

## **DEVELOPMENT MODEL FOR PUBLIC PROCUREMENT – IN A DANISH CONTEXT**

Morten Munkgaard Møller, Jens Hedegaard, Kent Petersen,  
Allan Vendelbo and Søren Jakobsen

*Morten Munkgaard Møller, Ph.D., is Assistant Professor at Department of Business Studies, Aarhus School of Business/Aarhus University. His research and teaching interest are in procurement, sourcing and industrial marketing. Jens Hedegaard Madsen is a customer partner in SKI (The Danish National Procurement Ltd.). He holds a master's degree in political science from 1993. Kent Petersen is also a customer partner in SKI. He holds a master's degree in information technology from 2003. Allan Vendelbo is sales- and marketing director of SKI. He holds a master's degree in human geography from 1982. Søren Jakobsen is managing director of SKI. He holds a master's degree in commerce from 1989 and an executive MBA from 1996.*

### **ABSTRACT**

In this paper we present and examine the development and subsequent roll-out of a maturity model for public procurement in Denmark. The development model is based on the capability maturity model and is expected to lead to consistency of practice within Danish public procurement organizations and increase best practice transparency. Further, the model is expected to be used as a common frame of reference and communication tool to provide a clear picture of the strengths and challenges in the individual procurement organizations as well as within public procurement in Denmark. Following the description of functionalities and build-up of the model this paper outlines the results of a survey on the current state of public procurement in Denmark.

### **INTRODUCTION**

SKI (National Procurement Ltd. – Denmark) crafted a new strategy a couple of years ago. SKI carry out tenders that adhere to the public procurement directives of the European Union. The tenders lead to framework agreements that promote and make public procurement more efficient. A central element of the new strategy was to create partnerships and other close and mutual binding agreements with its customers. SKI has realized that it needs to expand its offerings and not solely rely on conducting tenders that adhere to the public procurement directives of the European Union but needs to develop new

tools, methods, and concepts that can help its customers in the municipalities and other public institutions in Denmark in their daily work with procurement. In other words, SKI wants to make a set of practical tools and methods available in order to inspire public procurement organizations and to develop a more professional and forward-looking public procurement function in Denmark.

In close cooperation with the business sector and other partners, SKI has consequently developed a method and a model as a self assessment tool that can be used to assess an organization's existing maturity level within public procurement and in the tendering process. The model further provides input and inspiration for future initiatives and actions that may contribute to the development of the procurement organization's effectiveness and professionalism.

Based on the CMM (Capability Maturity Model), which is a structured, well documented and accepted method for self assessment of proficiency level and maturity of an organization in a given (functional) area, SKI has developed a progression model for public procurement in close cooperation with a number of public procurement organizations. This model has been named The Development Model. In this paper we present the adapted model for Danish procurement organizations and through a survey show the current state of public procurement.

## **OVERVIEW AND BACKGROUND**

Public procurement in Denmark is confronted by a number of central challenges. Public procurement must contribute to the continuous development of the welfare society by:

- becoming ever more efficient
- focusing on issues of sustainability
- securing that competition is maintained locally as well as globally
- maintaining its own position in an ever changing local, national, and international political context

Public procurement organizations are therefore challenged by many and often conflicting demands. The need to be able to share knowledge and experiences, to benchmark and share best practices and to always monitor and further develop public procurement tools is always present – and is tantamount to success. In cooperation with a number of central public organizations (ministries, universities, municipalities, and semi-public organizations) SKI has therefore developed a maturity model for public procurement.

The purpose of the development model is to provide public procurement organizations with a tool that can be used for self-assessment and evaluation of own score in important dimensions relating to pro-

curement and tendering. The model also gives the organizations the opportunity to benchmark their own level of progression compared to others. In this way the development model facilitates the sharing of best practices and knowledge among different purchasing organizations. This may lead to implementation of practices, structures, and processes that bring the procurement and supply in a given public procurement organization to a higher stage of development.

The specific purpose of developing the model is to provide SKI's customers and other stakeholders within public procurement in Denmark with an operational tool that can be used in order to further qualify and support decision-making and dialogue about the future direction of public procurement. SKI has the following vision for the use and implementation of the Development Model within public procurement in Denmark:

- The development model is designed to support and contribute to SKI's position and help SKI in becoming a key player who actively contributes to the development of public procurement as a whole.
- The development model is designed to inspire and support procurement organizations in obtaining further - both qualitative and quantitative - purchasing gains and help to develop, streamline, and professionalize further public procurement in Denmark.
- When starting up a new SKI partner relationship the development model will be used to clarify the current state-of-the-art of the customer through a self-evaluation. During the lifetime of the partner relationship the model will be used as the basis for monitoring achievement of progression through the partnership.
- It is desirable to hold a yearly conference - "Summit of Public Procurement" - where SKI "takes the temperature of" public procurement in collaboration with the procurement organizations and a number of relevant stakeholders and partners through customer self-evaluation by means of the model and discusses trends and challenges including how these are supported and handled, respectively.
- The development model is to function as a frame of reference and to be used for the development of training in public procurement in Denmark, including the diploma programme and courses in public procurement.
- 

### **THEORETICAL BUILDING BLOCKS**

The development model is based on the CMM (Capability Maturity Model), which is a recognized generic and systematic methodology

for evaluation of behavior, performance, and maturity level of task performance. The CMM model came into being in 1986 when the US Government asked the Software Engineering Institute (SEI) to provide the federal government with a method for assessing the capability of their software contractors. In 1987 the SEI released a brief description of the process maturity framework and a maturity questionnaire (Humphrey & Sweet, 1987). The core of the CMM is a unique model of organizational development and change. In order to facilitate change within an organization, it is necessary to change processes and to ensure that people have the required capability. Deming (1986) identified that generating staff enthusiasm for change and then not equipping them to achieve it was a recipe for disaster.

