivity of social services

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The aim of the joint research project COCKPIT¹ is to develop an integrated instrument for designing and implementing productive innovative care services that balances the different productivity expectations of care providers concerning increased efficiency; and careworkers for the better quality of interactive work; and people in need of care (clients) for their capacity to act and their quality of life, according to a triple-win situation in the so-called “Productivity Triangle”. This instrument considers the entire supply chain of care services, and comprises parameters such as careworkers’ interaction competencies; motivation and job satisfaction; and extended clients’ needs (for example; including their private social networks) within the assessment tool.

1. Introduction

The conceptual framework “Cockpit” merges different findings from (1) economic, (2) labour studies, and (3) nursing sciences regarding the drivers of services productivity.

Concerning the economic situation, and as a result of the uno-actu-principle (production and consumption of the service coincide) in which clients (patients, or more general: people in need of care) become ‘prosumers’ as they also play a part in generating the nursing service, the overall service productivity incorporates both provider and consumer productivity, as well as interactive productivity of the coactions in the emergence of services (see Fließ, 2009; Büttgen, 2007; Lashhof, 2006). In networks of care services (e.g. in new quartiers concepts for autonomous habitation, mutual assistance and empowering one’s own initiative), additional productivity effects result from economies of scale and scope, and modified transaction costs may appear (see livonen; Haho, 2006; Conrad; Dowling, 1992, 86).

From the perspective of labour studies and industrial psychology, the relevant drivers for productivity are, specifically, problems related to the coordination of action in new integrated care services, and a lack of careworkers’ recognition that can decrease...
work motivation and may evoke burn-out and productivity slumps (cf. Maslach et al., 2001; Büssing; Glaser, 2003).

Nursing sciences stress certain characteristics of care quality as being the most important drivers for service productivity, such as the degree of desired services being considered as necessary; the degree of desired self-organization capabilities of people in need of care (Arend; Gastmans, 1996); and the degree of desired self-determination by people in need of care about their own life (see Rinderspacher et al., 2009) etc.

With this background the Productivity Triangle assessment tool embraces multi-level quantitative ratios and qualitative indicators for the evaluation of service productivity within a three ‘pillar’ model. Specifically, these are:

(1) efficiency ratios based on an extended transaction cost model of the service process (Hafkesbrink; Evers, 2011);

(2) effectiveness indicators covering expectations and perceptions of people in need of care regarding a high quality care service and resulting life quality (see Kumbruck et al., 2010; Rieder, 2005; Kumbruck, 2008), operationalized by indicators such as the “capacity to act” and “self-determination”;

(3) qualitative indicators to assess the quality of work in care services taking into account care workers’ work experiences, expectations and perceptions (Becke et al., 2010). These may include, for example, respect for social recognition in the workplace, job control, options to translate their professional ethics into reality at work, and resources that promote health at work.

Methodologically, it is necessary to explore the inter-relationships of the three pillars of the Productivity Triangle, since the different dimensions will impact each other. For instance: self-determined standards of good service quality (careworker) will affect the perceived quality of services on the demand side (clients); a good process quality in terms of a sound work situation will decrease the transaction cost of careworker turnover etc.
2. Productivity Triangle

In the joint research project “Cockpit”, the variables “performance indicators” (efficiency and effectiveness), “quality of work” and “quality of care” are related to each other, and are focussed on the social services sector. To measure, assess and increase the productivity of social services, further measures and indicators are needed beyond traditional ones, such as rationalization of work processes, and the increase of indicators, such as time, costs, errors and customer satisfaction (Reichwald; Möslein, 1995; Baumgärnter; Bienzeisler, 2006). Key elements of service providers’ productivity are, by way of example, learning aptitude, and the employees’ willingness to acquire new skills, as well as their possibilities of interaction. In addition, personal social services are interactive and are provided directly to the person. The production and consumption of the service coincide (uno-actu principle) -- customers are co-producers of the service. Moreover, social services need to be aligned individually to the different needs of customers (Merchel, 2003, 6). An example is the needs of customers in domestic environment, ambulant and in-patient care facilities, who have different care levels, different opportunities of participation in and different demands on their social services.

