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Public eProcurement In Denmark: Measurements Of Suppliers' eMaturity

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Abstract

The paper introduces and evaluates a model for measuring the level of eCommerce maturity for suppliers to the public sector institutions in Denmark. The model comprises four distinct levels and seven parameters. These parameters are related to organizational and technological attributes relevant for eCommerce. Based on an empirical evaluation, it is found that the model is a useful tool for suppliers wanting to evaluate their level of eMaturity. Due to specific requirements from public sector customers it is argued that suppliers to the public sector have to possess a high level of eMaturity.

1 Introduction

Business transactions require involvement from customers and suppliers. This is the case whether the transaction takes place on-line or off-line or whether the transaction is businesses-to-business, businesses-to-consumers, or businesses-to-administration. At the beginning of the eCommerce era attention was mainly focused on business-to-business and business-to-consumer relations. Today attention has shifted and the possible commercial benefits resulting from eCommerce with the public sector is now also on the agenda (Andersen, 2004; Coulthard and Castleman, 2001). Regardless of whether eCommerce is performed in a private or a public context it is commonly assumed that

eCommerce among other benefits can lead to shortening of transaction time, lowering of costs, increased transparency, improved sharing and maintenance of enterprise information, and an increased internal and external efficiency of the organization (Zwass, 2003; Zhang, 2000; Laudon and Laudon, 2002).

Recent studies have dealt with eProcurement in the public sector. In this study we will use the term eProcurement to refer to the use of electronic means in purchasing processes. These processes include seeking information about goods and services, ordering and paying of goods (Andersen, 2004).

Issues concerning the required architecture of eProcurement systems (Liao et al. 2003), the tendering process in eProcurement (Liao, et al., 2002), and the possible economic gains achieved from public procurement portals (Henriksen et al., 2004) have been studied. The common assumptions for these studies are that there exists a pool of suppliers willing to offer goods and services through eProcurement channels and also that there is a concurrent demand for goods and services in eProcurement channels among public sector institutions. In the Danish context there has been some reluctance to adopt eProcurement among the public sector institutions (Andersen & Juul, 2002; Henriksen et al., 2004). No studies known to the authors have done a thorough analysis of whether this reluctance to adopt eProcurement is caused by the classic problem of who is to embark the marketplace first: buyers or suppliers (Bakos, 1991).

A number of studies have focused on the adoption of eProcurement from the perspective of public sector institutions. In their study of adoption of eProcurement in Australia Coulthard and Castleman (2001) focused on the possible differences between adoption of eCommerce by businesses and public institutions. Their assumption was that public institutions pursue a wide variety of goals. These goals go beyond mere efficiency and streamlining of benefits. Andersen (2004) also focuses on the public sector as the potential adopter of eProcurement. The assumption sketched by Andersen is that eProcurement can be used as a means to the improvement of supporting and strategic operations. However, Andersen reaches similar conclusions as Coulthard and Castleman, namely that there are no unambiguous economic or strategic outcomes of eProcurement adoption.

Regardless of whether adoption is viewed from the buyer or the supplier perspective it is apparent from the last few decades of IS-research that organizations face a plethora of challenges when implementing IS-driven innovations such as eProcurement (Larsen, et al., 2002). In this study focus is on the suppliers to public sector institutions in Denmark. In recognition of the broad scope of issues suppliers face when considering including eProcurement in their business activities a model for assessing eMaturity was developed. The model is designed to embrace two aspects of eMaturity: the technological aspect and the organizational aspect. The objective of this paper is to outline the parameters of an eMaturity model and to present the outcome of a qualitative, empirical assessment of an eMaturity model. The objective of the empirical assessment is to illustrate how organizations perceive the relative importance of technological and organizational attributes related to eCommerce, and how they position themselves with respect to maturity. The empirical assessment of the model is based on semi-structured interviews with suppliers of goods to Danish municipalities.

The structure of the paper is as follows. In the next section the concept of maturity is discussed. Thereafter, the evaluation tool for eMaturity is presented. The section gives an overview of the parameters, which based on a literature review should be included to assess suppliers' eMaturity in a satisfactory manner. The following section presents the research method applied in the empirical study of eMaturity of suppliers of goods and services to Danish public sector institutions. After having outlined the research method

data is presented. This leads to the final section, which discusses the result of the field study.