The performance of a procurement organization is defined as a five-level framework describing how an organization matures its procurement processes from ad hoc, chaotic processes to mature, disciplined procurement processes. The five-level framework is described in Paulk et al. (1993). By evolving through the five maturity levels, development practices are transformed from an ad hoc, undisciplined state into disciplined processes capable of predicting results. In a sense the CMM-model builds on work done by others, especially Benner (1984) and Dreyfus & Dreyfus (1996), who have studied the actual acquisition of skills. Dreyfus & Dreyfus (1996) describe five stages of learning in their model: (1) Beginner, (2) Advanced, (3) Competent, (4) Proficient, and (5) Expert; whereas Drejer & Riis (2001) also propose a five-stage development model with focus on competence development, but with slightly different labels. In 1984, Benner (1984) outlined an adaptation of the Dreyfus model of skill acquisition (Dreyfus & Dreyfus, 1980) applied to Nursing. Her model suggests a number of stages on the way to becoming a skilled practitioner.

Another inspiration for the development model comes from the EFQM Excellence Model. The EFQM Excellence Model is a non-prescriptive framework that recognizes that there are many ways in which an organization may achieve excellence, but which embraces TQM concepts such as the importance of the customer (Porter & Tanner, 1996). The scoring methods in the EFQM Excellence Model as well as in the CMM-Model are open to a degree of subjectivity and an area of criticism of the process (Hughes, 1999). However, the self-assessment part of the tool gives a powerful indication of the current overall situation with regard to the dimensions in the models. It has been suggested by Binney (1992) that the strength of self-assessment is dependent of adopting a common language between senior management and workers, at all levels, and the contribution it makes to change is through a shared understanding of strategy. In fact, the implementation of self-assessment techniques contributes to

the achievement of several aims: it facilitates the identification of strengths and areas for improvement (Aly, 1997; Black & Crumley, 1997); it offers an opportunity for benchmarking and for comparing firm performance and management with world class standards (Aly, 1997); it can be used as a basis for improvement planning in the firm (Conti, 1997; Davis, 1992); it can contribute to retaining the portfolio of clients in the future (Fountain, 1998); and it produces learning in the organization (Davis, 1992). The connection between self-assessment application and learning is of the utmost importance as the stimulation of knowledge generation processes is the basis for creating capabilities which are recognized as a main source of competitive advantage (Teece et al., 1997; Grant 1991, 1995).

There are many definitions of self-assessment (Finn & Porter, 1994; Hillman, 1994), but the one offered by the European Foundation for Quality Management (EFQM) almost reflects them all. In this way, self-assessment can be understood as a comprehensive, systematic, and regular review of the activities and results of an organization, compared with an excellence model. The self-assessment process allows the organization to discern clearly its strengths and areas in which improvements can be made (EFQM, 1999).

Mehlbye et al. (1993) provide the following definition of evaluation: "Assessment is a systematic collection of knowledge on complex ongoing or completed interventions whose goal fulfillment and quality cannot be readily assessed, and where there is a need for a deeper assessment of efforts based on specific standards and criteria that can be defined in terms of effort towards own goals or from others, such as user goals". Mehlbye et al (1993) distinguishes between the overall performance evaluation and development evaluation. The first seeks to uncover the relationship between effort and performance viewed as a cause-effect relationship. The latter assesses the development of an action, i.e. social processes, activities, and current results in order to provide feedback that can be used to develop and improve tools and activities in the effort.

## **METHODICAL STRUCTURE & DIMENSIONS OF ADAPTED MODEL**

### **Introduction to SKI's self-assessment tool**

SKI's adapted version of the CMM-model incorporates insights from the EFQM concept as well as thoughts from Benner (1994) and Dreyfus & Dreyfus (1996) as the framework is structured and categorized within the following five generic levels of maturity, i.e. (1) Ad-hoc level, (2) Repetitive level, (3) Documented level, (4) Controlled level, and (5) Optimized level – see figure 1 below.

**FIGURE 1:  
Dimensions in the generic development model**

|                                      | 1. Ad hoc-level                            | 2. Repetitive level   | 3. Documented level  | 4. Controlled level  | 5. Optimized level   |
|--------------------------------------|--|---|--|--|--|
| <b>Understanding &amp; Awareness</b> | Incipient recognition                      | Clear recognition   | Understands the need to act  | Understand the needs and requirements  | Higher long-term understanding   |
| <b>Training &amp; Communication</b>  | Sporadic information                       | Communications on general issues and needs                        | Individual initiatives supported by informal training                                | Management's vision supported by formal training                                     | Training and communications supports the use of external best practices and use of leading concepts. |
| <b>Processes and practices</b>       | Ad hoc approach to processes and practices | Common processes arise primarily because of individual initiative | Existing processes are identified, standardized and documented                       | Process ownership and accountability established, best practice implemented          | External best practices implemented  |
| <b>Techniques and automation</b>     | x  | Common tools applied  | Available techniques in use, standardized tools                                      | Mature and proven techniques in use, mandatory use of standard tools                 | Advanced techniques in use, widespread and optimal use of technologies                               |
| <b>Degree of compliance</b>          | x  | Inconsistent follow-up in isolated areas                          | Inconsistent follow-up across the company, development of performance mgmt processes | Performance Mgmt. systems in use in selected areas, use of cause and effect analysis | Fully use of Performance Mgmt. systems across the company  |
| <b>Expertise</b>                     | x  | x   | Involvement of specialists   | Across the enterprise involvement of internal knowledge resources                    | External experts involvement and use of external networks  |

As mentioned earlier, SKI's development model and self-assessment tool is inspired by the internationally recognized CMM maturity model, which is a proven model for evaluating a function on its level of maturity. The self-assessment tool is structured around tangible elements such as training and communication, processes and practices, techniques and automation, as well as less tangible elements such as expertise, the degree of compliance and understanding and cognition.

### **Dimensions in SKI's adapted Maturity Model**

The development model is constructed with the following eight dimensions as a point of departure. Each of the eight dimensions consists of sub-dimensions that form the foundation for a total of more than 100 questions and 500 possible answers in the self-evaluation tool. (21 questions and 105 possible answers in the light version):

1. **Tendering and contract award dimension:** illustrates the application of public tendering as well as the method for con-

tinuous and systematic exposure of procurement categories to more competition is implemented. The dimension also highlights whether the procurement organizations have a comprehensive strategy for bringing categories out for competition involving identification, assessment, and determination of future action through a consolidated procurement plan where resources are prioritized etcetera. Finally the dimension highlights the presence and use of competencies within the legal tender process and process-related competencies.