The “Productivity Triangle” model, and its underlying measurement concept, are based on the assumption that the implementation of the provision of services, or the provision of a service system, may have different effects in terms of work quality on the one hand, and on the efficiency and effectiveness of social services on the other hand.
The Productivity Triangle connects systematically the following areas of impact of the implementation of social service delivery by a set of indicators:

- **Perceived quality of work**: using indicators such as “opportunities of development and learning”, “social recognition”, “work-related action and decision latitude”, “psycho-physical stress”, “availability of health resources in work and organization”, and “work-life balance”.

- **Services productivity/quality**: to obtain the “structural capability” (= input in the process of provision of service), the ‘performance potential’ of providers and the ‘potential for the integration of clients’ are used. To obtain “process performance” (= throughput), the ‘process productivity and quality’ of providers and customers, as well as the ‘interactive productivity and quality’ (interaction of provider and customers / clients), are used. The measurement of “outcomes” by service provision is measured both quantitatively and qualitatively.

- **Performance indicators**: the different aforementioned indicators are used to operationalize the key performance indicators of service delivery. (1) The quantitative and monetary indicators may be condensed from the bottom-up into *efficiency measures*. In this process, the ratio ‘output to input’ is usually used as a key performance indicator (either quantitatively as a productivity index, e.g. as clients/hour, or as a profitability index on a value basis, e.g. revenue/hour). (2) The *effectiveness* of the service process includes indicators that reveal information about the quality of social services from the clients’ point of

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**Table 1: Productivity Cockpit “social services” model.**

The Productivity Triangle connects systematically the following areas of impact of the implementation of social service delivery by a set of indicators:

<table>
<thead>
<tr>
<th>Perceived quality of work</th>
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<tbody>
<tr>
<td>• Opportunities of development and learning</td>
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<tr>
<td>• Social recognition</td>
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<tr>
<td>• Work-related action and decision latitude</td>
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<tr>
<td>• Psycho-physical stress</td>
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<tr>
<td>• Availability of health resources in work and organization</td>
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<tr>
<td>• Work-life balance</td>
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<table>
<thead>
<tr>
<th>Services productivity/quality</th>
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</thead>
<tbody>
<tr>
<td>• Structural capability (input in the process)</td>
</tr>
<tr>
<td>• Performance potential of providers</td>
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<tr>
<td>• Potential for the integration of clients</td>
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<tr>
<td>• Process performance (throughput)</td>
</tr>
<tr>
<td>• Process productivity and quality of providers</td>
</tr>
<tr>
<td>• Interactive productivity and quality of clients</td>
</tr>
<tr>
<td>• Outcomes by service provision</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Performance indicators</th>
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<tbody>
<tr>
<td>• Quantitative and monetary indicators</td>
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<tr>
<td>• Effciency measures</td>
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<tr>
<td>• Effectiveness of the service process</td>
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</tbody>
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**Productivity Triangle**

**Organizational Measures**

- Work organization
- Style and structure of leadership
- Skills development
- Communication and information
- Esteem/corporate culture

**Organizational impacts on the productivity and quality of services**

<table>
<thead>
<tr>
<th>Supplier-process productivity/quality</th>
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<tbody>
<tr>
<td>Client-process productivity/quality</td>
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<tr>
<td>Interaction productivity/quality</td>
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<tr>
<td>Quantitative Output</td>
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<td>Qualitative Output</td>
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<table>
<thead>
<tr>
<th>Operationalization and measurement of indicators</th>
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<tbody>
<tr>
<td>Efficiency (cost efficiency)</td>
</tr>
<tr>
<td>Output Input</td>
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<tr>
<td>Effective (customer satisfaction)</td>
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<tr>
<td>Interactions</td>
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<tr>
<td>Autonomy</td>
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<tr>
<td>Emotional</td>
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<td>Empathy</td>
</tr>
<tr>
<td>Quality</td>
</tr>
</tbody>
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view, such as reliability, responsiveness, performance competencies, the providers’ empathy etc., as well as indicators for the providers’ quality of work.