2 eMaturity

The term "maturity" and the complementary pole "immaturity" is often used to characterize a state of a given level in a continuous process. The term is used relative to its object, e.g. "eCommerce is still in an immature state". This use of the term in relation to eCommerce creates an ontological vacuum since both the term and its object are somewhat fuzzy. The concept of eCommerce represents a plethora of aspects both related to organizational and technological issues as well as to business functions and supportive activities (see for example Zwass, 2003). Adding the notion of maturity or immaturity does not strengthen the ontology of the concept. Some qualitative and/ or quantitative measures determining what characterize different degrees of maturity are necessary.

A number of academic disciplines use the term maturity and develop maturity models as classification schemes. Before presenting a few of the often used classification schemes based on maturity models it should be acknowledged that not all researchers agree on the suitability of "evolutionistic" development models as a means for measuring IT capabilities in organizations (see for example King and Kraemer,1984).

In the field of software process improvement the Capability Maturity Model, a measure of maturity, is basically used to determine how structured the software development process is (Paulk et al., 1991). Within the field of business economics examples of explicit usage of the term maturity is found in the Product Life Cycle concept (Lancaster & Massingham, 1993; Robson, 1997).

In the IS-field the term maturity is also familiar for instance in the context of the "Stages of Growth model" (Galliers & Sutherland, 1991; Nolan & Gibson, 1974). The Stages of Growth model illustrates the organizational stage in a development process where the organizational usage of IT is measured. Galliers and Sutherland (1991) decomposed maturity into six stages, where each stage characterized the presence of some particular attributes of the organization. The strength of the Stages of Growth model is its focus on IT *and* organization. This overall typology of technology and organization is used as a point of departure in the further development of an eMaturity model where focus is on the organizational and technological capability and the readiness of suppliers to engage in eCommerce.

3 The eMaturity Evaluation Tool

In the following the parameters of the tool for assessment of eMaturity of a supplier are presented. The parameters are primarily based upon Galliers's *Stages of Growth Model* (Galliers & Sutherland, 1991), which is a further development of the Nolan-model (Nolan & Gibson, 1974), and upon the *CIVO-VIDS variables* (Andersen et al., 2001; Andersen et al., 2000), which are also a further development of variables outlined by Massetti and Zmud (1996). The parameters have subsequently been adjusted specifically to assess eMaturity. Each of the seven parameters are divided into four levels of eMaturity. Each level represents a certain degree of maturity ranging from *immature* to *mature* eCommerce commitment. Each of the seven parameters are described briefly in the following indicating the different degrees of radicallity of each parameter. Before

providing the overview of the seven parameters a conceptualization of the four levels of maturity is presented.

3.1 The Four Levels

Level 1

At this level maturity refers to a situation where the supplier has not realized any need for eCommerce. No changes due to shifts in environment or technology developments have affected the behavior of the organization. However, due to pressure from business partners (Hart & Saunders 1998; Iacovou et al., 1995) some eCommerce actions may have been implemented.

Level 2

At this level the organization uses one eCommerce channel, often an eShop. Limited resources are invested and only small organizational adjustments have been made. Most business routines are still carried out manually.

Level 3

At this level the organization has formulated an eCommerce strategy and critical success factors have been outlined. More channels have been taken into use and the organization has changed some business routines. Investments in eCommerce are seen as opportunities for cost reduction and at the same time as a way to free resources for more service oriented tasks.

Level 4

At this level the supplier uses several eCommerce channels. Individual customer support has a high priority. Manual routines are eliminated in favor of fully automated procedures. The aim is to achieve full integration of data internally in the organization and to be able to provide integration of data to customers too. eCommerce is now seen as a tool to increase customers and employees' satisfaction.