2. **Procurement policy and strategy dimension:** Illustrates the extent to which a comprehensive procurement policy has been developed and implemented and the degree to which it includes an operational strategy with action plans and targets. The procurement policy and strategy forms the basis for the organization's general guidelines, objectives and specific success criteria. It should also include action plans for improving the efficiency of the area as well as for increasing professionalism.
3. **Organization:** This dimension highlights the way in which procurement is organized and handled within the enterprise. The way purchasing is organized is crucial to the ways in which decision-making, processes, roles and responsibilities, etc. are distributed within the purchasing area.
4. **Processes:** Illustrate the overall procurement processes starting from need recognition, ordering to the actual invoice and payment. The purchasing process is a cross-functional process involving a large number of employees and departments within the organization. The dimension also highlights the degree of integration and interfaces between procurement processes and related processes in the company such as finance etc.
5. **System support:** This dimension highlights the degree of systemic support for procurement processes across the organization, including system integration, where as an example, integration to financial systems can contribute to the establishment of effective processes - both within the procurement area and in other parts of the organization.
6. **Reporting and monitoring:** This dimension highlights the degree of reporting and monitoring on achievement in procurement savings, including documentation of realized savings which is a key component of effective procurement. The dimension also highlights the degree of reporting to senior management and the quality of savings documentation.
7. **Supplier cooperation and management / "Contract Management":** This dimension highlights the extent of cooperation between the procurement and the suppliers, including

the continuous improvement and optimization of deliveries from the supplier in terms of optimal price, quality, service, delivery, etc. In other words, the dimension focuses on the quality of the management of suppliers.

8. ***Change, implementation and impact:*** The dimension is a cross-functional theme, highlighting the ability and readiness to implement change processes in procurement, including the ability to actually implement and ensure the efficacy of agreed initiatives and change projects in the field of procurement.
- 9.

The nature of the first seven dimensions in the model is primarily functional-procurement oriented, whereas the last dimension about change, implementation and impact is more generic in its nature and highlights both the ability of the organization to change and the willingness to do so. The last dimension is considered to be the most important one, as it measures the willingness and ability to change and need to be at a certain level to indicate that the organization in question can in fact develop on the other dimensions and through the 5 stage progression scheme. In fact it is a prerequisite for development that a certain level of willingness and ability is present. Otherwise it will be very difficult for the organization to progress on the other dimensions.

Therefore, a self-evaluation of the maturity level of readiness for change and willingness will give public procurement organizations a useful picture of whether the individual procurement organization possesses the basic preconditions for realizing the development goals and ambitions that they want to implement in practice. If the self-evaluation unveils the absence of true willingness and readiness for change or the absence of the necessary basic conditions, the development model provides the customers with inspiration as well as advice and tools for how the procurement organization can become more change-ready and ripe in order to ensure the necessary conditions for the desired change. By extension, the development model also includes an inspiration module with hints and tips, and tools for successful change management in procurement, based on generic tools and practical experiences and examples assembled across the total public procurement organizations in Denmark.

#### ***Descriptions of the "5 levels of development" in the development model***

The following "state descriptions" highlight the five levels of maturity with respect to specific tasks within a public procurement organization:

**Ad hoc level**

Actions within the field of procurement are uncoordinated and random and mostly operated by individuals in the organization. A process overview exists, but the operations are not mapped and documented. Information and communication about possible interventions within the procurement area is uncoordinated and random. The organization of the sourcing group is characterized by informal management. At this base level, procurement practices and results are inconsistent. Development processes are rarely defined, and sound practices are often sacrificed in order to meet unreasonable schedules.

**Repetitive level**

A few people in the organization are aware of the need for development of the sourcing area. Common, uniform processes occur based on a practical realization of a need, which inspires support for development of common tools. The need for development of a sourcing area is communicated to senior management, who then considers changes in the procurement area. Training and education are not formalized and usually conducted as "co-worker training". No systematic follow-up on savings and other effects of procurement initiatives. Only isolated areas of the procurement organization document savings in a consistent way. There is little interaction between isolated projects within the procurement organization.

**Demonstrated level**

There is a recognized need for action and change, and the current processes within the procurement area are mapped, documented, and standardized. Management by objectives within the procurement area has not yet been established, but the initial steps are being taken. Informal training and training on procurement activities are carried out by individuals – the procurement function has not yet undertaken the responsibility for formal training and education in the field of procurement. Initiated optimizing processes are based on the knowledge found in the purchasing function without involvement of the broader organization.

**Controlled level**

The management defines the vision and goals for the procurement area and communicates these clearly to the organization. The processes are characterized by being mature and proven across the organization and standardized tools are used. Process ownership and responsibility are established and internal best practices are implemented. There is formal training and education to support the vision within the field of procurement. In selected areas, performance management tools have been introduced, and progress is being made through analysis of cause and effect relationships used as input into

future initiatives within procurement. Functions such as optimization of contracts, supplier cooperation, and processes are performed in cooperation with knowledgeable persons across the organization.

### **Optimized Level**

Focus is on achieving best practice through constant optimization of the actions within procurement. At the highest level of procurement maturity, an organization continuously evaluates the capability of its processes to pinpoint areas requiring the greatest improvement. Continuous improvements can be achieved opportunistically by deploying the results of lessons learned, or they can be produced proactively by evaluating new development methods, processes or technologies for potential adoption. Optimization measures are integrated in the organization's strategic development process. External best practices are used as the standard for formal training and education, and the education focuses on training in the latest concepts and tools within the procurement area. Optimization of contracts, supplier cooperation and processes is being conducted with the help and inspiration from outside experts and consultants. IT-support for all processes has been implemented.

### **Different versions of the development model**

SKI has developed two versions of the maturity model for use in Danish public procurement:

- **"The light version"** including the three most important and basic issues and themes from all seven dimensions from the full version of the development model – i.e. a total of 21 questions and 105 responses and performance opportunities. This version is primarily targeted at and recommended to medium and large procurement organizations with medium maturity, competence and an average ambition level in the field of procurement. The version is used as an "appetizer", and the hope is that the public procurement organizations will proceed to the "full" version – or the "excellence version" (see below).
- **"The excellence version"** including 10 intro-questions and more than 100 questions in all eight dimensions, with additional questions regarding clarification of best practice, if the score is at level 4 or 5. This version is targeted and is recommended primarily to SKI-partner customers and SKI-Top-50 clients, and other medium and large procurement organizations with a high degree of maturity and competence levels above average or a relatively high level of ambition in the field of procurement.