In this respect, the ‘Productivity Triangle’ is also embedded in the concept of sustainable work quality (Becke, 2009). It specifically includes the dimensions of process quality (supplier, customer, interaction), the quality of outcomes (“good” care) and the perceived quality of work, shown in Table 1. The following sections explain in more detail the several "edges" of the Productivity Triangle.

2.1 Efficiency and effectiveness: Performance indicators of social services

The assessment of productivity, quality and the achievement of (social) services is a much debated topic because of the tightening situation in the nursing area (demographic change, shortage of skilled employees, costs explosion, etc). The provision of care services causes continuously high costs which need to be funded on the one hand by service users, and, on the other hand, and in most cases, by social insurances (primarily nursing insurances and health insurances), private insurances or social assistance authorities. All cost bearers have a fundamental interest in reducing costs, or at least in restricting the increase of anticipated costs in light of demographic changes.

For this reason, increased interventions in the healthcare market were made in recent years with the aim of cost-cutting. The basic principles of these interventions were, on the one hand, the strengthening of market mechanisms (e.g. producing competition through the admission of new private providers), and, on the other hand, an expense limit for nursing services (e.g. by capping hospital per diem charges, or the employment of less qualified nurses; see Marrs, 2007; Rothgang, 2008; Senghaas-Knobloch, 2010). Nevertheless, the provision of care services – comparable to pension benefits – is regarded as more and more difficult to obtain financing for in the future. The cost pressure in this sector is very high. In order to ensure the financing of provision of care services, despite falling per diem rates, the providers rely on an increase in productivity in terms of improved cost efficiency. In this process, personnel savings and further austerity measures (such as more favourable purchases, reduction of charges, more efficient work organization, agglomeration of the employees’ performance, and less nursing time per service user) come to the fore.

Different approaches are being developed to a more management-oriented approach to the increasing economisation of social services. In this context, particular aspects come to the centre of attention such as effectiveness, efficiency and the quality of provided services. Considering efficiency, different input variables are used, such as resources (staff, material and equipment), as well as output variables, such as quantitative aspects (e.g. the number of clients), and qualitative variables such as the satisfaction of service users. Efficiency (in terms of cost awareness and cost orientation) and effectiveness (in terms of the goal-attainment of activities to improve the wellbeing of service users - and thus the quality of the offered service) are used here on an equal footing (Fließ; Marra; Reckenfelderbäumer, 2005, 395.).

With this in mind, it should be avoided that a one-sided focus of economic indicators and evaluation criteria on an increase of the productivity of service provision leads to
a decrease of its quality (Bienzeisler; Tuenter, 2003). For example, Bienzeisler and Löffler perceive a starting point for increasing the efficiency of work processes and simultaneously improving the service and quality of work by strengthening the interaction skills of the employees (Bienzeisler; Löffler, 2005, 220ff.). Interaction skills support employees to cope with heterogeneous expectations and inconsistencies in their customer contact, increase the quality of interaction, and thus improve productivity without sacrificing quality.

To sum up: it is important that all rationalization measures ensure the quality of work and care. Standards of performance assessment are not only composed of exclusively economic outcome criteria (e.g. time, cost, efficiency), but essentially need to take into consideration the quality of life and the ability to act of the service users. These are also fixed benchmarks of current models of care (e.g. the nursing model of Monika Krohwinkel; see Löser, 2004), which in turn builds the basis for wide areas of the SGB XI\(^2\) as well as the concept of ensuring quality by the medical service of health insurance (MDK; Müller, 2005, 41; Löser, 2004, 22). This is also shown in labour and health science research traditions that are influenced by labour psychology. According to these, it can be proved that a good process quality affects the performance of employees, and thus contributes to an increase of productivity (see Ulich, 2001). From a health-science point of view, a high process quality is supported when the working conditions assist the expectations of employees (see Antonovsky, 1997). This means that working processes and structures should be organized in such a manner that employees experience them as comprehensible, manageable and meaningful.