3.2 The Seven Parameters

Strategy

The parameter *Strategy* relates to the visions and goals of the organization. Strategy is typically outlined by top-management. It is the explicit expectations towards eCommerce. *Strategy* is thus an indication of the ambitions of a supplier with respect to eCommerce. A clear strategy is essential for achieving success in connection with all projects involving major organizational changes (Davenport & Short, 1990; Ambeck & Beyer, 1999), and especially in connection with eCommerce projects (Rajkumar, 2001; Kalakota & Robinson, 2001; Neef, 2001). Kalakota and Robinson (2001) suggested a classification of strategy based upon the attitude of management towards technological advances and new market opportunities. According to this classification, the attitude can be categorized as: *visionary*, *pragmatic*, *conservative*, and *skeptical*.

eCommerce Model

The parameter *eCommerce Model* is defined as the specific electronic relation used to connect a supplier to its customers. Based on the degree of innovativeness, and the extent

to which the applied *eCommerce Model* is functionally integrated (Timmers, 2000) four types of *eCommerce Models* of relevance for suppliers of goods to municipalities can be identified: *on-line presence, eShop*, *eProcurement*, and *eMarketplaces* (Rajkumar, 2001; Neef, 2001; Eyholzer & Hunziker, 2000).

Changes of Sales Processes

This parameter includes all the different activities, routines, and procedures, which occur in connection with sales activities. *Sales Processes* can be divided into two main groups of processes: negotiating framework agreements and carrying out various sales operations (Andersen, 2004). The extent, to which the sales processes have changed in connection with the introduction of eCommerce, can be used as a general measure of the improvement of the effectiveness of the sales processes. Hence, it can also be used as a measure of the decrease in the duration as well as the costs of the cyclical sales processes. The changes of sales processes, which the supplier has undertaken to accommodate eCommerce, can be categorized as: *no change, adjusted*, *streamlined*, and *innovative (*Ambeck & Beyer, 1999).

eCatalogue

The parameter *eCatalogue* comprises a suppliers' digital product information. The development of an *eCatalogue* can be divided into four stages: *digital, content management, automatically generated,* and *customized.* The digital catalogue is a basic representation of goods distributed via digital media, often in the form of a CD. In the next stage where the supplier employs *content management* more effort is put into the user interface. This is often a major challenge for suppliers (Heywood et al,. 2002) because the product information usually is spread among several, different systems, and because the information can be difficult to understand for many customers. *Automatically generated* eCatalogues provide buyers systematic product searching facilities. Continuous and precise electronic up-datings of the eCatalogue are automated. The most developed level of the eCatalogue is the level where the catalogue is *customized* to fulfill the particular needs of the individual customer.

Integration

Integration refers to the extent to which back-office systems are integrated with the front-office systems, and the flow of information e.g. sales orders between internal organizational units of the supplier, as well as external, autonomous units is adequate and coordinated (Andersen et al, 2000). The parameter is measured on a scale with four levels, which range from *no integration* to *full integration*.

Organizational Changes

This parameter is a measure of the number of changes that occur in the organization as a consequence of eCommerce implementation. The parameter also includes possible down-sizing and shifts of responsibilities between various departments due to eCommerce. When sales procedures are digitalized, new employee skills are required and job profiles may change (Laudon & Laudon, 2003). This may in turn lead to staff changes, employee replacements, need for employee training, as well as a new recruitment strategy (Christiansen et al., 1999). Likewise, the organizational culture is assessed, since e.g. down-sizing is likely to have negative effects on the organizational culture, thereby causing resistance from the employees towards the introduction of eCommerce. The scale of maturity with respect to organizational changes range from *conventional task handling* to *account management*.

Table 1: *Overview Of The Seven Ematurity Parameters And Their Degree Of Radicallity*