The reason for constructing essentially two versions of the development model is that in particular many small and medium-sized pro-

curement organizations have a relatively low level of maturity and competence within their organizations and therefore would find it overwhelming and maybe too ambitious and comprehensive to evaluate themselves through the "Excellence version".

Therefore, it is crucial that SKI makes different versions of the development model available to the Danish public procurement organizations to support the dialogue about development and further improvement of the procurement functions between both SKI and public procurement organizations as well as within internal purchasing functions, departments and their employees. The two different versions of the development model should encompass the diversity within public procurement in Denmark as regards size, maturity and ambition levels, etc.

### **Strategy for using the model with regard to SKI-Partnerships**

SKI has entered into actual partnerships with ten central public organizations, where each partnership has its own purposes and goals as well as organizational focus in order to achieve the optimum insight and knowledge creation with a view to the continuous development of public procurement. The ten organizations represent different levels of the Danish public sector; ministries, universities, municipalities, and semi-public organizations. The primary purpose of the partnerships is to bring SKI – as the central purchasing agency in Denmark – closer to the public organizations and their everyday life in order to offer even more efficient public procurement solutions. Through the partnerships SKI wishes to inspire and support the public organizations and procurement officials in achieving procurement savings and promoting efficient public management, thereby securing resources for citizen welfare and service.

In connection with the establishment of specific partnerships, it is the intention to use the development model as this can serve as a baseline for the relationships. During the life-time of the relationship this baseline can then be used to monitor whether the cooperation is on track and whether the development curve for the relationships is satisfactory. According to Ford (1980) and Ford et al. (1998; 2003) buyer-seller relationships develop according to a process through time. This process consists of four stages: (1) the Pre-Relationship stage; (2) the Exploratory stage; (3) the Developing stage; and (4) the Stable stage, and it is interesting to measure the development over time and at different intervals in the relationship period as it does not make sense to analyze development without including the time perspective.

SKI has crafted the following strategy for the use of the development model when implementing new partnership agreements:

- The model can be used by SKI and the partner customer to identify the present level of maturity of the partner's purchasing function to jointly identify priorities and set specific objectives for the implementation of the partnership.
- The model can also be applied by the SKI customer and partner continuous (self-)evaluation and follow up on the momentum regarding the implementation of the partnership in relation to the setup priorities, goals, etc.
- Benchmarking of maturity, development potential, etc. across partner and SKI interfaces to be used for knowledge exchange etc.
- Documentation and dissemination of best practices across SKI-partner clients and public procurement in Denmark.
- Identification of existing level of maturity within procurement and developing proposals for prospective development, action opportunities and activities in connection with the actual implementation of the partnership.
- To be used as a checklist to provide security and direction for actions needed to implement the partnership in practice.

Local Government Denmark (LGDK) is the interest group and member authority of Danish municipalities. Although membership of LGDK is voluntary, all 98 municipalities are members. The mission of LGDK is to safeguard common interests of the municipalities, assist the individual municipality with consultancy services and in addition ensure that the local authorities are provided with up-to-date and relevant information. As part of the procurement strategy of Local Government Denmark (LGDK) it is decided that the development model should be available to the 98 Danish municipalities as a tool to be used not only to evaluate the present level of maturity but also to identify and highlight areas of new opportunities and areas of cooperation between clusters of municipalities.

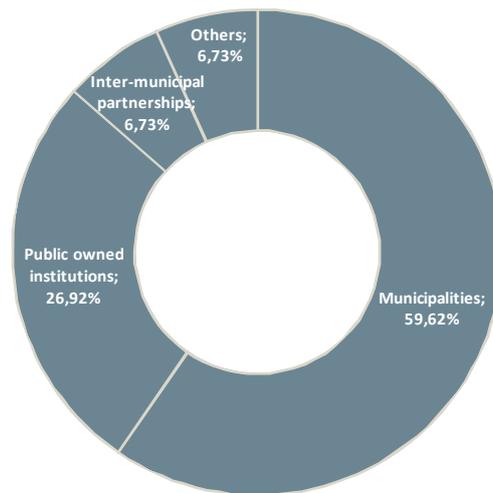
#### **METHODS – RESEARCH METHODOLOGY**

In this paper we present results concerning the maturity model for Public Procurement that are based on an ongoing data collection. More than 100 public institutions have implemented the model in their procurement functions and have contributed with knowledge, experiences, and best practice regarding the level of maturity in their organization. The population of 100 institutions is divided into the following four sectors:

- Municipalities.
- Institutions owned by the state or municipalities.
- Inter-municipal partnerships.
- Others (e.g. universities, educational establishments).

The result of the survey is based on the following distribution of respondents from the four sectors as shown below in figure 2:

**FIGURE 2**  
**Distribution of respondents**



Responding procurement managers have completed the evaluation by the Excellence Model or the Light Version by utilizing a web-based tool that includes more than 100 quantitative questions based on a maturity scale and the same amount of open questions based on a qualitative approach. The overall design of the questions is intended to determine the role of people, processes, practices, and use of technology aimed at achieving a higher efficiency and professionalism within the seven dimensions:

- The tender process.
- Procurement strategy and policy.
- The organizational design of the procurement function.
- The procure-to-pay process.
- Reporting and documentation of savings.
- IT systems supporting procurement.
- Cooperation with - and management of - suppliers.
- 

This method has been supplemented with the gathering of additional information on the size of the procurement function, yearly procurement volume, number of suppliers, etc.

The analyses conducted in this paper are statistically based on different sample sizes due to the different ways, in which the Maturity Model can be applied, either as an Excellence model, light version or frame for a thematically based discussion. The different approaches to the application of the model result in different sample sizes in the database. For the analysis conducted in this paper, N=100, N=36, or N=X will represent the different sample sizes for estimating the maturity level of the particular dimension.