The MDK submitted tools with respect to § 79 SGB XI (economical examination in the field of in-patient care) with indicators of efficiency and effectiveness which include the profitability and quality of outcomes (effectiveness) of care (see Engel u.a., 2004). These are taken into conceptual consideration in the process of operationalization of the ‘Productivity Triangle’.

The transaction costs approach is used as a base for the costs differentiation of the ‘Productivity Triangle’ (see Hafkesbrink, 2010). It is assumed that, in addition to direct costs for creating added value (“transformation costs” according to North 1992, 33), all coordination services for the establishment of services in form of transaction costs – quasi the residual value – find expression in the investigation of total costs. These transaction costs can be divided into three sets (see Stein; Zillmer 2007, 15):

1. Market transaction and market access costs: the costs of initiation, completion and monitoring of (nursing) contracts
2. Internal corporate transaction costs: the costs of establishing and maintaining the motivation and processes of business and service
3. Network transaction costs: Costs of establishing and monitoring of the inter-organizational infrastructure and inter-organizational processes of business and service

\(^2\) SGB = Sozialgesetzbuch (Social Security Code in Germany)
In this article we focus on the company's internal transaction costs. The different types of costs are defined as follows:

- **Value-added costs:** All costs which are connected to a direct value-added progress in service processes (“transformation costs” for the key process which means all activities to increase customer involvement, all visible provider activities)
- **Transaction costs which are related to added value:** transaction costs that immediately support recoverable the key process (e.g. back-stage processes, which are invisible to users of service)
- **Transaction costs for support processes:** Transaction costs which occur in connection with organizational performance processes which support the key process (e.g. tasks of documentation and billing)

Social services (service of assistance and nursing) are basically a chain of interconnected, interdependent and mutually dependent provided services (see Frommelt, 2009). For this reason it is of particular interest to define which of the activities of providers and users of the service process listed in the ‘Productivity Triangle’ are in fact added valued or related to this, and which processes represent only support functions. On this basis, indicators can be systematically derived for complex interactive services for e.g. work organization measures to strengthen value-added shares of services, or the reversal of support processes (see Hafkesbrink; Evers, 2011).

### 2.2 Quality of work

The concept of sustainable quality of work (cf. Becke et al., 2010) consists of two interrelated dimensions: The quality of outcomes refers to the quality of social (care and assistance) services. It is significantly influenced by the quality of work processes through which a social service is provided. The concept of sustainable quality of work is based on the assumption that such outcomes require a high standard of work.

Three dimensions are of central importance for the quality of work processes (Becke et al., 2010). Firstly, it is influenced by the quality of coordination of personal care and assistance services as intensive interaction work (see Böhle et al., 2006). Such social services require, for example, a high degree of (self-) coordination between different professional staff, volunteers and clients in task-oriented, temporal and social respects. Secondly, the quality of process is influenced by work-related cooperation relations in care facilities, in ambulant care or in neighborhood-based care concepts. Of central importance is the unwritten and implicit ‘psychological contract’ between management and employees (see Schein 1980) and the social recognition of employees and volunteers. Thirdly the quality of process is influenced by the specific working conditions (Becke et al., 2010). Especially significant are the available job control or ‘decision latitude’ (Karasek, 1979), opportunities to realize professional-ethical ideas and standards at work, opportunities for professional development, and an appropriate ‘work-life balance’ (cf. Kumbruck, 2010; Becke, 2012).

“Sustainability” has a double meaning in the concept of the sustainable quality of work (Becke et al., 2010): Care work is influenced by high, dynamic flexible require-
ments in respects of working time-, task- and client-orientation. Approaches of “good work” are therefore, first, to be adapted to changing work environments and job demands: sustainable quality of work is therefore a long-term task. Second, sustainability refers to the preservation and development of health-promoting resources at individual, social and organizational level. This is necessary for the motivation of employees to perform in the long term.