Level Parameter	Level 1	Level 2	Level 3	Level 4
Strategy	*Sceptical* No belief in the possible technological opportunities created by eCommerce	*Conservative* Small investment and resource allocation Believe it is a way to create value	*Pragmatic* Result orientation eCommerce incentives must fulfill the expectation	*Visionary* Market leader eCommerce initiatives are independent of other companies
eCommerce model	*Conventional sales channel* On-line presence	*Single channel (experimental)* Often in the form of an eShop	*External eCommerce models as a pilot project* The single channel is expanded Distribution of eCatalogues to eProcurement systems and/ or eMarketplaces	*Multiple digital channels* Full use of and integration of eProcurement, eMarketplaces, and eShop
Process	*No change* Manual processes Employee intensive sales process	*Adjusted* New tasks are incorporated in the old process Old process is still dominant Mostly manual tasks in the sales process	*Streamlined* Eliminate unnecessary operations Processes are streamlined Reduction in process cyclic time	*Innovative* Process vision Re-engineering Value added re-design of the sales process to gain more value Dramatic changes Incorporating new business opportunities
eCatalogue	*Digital catalogue* Distributed via off-line means Infrequent up-datings	*Content management* Make internal product information external available to the customers Manually prepared	*Automatically generated* Frequent and online updatings Supports different standards	*Customized* Contains product information based on customer demand Is digitally handled
Integration	*No integration* Printing of orders and messages Manual handling	*Low integration* Conversion of e-mail to ERP-system Few document types Manuel typing of data Few entities	*Medium integration* Replicating order information as a batch process between ERP and the eCommerce model. No external integration Several document types Automatic Many entities	*Full integration* Digital transaction of information to ERP-systems Buizz-talk (all document types) Real time Integration to the customer
Organization	Conventional order-handling Do not use technological opportunities	Parallel tasks Much manual typing of data Employees create externally understandable product information Transaction based operations	*Tasks related to product information on customer demand* Education of the sales force The employees learn new tasks and procedures in the eCommerce process Reallocation of employees and reduction of the sales force	*Account management* The sales force support different eCommerce models CRM
Management/ control	*Individual* Enthusiastic employees Generally no recognition of needs	*IT department* eCommerce is seen as an IT project	*Marketing* eCommerce is seen as a commercial project	*Executive* Interorganizational eCommerce Coordination

Management And Control

The parameter management and control measures the degree, to which eCommerce is considered to be an integrated part of the organization by top-management, the marketing department, the IT-unit etc. The assessment of the parameter can be made by

investigating the allocation of resources for eCommerce projects, the priority of eCommerce projects, and whether or not the eCommerce projects have got a strategic, tactic, or only operational status within the organization. Likewise, it is of major importance to know whether the eCommerce projects have been carried out as a result of managerial dispositions, decisions taken on departmental level, or initiatives taken by a few enthusiastic employees. The scale concerning management and control comprises the following four parameters *individual, IT department, marketing,* and *executive.*

4 Research Method

To explore the perceived stages of maturity of suppliers of goods and services to municipalities in Denmark six in-depth and semi-structured interviews were carried out. Given the novelty of the subject among the informants it was found prudent to establish personal contact to the informants and to make sure that informants and the researchers had a common understanding of the parameters. It has been argued that especially new areas of IS-research requires this research strategy, because it is crucial that researcher and informant have the same understanding of the central concepts of the research instrument (Benbasat et al., 1987).

The exploratory search for an answer to the main research question pursued in this study was a dialectic relationship between the model and empirical evidence. When applying this exploratory approach it should be kept in mind that it is the interplay between the unique (the individual case) and the general (the theoretically developed model), which provides new insights, which again can lead to generalizations based on single cases (Andersen, 1992). It should be stressed that it is ambitious to provide a comprehensive empirical support of the model based on six interviews especially when taking into consideration that the eMaturity model consists of 4 times 7 cells, each representing unique attributes. However, insights from the interviews can provide pointers towards the suitability of the model.

Informants were chosen based on several different criteria. First of all the supplier should sell goods relevant for eCommerce. IS research has throughout the last decades shown that MRO-goods are particularly suitable for eCommerce (Berryman et al. 1998; Malone et al., 1987). Therefore, suppliers of MRO-goods were chosen as informants. Another criterion, which was found relevant in the selecting of informants, was whether or not the organization was engaged in some form of eCommerce. If the organization had no perception of the concept and was not interested in adopting eCommerce in the near future it was found futile to interview a representative from such an organization. Finally, it was found crucial that the supplier had established a business relationship to one or more municipalities.