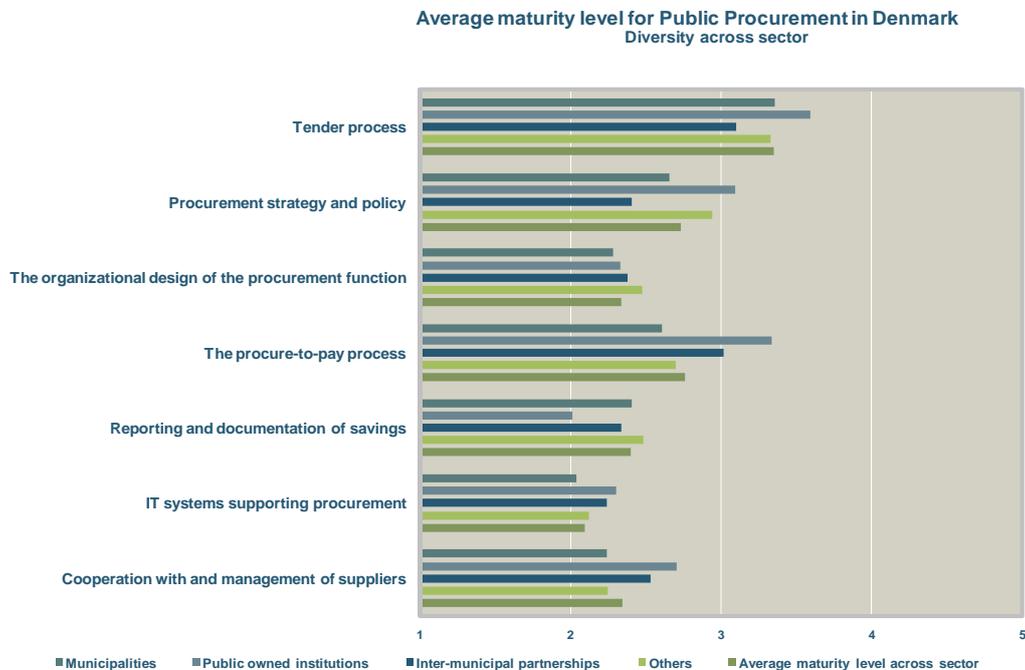
## **RESULTS**

### **Status and trends: A perspective on public procurement diversity across sector**

As expected, the conducted analysis shows that the maturity level of the procurement organizations is highest in the tender process and in procurement strategy and policy with an average level of maturity exceeding 3 and lowest in e-commerce and IT-system support for procurement with an average development level of approximately 2. The reason for this is that public procurement organizations have a long tradition and are very much focused on the tender process as a core task - especially the municipalities and state authorities who score top points on this dimension. The reason for the relatively low scores of e-commerce and system support is that we still have not developed and implemented properly functioning and integrated e-commerce solutions and system support for procurement in the Danish public sector.

As regards procurement and strategy, most procurement organizations have a comprehensive procurement policy, which defines the framework and objectives for working in procurement. Most procurement organizations also have an operational strategy/action plan on how procurement policy should be implemented through concrete and measurable initiatives and actions.

**FIGURE 3**  
**Average maturity level for public procurement in Denmark –**  
**Diversity across sector**



Regarding the organization of public purchasing organizations in Denmark, including the roles and responsibilities, the analysis shows that many purchasing organizations often face challenges in organizing an appropriate procurement organization in the intersection between the central purchasing department and the decentralized units and institutions within the same legal entity. For the decentralized units and institutions to act effectively in relation to procurement in e.g. a municipality, it is necessary to have a clear and adequate organization and division of roles and responsibilities, which poses a major challenge.

Regarding the optimization of the procurement process, the study shows that particularly the state authorities, but also the semi-public enterprises are in the forefront of optimization and organization of the procurement process. One explanation may be that within the State the presence of the Public Procurement Portal (DOIP) has acted and contributed to the standardization of the procurement process in connection with purchasing through the portal. However, there are numerous challenges and concerns about inappropriate use of DOIP that contribute to the low average score regarding e-commerce.

In recent years both governmental and municipal organizations have faced the need for targeted savings, and more and more focus is

therefore on reporting and documentation of procurement savings, giving the public procurement organizations an incentive to streamline and professionalize the procurement. Owing to resource constraints the procurement organizations are also forced to demonstrate measurable results in terms of realized saving and argue for any use of resources.

A further focus area is the cooperation with - and management of - suppliers, where Danish public procurement has definite development potential. The reason is that there may be a number of process gains by optimizing cooperative relationships with suppliers, and through closer cooperation with the government purchasing organizations, the suppliers will play an even more vital role in contributing to a more efficient organization and deployment in public procurement in Denmark. Outsourcing of all or part of their storage capacity has also been an option for some public and semi-public procurement organizations in Denmark. This leads to closer cooperation and greater dependence on suppliers as the logistic optimization of the supply chain is outsourced to external parties.

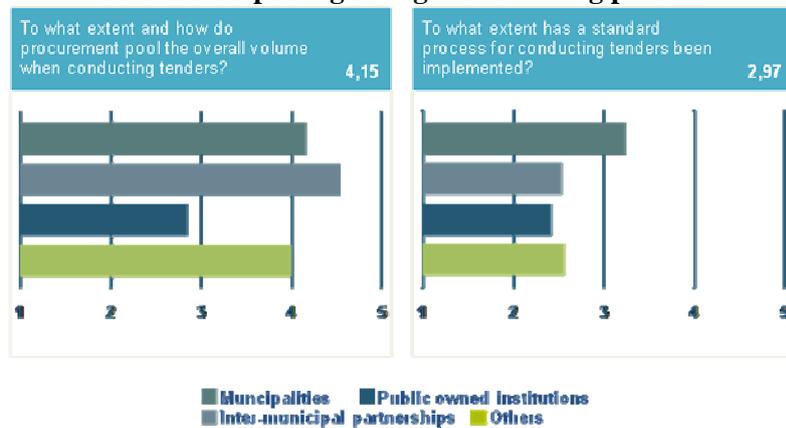
## **RESULTS AT THE SECTORAL LEVEL AND BY DIMENSIONS**

### ***Tender Process***

Danish public institutions are subject to EU procurement directives and national regulations about advertising etc. The directives and regulations provide a framework for effective procurement, and the rules get stricter the more the public institutions pool their purchases in order to obtain better agreements and conditions.