In ambulant and in in-patient care a high demand for the organization of sustainable quality of work exists (see Klein; Gaugisch, 2005; Büscher; Horn, 2010). Care work is characterized by a high level of physical (e.g. heavy lifting) and psychological stress. High psychological stress is often a result of the ongoing economization of health systems and the increasing cost pressures of nursing insurance companies. Because of the understaffing of nursing services, as well as the increasing documentation prescribed by law (Weigl; Glaser, 2006), employees are more and more pressed for time. Thus, nurses have less time to pay attention to the needs of patients for care. These restrictions contradict to nurses’ professional ethics, ideas and standards (Kumbruck, 2010). Nurses are also confronted with increased work requirements, because many patients show more complex mental and physical illnesses and restrictions. It is less and less possible to cope sufficiently with those demands because of the limited time and available staff (Müller, 2005, 69). Psychological stress is also linked closely with nursing because of high personal interactive work. It requires in particular sentimental and emotional work (Böhle et al., 2006), for example to cope with violence of clients against nurses.

Care work contains a dual recognition problem. This manifests itself in the fact that care work is defined as non-scientific support to key medical activities (Gottschall, 2008) and an undervalued public recognition is given (Büscher; Horn, 2010) which is reflected in the comparatively low income and earning potential of nurses. Moreover, their lack of appreciation is expressed in the invisible elements of their activities which are important for care work and the professional ethos of nurses, especially in the emotive area (Kumbruck 2010). This lack of recognition is a main source of the professional dissatisfaction of nurses and can lead to burnout (see Maslach et al., 2001; Siegrist, 1996).

The heavy workload results in a high number of persons on sick leave and the increased early retirement of nurses in relation to other professional groups (see Klein; Gaugisch, 2005; Kumbruck, 2010). The high level of strain, inconvenient working times (e.g. changing and night shifts), insufficient social recognition, as well as low-income and few professional development opportunities contribute to a noticeable shortage of qualified care workers. The promotion of the sustainable quality of work is therefore of key importance to the retention and recruitment of qualified personnel. Measures to improve productivity and quality of care are ultimately successful if they integrate a health-promoting work organization for careworkers and enable employees to realize professional ideas at work.

From this analysis, the following comprehensive areas (for ambulant and in-patient facilities) for supporting and dealing with the quality of work are identified in the ‘Productivity Cockpit’:

**Quality of work organization**: this includes mainly labor time and work organization. An optimal organization of processes and interfaces, as well as a systematic in-
Involvement of volunteers at certain points of the nursing process, can positively affect the quality of the work organization.

**Quality of leadership**: leadership styles are an important factor to support the quality of work. It is possible to increase the individual scope of action of employees and to avoid more easily stressful situations by a professionally and socially competent leadership (see Klein; Gaugisch, 2005, 19). This also may contribute to a reduction in workload of the managers themselves.

**Quality of communication and information**: care work includes the interaction between employees, clients and their families and other caregivers, as well as with external service providers and volunteers. A good organization of interfaces, processes and communication is needed to best cope with work tasks and the requirements for passing information on to service users.

**Quality of skills development**: skills development and the continuous education and training of employees and care service managers are part of the statutory criteria of quality assurance in nursing (see MDS, 2007). The quality of such offerings is measured by the fact, whether they help employees and managers to accomplish their daily tasks well and ensure a high quality of outcomes.

**Quality of esteem**: appreciation is a key dimension of high quality work that can impact positively on the commitment of employees. The support for a sustainable quality of work (e.g. by a good organization, through a well defined scope of activities for employees and training opportunities) can contribute both in ambulant and in-patient care to cost efficiency by a reduction of absence from work and a decrease of the employee turnover rate (Müller, 2005).

The aforementioned issues serve as determinants to survey and evaluate the quality of social services within the Cockpit Model. The criterion for this is the perceived quality of work of employees and leaders which is measured and evaluated by means of qualitative and quantitative evaluation methods such as questionnaires. For this the interaction of determinants of the quality of work and care and cost efficiency must be balanced with integrated care and assistance services.