5 Data

In the following sections data from each of the six organizations included in the study is presented. First, a summary of each of the six semi-structured interviews is outlined. Thereafter, an explicit statement concerning the "maturity" of the organization is provided by the informants from the different organizations. The explicit maturity statements are based on the closing question of each interview. After having discussed aspects related to each of the seven parameters the informant was explicitly asked "How eMature do you consider your organization to be?"

Organization A

Organization A was founded in 1974. A's core business is wholesale of PCs and printers. The organization established a web-based eShop in 1995. Lately the company has expanded its eCommerce activities to include involvement in a public eProcurement portal and an eCatalogue for eProcurement-systems. The vice director is responsible for the overall eCommerce strategy as well as the implementation of eCommerce. The incentive for getting involved in eCommerce in 1995 was a desire to minimize transaction costs. As stated by the informant: "Our eShop was established due to demand from our customers. We spent a disproportionate amount of time on the phone doing things, which could be done more precise and faster by other means." A saw it as a strategic priority to be among the best from the beginning. Representatives from the organization took part in focus-groups to get access to the newest information and to be able to influence development in the area. A has recently repositioned itself and is not as aggressive and proactive in its eCommerce strategy any more. A's experience is that the customers are not as eager to adopt eCommerce as they used to be. A has automated many of its processes. New departments have been established and others have been closed down. Time has been saved on transaction costs but more resources have been allocated for updating of data. The system is designed to handle a high degree of data-integration. Lack of full integration is due to absence of global standards. Lack of standards are also seen as the major obstacle for development of an eCatalogue.

Company A's informant: "I reckon A to be very mature without being at the very top. The determining factor for this assessment is that our organization is in place. We have the foundation. What is still missing is investments in technology."

Organization B

B was founded in 1953 in Denmark. Today it is an international organization with branches in 55 countries. B is a wholesaler of nursing and hospital equipment. B is engaged in two types of eCommerce activities: eCatalogues and presence at the Public eProcurement portal (www.doip.dk). B's eCommerce strategy is to live up to the expectations of their customers: "If our customers want eCommerce, then our opinion doesn't matter. We want to be where our customers are." B is not interested in investing unnecessary resources and prefers to wait until there is a request for further eCommerce developments. B faces similar to A problems due to the lack of global standards, and B sees this as the major obstacle for improvement of eCatalogues. Today B updates its eCatalogues manually, tailoring it individually to each customer. Orders are handled manually unless they are received via EDI. The eCommerce initiatives have not resulted in changes in organizational processes. The only change now is that many orders are received via e-mail but they are printed on paper and handled in the traditional manner. B has not spent any effort on integration of data, mainly because its requires too many adjustments to the existing systems. B's eCommerce activities have not led to lay-offs of employees, but changes in work has taken place, especially for the sales-personnel. This has not led to major resistance to change something which the informant explains is a result of the organizational culture. The reason that B perceives itself to be rather immature with respect to eCommerce is that their customers, the municipalities, have not yet adopted eCommerce.

Company B's informant: "We are not highly mature, but moderately mature. The reason being internal barriers, which have to be overcome before we become highly mature and reach complete integration."

Organization C

C was established in 1975. C is a wholesaler in a commercial niche of nursery aids and chiropody products. C established an eShop in 1999. The first eShop was a basic solution where an Access database was made available on their web-site. This fulfilled the particular request from customers who wanted to get an overview of product selection, technical data, and images of products. Today, C also has an eCatalogue. C has chosen a proactive eCommerce strategy: "We have been up front in the business sector. We do not wait and see what others do. We have been very active in the development of our eShop." Most of the sales processes are digitalized, whereas purchasing processes are still done through conventional methods. C has partly integration of processes. However, similar to the other organizations C has experienced that the lack of global standards is a barrier for full integration. The eCommerce initiative at C was initiated by the board. Due to close collaboration between the finance-, IT-, and sales- departments eCommerce has achieved and maintained the high priority originally planned for eCommerce by the board.

Company C's informant: "We are among the best! The reason is that we are very fond of new systems."