As a result of the EU and national law provisions, an average Danish municipality is required to put more than 200 sourcing category areas out to tender over a typical four-year contract period. This work requires four to six times as many procurement resources as are present in an average Danish municipality. In order to minimize the number of tenders, which each municipality must put out in order to meet legislation, a vast majority of Danish municipalities instead use SKI's framework agreements on a wide range of areas. In this way they get access to advantageous purchasing agreements where SKI has pooled the volume across the entire public sector in Denmark. In addition, many municipalities also choose to be part of procurement communities, where they implement common tender projects with other municipalities.

**FIGURE 4**  
**Selected output regarding the tendering process**



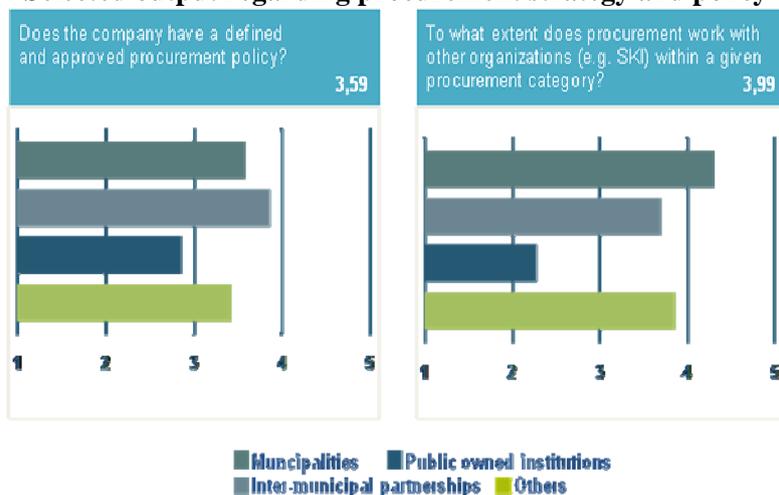
Danish public institutions are keen to set up purchasing areas for competition and the tasks will be assigned to the public or private entity that solves the tasks most efficiently. In this way both economic and human resources can be released for other more productive areas. Therefore they set up targets concerning e.g. the number of put-out tenders or actual implemented savings on contracts. The larger the purchasing organization and the higher the number of successfully put-out tender, the better and more standardized are the processes for completing the tender process. In other words: size matters.

***Procurement strategy and policy***

The vast majority of Danish procurement organizations have a well-defined and approved procurement policy. If the purchase policy is to help in creating real value and measurable effects in the daily work, it is often necessary to have a strategy and an action plan for the implementation of the procurement policy. To underpin this work SKI has launched an initiative in which SKI assists procurement organizations in that matter via inspiration, guidance, workshops, etc.

**FIGURE 5**

**Selected output regarding procurement strategy and policy**



The scores are generally very high in terms of cooperation with other purchasing organizations in general and at category level - not least in the municipalities. The reason might be found in the fact that few public procurement organizations are able to meet their tender obligations themselves, and collaborating with others provides volume and power. This is also the reason for the widespread use of SKI's framework agreements and other types of cooperative arrangements between municipalities. The ability to work with others is a central theme and a competitive tool for many public procurement organizations in Denmark. The ability to collaborate internally and externally is becoming increasingly crucial for the success of the Danish procurement organizations.

***The organizational design of the procurement function***

Danish public procurement faces a number of challenges in relation to skill development and training within purchasing and tender related areas. Generally few employees within public procurement in Denmark have a higher education and the overall competence level is on a generally level low which means that the area for development is quite large.

The survey also shows that there is only limited training activities for the employees and managers of the purchasing departments of the Danish procurement organizations. Consequently, the survey also shows that the public procurement organizations only offer limited career development opportunities to their employees within procurement.

**FIGURE 6**  
**Selected output regarding organizational design of the procurement function**



The combination of a low level of competence and the lack of educational and career opportunities is a major challenge if the current level of development in public procurement organizations in Denmark is to be increased. Today there are only limited and sporadic training opportunities in Danish public procurement. To increase the level of maturity within procurement, the initiatives must be strategic in nature and aim at broadening the skill base with focus on a training level which at least equals that of the Diploma and Master levels and is aimed at both employees and leaders within public procurement organizations.

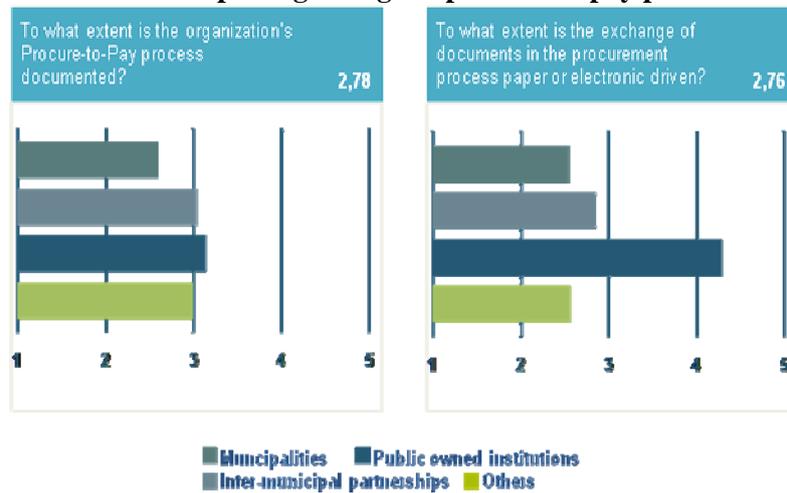
***The Procure-to-Pay process***

The study shows that to some degree the Danish public procurement organizations work with optimization and automation of the procurement process. To some extent, the procurement organizations have also documented their procurement process.