### 2.3 Quality of Care

Quality of care is the central criterion in the context of statutory quality testing by the MDK. It is divided into i) "structural quality" (e.g. staffing, level of qualification, training and continuing education, nursing concepts); ii) “structural process quality” (e.g. nursing documentation, training of new employees, cooperation with other service providers); and iii) “quality of outcomes” (e.g. nutrition and hydration care, health state of the patient)” (DZA, 2010, 8). Despite the relevance of these aspects of everyday care of nursing facilities in the context of quality testing and evaluation this has been so far neglected in the productivity perspective. However, the crucial indicator of effectiveness of a care system or a care facility is to ensure the quality of care and assistance.

Indicators of the Medical Service of Health Insurances (MDK) are used in the context of the Cockpit project for recording and measuring the quality of care. The, MDK carries out quality tests of ambulant and in-patient facilities on a statutory basis (MDS,
This means that the aforementioned points are surveyed in the context of statutory quality testing, and facilities try to implement these standards. The MDS (2007) considers amongst other things the following criteria to be relevant for assessing the quality of care:

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<table>
<thead>
<tr>
<th>Structural quality</th>
<th>Process quality</th>
<th>Quality of outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care concepts, models</td>
<td>Care organization and nursing documentation</td>
<td>State of care (e.g. state of skin)</td>
</tr>
<tr>
<td>Perception of responsibility of leaderships in terms of management tasks, professional checks of nurses, documentation</td>
<td>Training concepts, qualifying measures, planning and implementation of training</td>
<td>Health-related issues (nutrition and hydration care, Decubitus prophylaxis, etc.), appropriate medication</td>
</tr>
<tr>
<td>Equipment features (ambulant: business premises, storage of keys, in-patient: barrier-free facilities)</td>
<td>Action according to the situation in acute occurrence</td>
<td>Satisfaction scores from customers or clients</td>
</tr>
<tr>
<td>Quality management, implementation of measures of internal quality assurance</td>
<td>Care anamnesis, planning of care strategies, nursing goals</td>
<td>Biographical work</td>
</tr>
<tr>
<td>Personnel organization (qualifications, arrangement of agencies); employment of nurses according to their qualifications</td>
<td>Evaluation of the nursing process</td>
<td>Measures for in-patient social care</td>
</tr>
<tr>
<td>Permanent accessibility (especially ambulant) and appropriate staffing (in particular on weekends)</td>
<td>Activating care: acquisition of resources, skills, problems and deficits of customers / clients</td>
<td>Maintaining hygienic standards</td>
</tr>
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Table 1: Indicators of care quality (selection) of the MDK (Source: MDS, 2007)

Also recognized is the so-called Care-Charter drafted by various initiatives. This Charter serves as a "benchmark for the implementation of dignified care and assistance" (DZA, 2010, 4), which is "... widely recognized and established in Germany " (ibid., 6). It contains eight items to which every person in need of care has the right (BMFSFJ/ BMG, 2010; DZA, 2010):

- to gain help for self-help and to be supported in leading a self-determined and independent life as possible
Nevertheless, the users' perspective in evaluating the quality of care (see also: MDS, 2007; Wingenfeld, 2003) is only one effectiveness criterion to be measured, and has to be looked at carefully because of a certain bias. In surveys of ratings from customers or clients, a very high level of satisfaction in terms of both ambulant and inpatient services is usually reached (MDS, 2007; Wingenfeld, 2003). In addition, "the questioning of insured persons satisfaction... is only possible in a subset of people in need of care, because a large number of them are incapable of answering questions because of their cognitive impairment" (MDS, 2007, 43; translation by the authors).

Against the background of care quality standards of the MDK, as well as of the approach to decent care not only in the context of health outcomes (Care-Charter), it is assumed that the quality of care is measured by the structural, process and the outcomes which are achieved by the social services.

Thus, to support the Cockpit measurement tool for the evaluation of care quality and the impacts of productivity, we return to aspects that are already used as part of quality testing in the MDK framework. In addition, we also use measurement concepts to survey the quality of care by investigating the satisfaction of customers/clients or their relatives. The above mentioned areas for organizing work quality are also used here because these are the same factors involved in quality of care (see e.g. MDS, 2007; BMFSFJ/BMG, 2010).