Organization D

D was established in 1921 as a cooperative where members should be able to get quality supplies at reasonable prices. D is a wholesaler of fish, meat, fruit and vegetables. D runs an eShop, which generates about 30% of its annual turnover. D also has an eCatalogue. Financial issues were the main reason for D to get involved in eCommerce. Apart from direct savings D has experienced improved quality of service through its eShop activities. D's vision is to adjust to demands of customers but no explicit strategy has been outlined. Almost all steps in the sales process is digitalized in D, but there is not full integration between the eShop and the ERP-system. D has not experienced reduction in staff, but changes have taken place especially for the sales personnel. Traditional sales work is replaced by account management and strategic sales. Another skill which has been required is IT-competencies. The sales personnel has to guide and sometimes even support customers in their use of the eShop. Due to awareness of the competitive need for changes there has been no or little resistance to change in the organization. Especially top-management has been positive towards the developments.

Company D's informant: "I reckon that we are very mature. There are things we can do better. The reason for the evaluation of high maturity is a result of the positive feed-back from our customers, and the monthly turnover in our eShop."

Organization E

E was established in 1845 as a stationery business. Today it is a part of an international business group with branches in Europe, Asia and US. E is a wholesaler of office supplies, office furniture, and office machinery. The incentives for E to use eCommerce was a desire to create more profit and at the same time to satisfy its customers. E had no eCommerce strategy. Instead the evolution has been driven by requests from customers. E launched its eShop in 2000. Activities from the eShop have been integrated to E's ERP system. E uses eCatalogues both in their eShop and in the public eMarketplaces. All catalogues are updated semi-automatically. The informant claims that disproportionate amounts of resources are required to update the catalogues. The eCommerce initiatives have not had any impact on processes in the organization. "We are not going to change the organization just because we do eCommerce. Of course we utilize the advantages of

eCommerce. But, I do not believe that we get anything out of changing everything just because things are done electronically now. It is business that drives it, not the technology."

Company E's informant: "I think we are very eCommerce mature. Our strength is that we have the technical know-how within the organization. We have a division of responsibilities - this a commercial issue not an IT project."

Organization F

F was established in 1922. In 1998 it was taken over by an international industry group. F sells photocopiers, printer toner, paper, and office supplies. F has compiled an eCatalogue and is present at the public eMarketplaces in Denmark. The reason for F's presence at the eMarketplaces is pressure from customers. The issue of integration is left to the corporate level. F wants full integration but is not interested in investing the necessary resources. F has no explicit eCommerce strategy. "We do not have an eCommerce vision. Our vision is to be the preferred business partner." The corporate strategy is that eCommerce should not be viewed as being different from other business activities. However, eCommerce has received attention from top-management, which has allocated resources to establish a project-group of representatives from the IT-, marketing-, and sales-departments. Major emphasis is on the commercial aspects of eCommerce. Not the technical aspects. A look at F's business processes before and after the introduction of eCommerce reveals that no major changes have taken place. "We adjust our processes continuously, but not with a particular focus on eCommerce or efficiency gains due to eCommerce."

Company F's informant: "Maturity can be twofold. If maturity is to be able to do eCommerce, then our maturity is medium. [If] Maturity [is seen as a means] to exploit resources then we are not that far."

6 Analysis And Conclusion

The objective of the qualitative, empirical assessment of the eMaturity model was to provide an empirical evaluation of the usefulness of the outlined eMaturity model. Since the issues discussed during the interviews closely reflected the seven parameters one way to assess the empirical evaluation is address the ways the informants reacted to issues discussed during the interviews. Apart from a few situations the informants were never at a loss for answers. This could indicate, that the issues discussed were not considered to be completely foreign to the informants' view of eCommerce. However, this type of interpretation should be done with caution. Biases from interaction with informants could arise for example because the informant gives the answer that she expcets the interviewer wants, that the informant wants to impress the interviewer, and that the informant prefers to answer positively rather than negatively (Andersen, 1992). Given that eMaturity is a sensitive area to discuss with organizations that have ambitions in the area of eCommerce, there are good reasons to belive that the informants have been influenced by those biases.

Another way to assess the empirical evaluation is to look at the eMaturity statements of the informants and compare them to the researchers interpretation of the eMaturity level of the organization.