When it comes to electronic or paper-based procurement, the state authorities distinguish themselves by having a much higher level of electronic-based procurement process in relation to other procurement organizations in Denmark

**FIGURE 7**

**Selected output regarding the procure-to-pay process**



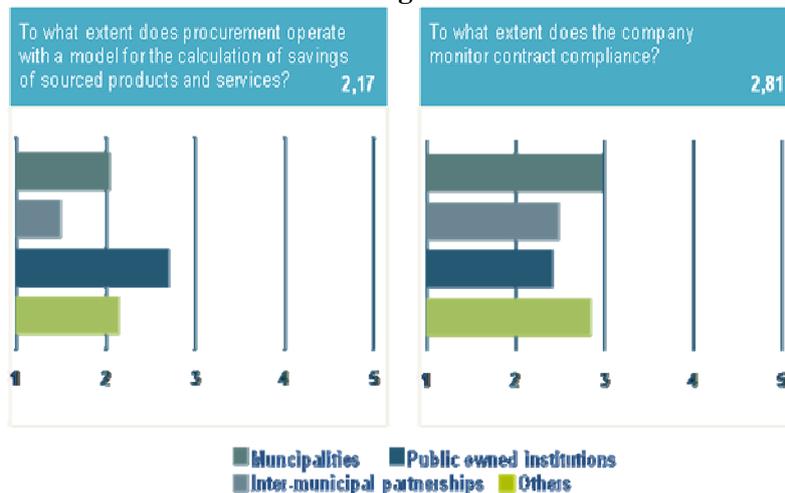
As discussed above, the study shows that particularly the state authorities, but also the semi-public enterprises are in the forefront of optimization and organization of the procurement process. An explanation for this may be that through its presence in the Public Procurement Portal (DOIP) the state has obtained and gathered insights into standardization of the procurement process. The Public Procurement Portal (DOIP) is not without its flaws and is faced with a range of challenges which may be a contributing factor to the low average score regarding use of e-commerce.

***Reporting and documentation of savings***

As mentioned above, the survey shows that public procurement organizations in Denmark focus increasingly on the visibility of the impact of procurement work. Measurability of procurement work effectiveness requires that the purchasing organization has an overview of the total spend in order to be able to calculate and assess the potential savings. The survey shows that to some degree, the public procurement organizations continually conduct spend analyses in order to monitor their purchasing performance.

The study also shows that public procurement organizations relative modestly use a systematic approach for calculation of savings of sourced products and services. To ensure that calculated savings are transformed to real savings, it is essential to ensure compliance with the negotiated agreements. Even the best contracts are worth nothing if they are not fully implemented through the organization.

**FIGURE 8**  
**Selected output regarding reporting and documentation of savings**



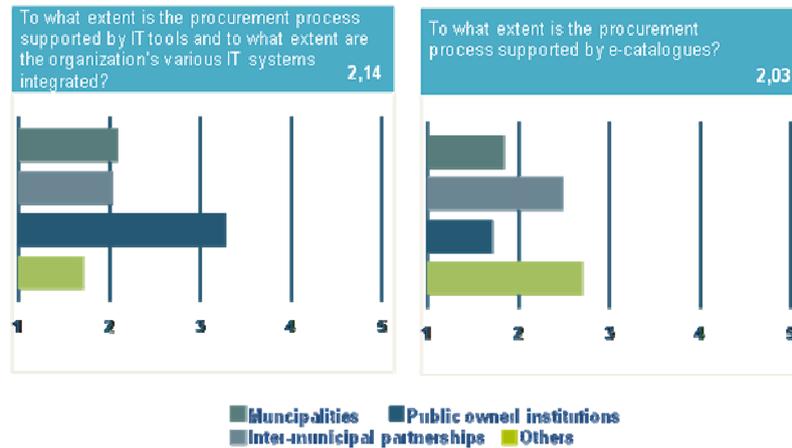
Up-to-date and continuous data and information on realized procurement savings and compliance is a prerequisite for top management support regarding the procurement department's initiatives in order to ensure maximum compliance and efficacy of the agreements.

***IT systems supporting procurement***

As mentioned above, the study shows that the levels of maturity in the Danish public procurement organizations are generally relatively low as regards e-commerce and IT-support for procurement. System support for the procurement process is on a relatively low level, and there is only limited integration between electronic procurement systems and ERP-systems facilitating the financial part of the transactions.

As for system support of the procurement process, the study shows that the state authorities are most advanced with the highest level of maturity in the study. Again, one highly plausible explanation for that is the presence of the Public Procurement Portal (DOIP) within the state, which largely ensures access to electronic catalogs and ensures systemic support for the central parts of the procurement process. However, there are also numerous challenges around DOIP that contribute to the low average score regarding e-commerce and system support.

**FIGURE 9**  
**Selected output regarding IT Systems supporting procurement**



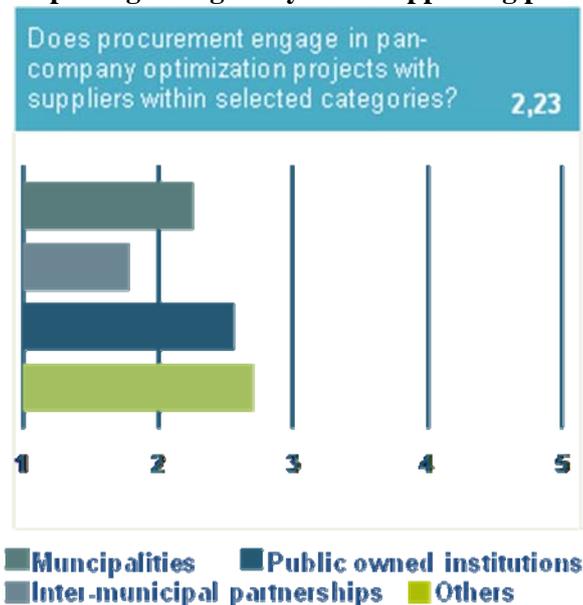
Training in procurement-related IT-systems is generally not a priority in public procurement in Denmark. The limited focus on training in the use of different e-procurement solutions may result in a failure to exploit the full functionality of the procurement systems, which in turn can have a negative effect on implementation and prevalence of e-commerce in public procurement in Denmark in general. Many public procurement organizations postpone systematic implementation of e-commerce until some well tested and integrated e-commerce solutions are found to be available elsewhere.