3. Interrelationships and interdependencies of performance indicators, quality of work and quality of care in the Productivity Cockpit

The productivity of social services is determined by interactions and mutual relationships between the various elements of the Productivity Triangle. The aim is to analyze or estimate potential conflicts of interests and expectations of involved care service actors, as it also detects synergies between the three pillars of the Productivity Triangle and identifies the unintended problematic consequences of measures to increase productivity.

Operational measures for increasing the productivity in this context may be those that influence cost efficiency, quality of care and labor - where reciprocal effects need to
be observed. Organizational measures to design social services, and their empirically documented and anticipated effects in terms of the quality of labor and care, are presented in Table 2. The analysis therein shows for each case, whether a negative (−), a positive (+) or no (0) relationship is suspected between the variables. Measures are also included that are checked by quality tests: e.g. an implementation of education and training is not only of use for the quality of care in certain dimensions, but also for the quality of work as it can reduce the long-term transaction costs.

The organizational design areas of the Productivity Cockpit are oriented towards such measures and instruments which can both improve the quality of work and care as well as improve cost efficiency. It was noted that the design areas are not targeted specifically to a particular social service, but concern domestic care as well as in-patient facilities. The interdependencies between the dimensions of the Productivity Triangle are usually not of a zero-sum nature. On the contrary, the results in each dimension can be negative (race-to-the bottom) or positive (win-win situation). Table 2 shows these relationships. The scores relate to the earlier discussion of in-patient and ambulant social services, as well as our own project findings.

Table 2: Effects of organization approaches to the quality of work and care (see, e.g. Blass, 2005; Buescher, Horn, 2010; Klein; Gaugisch, 2005; MDS, 2007; own theories).

From Table 2 five exploratory theses are identified for the interaction of performance indicators, quality of labor and care in the Productivity Triangle:

**Thesis 1:** The quality of care in terms of structures, processes and outcomes can be supported in fields of work organization e.g. by individual care and social care support (e.g. DZA, 2010). This leads to additional costs of coordination and planning, for
example as a result of the permanent accessibility and spontaneous reactions of ambulant/ in-patient services on current occurrences and requests from customers and clients. On the one hand, the organization of work especially in the area of individual nursing schedules can have different effects on the perceived quality of work. It may result in different shifts or night shifts with a negative impact for the work-life balance (Klein; Gaugisch, 2005) and thus decrease the work quality. On the other hand e.g. stress levels in in-patient facilities can be reduced with respect to specific activity peaks during the day (getting up, have breakfast, lunch) (Klein; Gaugisch, 2005, 31; Müller, 2005, 64) and thereby support the health promotion of nursing staff. By reducing peaks at certain times more working time may be made available for customers/ clients.

**Thesis 2:** The exercise of leadership functions is an important benchmark for the implementation of a good care quality (see MDS, 2007). This includes the involvement of employees and the examination of models and concept development, as well as the investigation of quality and the implementation of documentation. Monitoring and the assurance of care quality of processes are also management tasks. In addition, the quality of leadership is an important indicator of the quality of nursing work (e.g. Klein; Gaugisch, 2005, 19; Müller, 2005). The optimal execution of leadership tasks may avoid stress and unclear responsibilities e.g. by delegating tasks and assigning clear responsibilities and decision-making power. This promotes individual learning and development opportunities. At the same time transaction costs (e.g. conflict management, improvement measure and demands) can be reduced. The involvement of employees in innovation and change processes – of which nursing facilities are affected continually because of permanently evolving standards of quality and financial constraints (see Müller, 2005, 69) – may improve the quality of work (Klein; Gaugisch, 2005). This may lower the transaction costs of conflict management in general and particularly in changing processes among employees and managers.