Table 2: *Overview Of Interpreted Ematurity Levels Of Organizations A, B, C, D, E, And F*

Level / Parameter	Level 1	Level 2	Level 3	Level 4
Strategy		D	B	A, C
eCommerce model		D	B, C, F	A, E
Process	B, E, F	D	A, C	
eCatalogue		B, D, F	A, C	E
Integration		B, F	A, C, D, E	
Organization		F	D	A, B C, E
Management			C, D, E, F	A, B

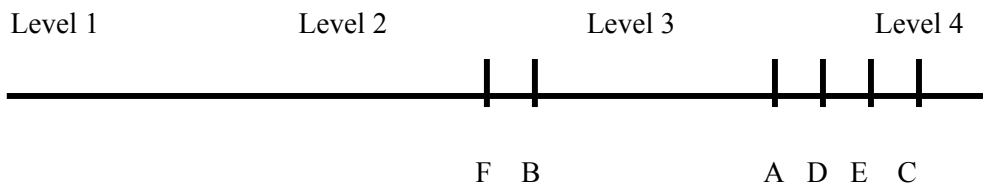

Figure 1: *Perceived eMaturity Levels Of Organization A, B, C, D, E, And F*

The eMaturity statements from the six informants suggest that they perceive their organizations to possess medium to high and in some cases even a very high level of eMaturity. The determining factors for the optimistic assessment are generally a focus on organizational parameters. The statements were based on how the informants perceived the organizations' handling of the implementation of eCommerce from a managerial and organizational perspective. Some informants also stressed that eCommerce was not a technical project. It is interesting to note that when informants assess their maturity level to be low this in most cases is due to technical obstacles. Lack of standards are often mentioned as the inhibitor for further maturity. Common for all the informants was their focus on their customers. A general attitude was: "If customers want eCommerce, then we'll provide it!" The interpreted eMaturity level for each organization based on the seven suggested parameters provides a picture, which more or less correlates the explicit maturity statements (cf. Table 2 and Figure 1). This could indicate that the eMaturity model is a practical tool for organizations to access their position in the eCommerce landscape. This in our opinion is the most important finding from the present study. From a more normative point of view businesses might therefore be able to apply the model to position themselves and further to use the parameters as inspiration to improve their eMaturity.

As stated in the introduction our focus was on eProcurement suppliers for public sector institutions. One issue, which is compelling to discuss in this context is whether or not eMaturity is of higher importance in business-to-administration relations compared to business-to-business relations. The public sectors' eProcurement has some characteristics, which in our view require a high eMaturity level from the suppliers. One issue, which should be kept in mind is that public sector institutions purchase goods in order to provide a variety of services to citizens, who often are very dependent on the services provided. In addition many "production units" are very dependent of MROs, which often represent a marginal value compared to the cost of running the service. An illustrative example of

this situation is in hospital service. The cost of rubber gloves is marginal compared to the cost of running the hospital, not mentioning the personal costs of cancellations due to a situation where the hospital runs out of stock of rubber gloves. Apart from that public institutions have close budgetary control and political attention on continuous efforts to reduce costs (Henriksen et al., 2004). This requires advanced IT systems, which are expected to improve efficiency.

Due to the need for controlling procedures purchasing is ideally suited for electronic procedures (Liao et al., 2003). This requires transparency in all business processes ideally through full integration of data. Public sector institutions buy commodities, which are mostly purchased repeatedly (e.g. office supplies, provisions, and nursery supplies). Ideally eProcurement is supported by CRM-systems. CRM-systems can furthermore support punctual delivery, which often is crucial due to the type of services public sector agencies perform (e.g. eldercare, where nursery supplies have to be in place). These conditions speak in favor of highly structured processes within the suppliers' organization. The suggested parameters indicate that an organization operating at eMaturity level 4, where integration, customization, and real-time updating of product information is a must, has to be highly structured.

Level 4 parameters are closely related to the technological attributes of eMaturity. However, given that organizational support and consensus are needed powerful IT-systems alone will not be enough. It should therefore be stressed that the eMaturity model should be seen as a holistic framework, where organizational issues cannot be separated from technological issues.

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