***Cooperation with and management of suppliers***

In many Danish procurement organizations, the general perception is that cooperation with suppliers is impossible because of existing rules of engagement, e.g. tender rules, laws, etc. This is only partially true, however, as there are abundant opportunity for cooperation with a supplier who has won a specific tender for the duration of the contract. The survey also documents that public procurement organizations only carry out optimization projects with their suppliers to a certain degree. This is an alarming fact as suppliers have an incentive in helping to implement the contracts and in supporting the compliance to the very same contract.

The study shows that evaluation of vendor performance during the contract period is only a moderate priority. In other words, only little effort is spent on ongoing evaluation and documentation of the supplier's performance.

**FIGURE 10**  
**Selected output regarding IT Systems supporting procurement**



### CONCLUSION

In this section we present our conclusions concerning application and contribution of the development model to public procurement in Denmark. As a common frame of reference within purchasing and supply for actors involved in public procurement, the development model has helped create a clear picture of a complex area of ongoing transformation and challenges confronting public procurement in Denmark in 2010. In this respect both the scope and depth of the development model should be emphasized. The strength of the model is that it can be used as a common frame of reference within public procurement in Denmark and as a communication tool to provide a clear picture of strengths and challenges within public procurement in Denmark – overall and across sectors, etc.

One of the study's most central conclusions is that the combination of a relatively low educational level and lack of career opportunities is a main challenge to be overcome if the maturity level within public procurement in Denmark is to be increased. Therefore it is crucial to establish a strategic and broad-based education and skill development effort for both staff and managers in public procurement organizations. There is a willingness in public procurement functions to work more professionally and efficiently with purchasing, but it requires a lift of competencies, and a common skills development effort can only succeed if all key players and decision makers in the public procurement in Denmark support and contribute to this activity.

In addition, the study concludes that the level of maturity in public procurement organizations is highest as regards to the tender process. The reason for this is obvious, as public procurement organizations have a long history and tradition for working with tenders and contract awards as this has been a core task for a long time, allowing knowledge to be accumulated within this field. Conversely, the study also concludes that the levels of maturity are generally lowest as regards e-commerce and IT-system support for procurement. The reason for this is a general lack of well tested, efficient, and integrated e-commerce solutions. For this reason many procurement organizations have deferred the decision on the systematic implementation of e-commerce until some well tested and integrated e-commerce solutions become available.

### REFERENCES

- Aly, M.A. (1997) *Is self-assessment (as a powerful tool for total quality management implementation) suitable in the Middle East context? The experience of a petrochemical global company*, Total Quality Management, 8 (2 & 3) pp. 54-59
- Benner, P. (1984) *From Novice to Expert: Excellence and Power in Clinical Practice*, California Addison Wesley.
- Binney, G. (1992) *Making Quality Work: Lessons from Europa's Leading Companies*, London, The Economist Intelligence Unit
- Black, S.A. & Crumley, H.C. (1997) *Self-assessment: What's in it for us?*, Total Quality Management, 8 (2 & 3), pp. 90-93
- Conti, T. (1997) *Organizational Self-Assessment*, London, Chapman & Hall
- Davis, V.S. (1992) *Self-audits. First step in TQM*, HR Magazine, September, pp. 39-41
- Deming, W.E. (1986) *Out of the Crisis*, Cambridge, Mass. MIT Center for Advanced Engineering Study.
- Drejser, A. & Riis, J.O. (200) *Competence Strategy* (in Danish), Børsens Forlag
- Dreyfus, H. L. and Dreyfus S. E. (1986) *Mind over Machine: the power of human intuition and expertise in the era of the computer* Oxford; Basil Blackwell
- Dreyfus, S.E. & Dreyfus, H.L. (1980) *A five-stage model of the mental activities involved in skill acquisition*. Unpublished report supported by the Air Force Office of Scientific Research, USAF, University of California, Berkeley
- European Foundation for Quality Management (1999) *Introducing Excellence*, Brussels, EFQM
- Finn, M. & Porter, L.J. (1994) *TQM self-assessment in the UK*, The TQM Magazine, 6 (4), pp. 56-61

- Ford, D. (1980) *The Development of Buyer-Seller Relationships in Industrial Markets*, European Journal of Marketing, Vol. 14, No. 5/6, pp. 339-353
- Ford, D., Gadde, L.-E., Håkansson, H., and Snehota, I. (2003) *Managing Business relationships*, John Wiley & Sons, Chichester
- Ford, D., Gadde, L.-E., Håkansson, H., Lundgren, A., Snehota, I., Turnbull, P., and Wilson, D. (1998) *Managing business relationships*, John Wiley & Sons, Chichester
- Fountain, M. (1998) *The target assessment model as an international standard for self-assessment*, Total Quality Management, 9 (4 & 5), pp. 95-99
- Grant, R.M. (1991) *The resource-based theory of competitive advantage: implications for strategy formulation*, California Management Review, 33 (3), pp. 114-135
- Grant, R.M. (1996) *Toward a knowledge-based theory of the firm*, Strategic Management Journal, 17, pp. 109-122
- Hillman, G.P. (1994) *Making self-assessment successful*, The TQM Magazine, 6(3), pp. 29-31
- Hughes, A. (1999) *An Investigation of self-assessment and the Business Excellence Models using the teaching of Dr. Edwards Deming*, MSc Dissertation, Sheffield Hallam University, Sheffield.
- Humphrey, W. & Sweet, W. (1987) *Method for Assessing the Software Engineering Capability of Contractors*. Carnegie Mellon Software Engineering Institute Technical Report CMU/SEI-87-TR-023 ADA187230.
- Paulk, M.C., Curtis, B., Chrissis, M.B. & Weber, C.V. (1993) *Capability Maturity Model for Software version 1.1*. Carnegie Mellon Software Engineering Institute Technical Report CMU/SEI-93-TR-24, DTIC Number ADA263404,
- Porter, L.J. & Tanner, S.J. (1996) *Assessing Business Excellence*, Oxford, Butterworth Heinemann
- Teece, D.J., Pisano, G. & Shuen. A. (1997) *Dynamic capabilities and strategic management*, Strategic Management Journal, 7, pp. 509-533