**Thesis 3:** Training and education of employees and managers has positive impacts on the process and outcome quality of care. The question of the assignment of employees in accordance to their qualifications influences positively the structural quality (see MDS, 2007). In addition, skills development is an important component to support work quality. Educated and in the correctly placed employees can reduce transaction costs in the long term: they can perform tasks more efficiently and thus gain working time for social assistance and support for clients. In addition, they are generally more familiar with the documentation and can apply this in a way that the quality of care increases (see MDS, 2007). In addition, transaction costs be lowered by documentation tasks. Through training for behavior prevention (stress management, lifting and carrying techniques in care) additional mental and physical stress — and thus costs for days off through illness, days off personnel turnover etc. can be reduced.

**Thesis 4:** Care is interactive work and in daily life is stressful. "This concerns the cooperation between management and care, between the different working shifts, between fields of nursing and internal functional areas, between nursing facility and external service providers, and between nurses and patients or their relatives" (Blass, 2005, 8; translation by the authors). As a result this leads to high costs of coordination and cooperation (increasing transaction costs). With good communication, coordination and cooperation in internal teams and with external service providers (caterers, pharmacists, doctors and volunteers) transaction costs can be reduced for ad-hoc meetings, questions, etc. Meeting protocols of shifts, teams and cases can be accessible to all employees, volunteers and other caregivers (respecting data protec-
This is especially important for part-time employees and new employees who are not always present at meetings and so have a lower information base. (Klein; Gaugisch, 2005, 32). At the same time the quality of care increases: external services and volunteers can be provided with a high level of information about customers and clients. Employees can be supported actively by the involvement of volunteers, relatives, etc. in working processes and thereby perform some physical and mental tasks. This can reduce the costs of personnel turnover and days off work of employees.

**Thesis 5:** Appreciation is of particular importance to the quality of work. Both internal (social support in teams and by managers) and external (public appreciation of the nursing profession) improvements can be obtained by public relations (press releases, public events, see e.g. Bode; Dobrowolski, 2009). A side effect of good public relations is that volunteers and new employees can be recruited through the provision of a better image of the institution and the nursing profession, so reducing the costs of recruiting new personnel. The delegation of responsibility and qualification concepts shows as well internal recognition (see Büscher; Horn, 2010). These measures can increase the quality of care: skilled personnel and a clear assignment and delegation of decision-making may positively influence the quality of structures, processes and outcomes.

### 4. Results from an initial test

Initial empirical investigations with the extended transaction cost model demonstrate how productivity in a wider sense may be measured using a wider set of quantitative and qualitative indicators.

Figure 1 shows the relationship between the transaction cost approach and the success indicators of the quantitative process effectiveness. The characterization of individual process steps of providing services is the basis for the classification of the value-added growth in process. At this point the direct value added shares are separated from processes which are related to value added and support.

The respective shares are allocated in a second step into productivity of providers, customers or interactive productivity:
A pilot test of the instruments \((n_1=20; n_2=3)\) at a psycho-social nursing service with a small sample reveals the following relationships between the added value and support processes:
The test data show that direct ‘on-stage’ activities (face-to-face contact with clients), indirect activities (all benefits for the client which are invisible) and support processes (those processes which require maintaining the key processes) each take up about one-third of a nurse’s working day of nurses in a psycho-social setting. The so-called “interaction productivity ” is the lowest share with 31%.
These test results have already been qualitatively described in the literature, e.g. the high proportion of bureaucracy/documentation (Bode, Dobrowolski, 2009; Buescher, Horn, 2010) or the demand for improvement in designing interfaces, e.g. in the context of coordination with external service providers and functional areas (, Blass, 2005; Buescher, Horn, 2010; Klein; Gaugisch, 2005).

5. Conclusion

The tools presented here constitute a promising approach which largely builds on existing data and findings in the social services (e.g. MDS, 2007). Additional surveys are needed to demonstrate their applicability in other areas. The existing test results, as well as findings from the literature, show that there are approaches to increase the efficiency, effectiveness and quality of work in social services (see Chapter 2.2. and 2.3). The tools described here will be tested further in the context of specific social services in ambulant and in-patient fields to work out results in terms of efficiency, effectiveness and quality of work.

References


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