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Converting theory to praxis

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Abstract

The growth of services - leveraged by the servitization of manufacturing - stresses the urgency of novel approaches and metrics in assessing the performance of services. Building on the statistical and socio-economic paradigms, this paper outlines the microeconomic frame for the integrative analysis of service productivity. The integrative frame is further refined with the complementary premises of the organization theory. Organizations enable link descriptive theorizing of services to the real world contexts that are influenced by uncertainties and the bounded rationality of the business managers. The contingency argument implies that when technology, strategy and the organization of a service firm are mutually consistent, it is possible to address the intangible aspects of service productivity through the tangible characteristics of the firm's organization and the underlying strategy. The organizational method in the analysis of service productivity is illustrated by the productivity regimes of two Nordic banking corporations. The empirical findings suggest that the propositions of the organization theory may have a wider validity across organization types. The paper makes tentative propositions how the productivity regime of a business corporation shows up in its inter-firm relations and network strategies.

Key words: Productivity, service, organization, networks

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Converting theory to praxis

1 Introduction

The growth of services - leveraged by the *servitization* of goods production - guides the industry evolution in the advanced economies. This stresses the urgency of novel approaches and metrics in assessing the overall performance of services. Whilst the *conceptualization* of service productivity over the past decade (Gadrey et al., 2002; Djellal et al., 2008) has been progressive, scholarly debate on service productivity still lacks a coherent economic theory. The productivity of services in the statistical framework is largely assimilated with the producer's efficiency measured with the input-output ratios (Inklaar et al., 2006). Statistical approach however, overlooks the customer's perspective that is manifested in the outcome, the *effectiveness* of the purchased service. These considerations are stressed in the socio-economic views of service management (e.g. Parasuaman, 2002; Zeithaml et al., 1985). Building on these two schools there is an emerging paradigm called the *integrative* approach. It addresses service productivity holistically from the producer's and the customer's perspectives (Djellal et al., 2008; Viitamo and Toivonen, 2013). The integrative frame outlined in this paper, posits that the central aspects of service technology are manifested in dimensions of productivity: the producer's efficiency and the customer's effectiveness.

In this paper, the microeconomic frame of the integrated productivity analysis is refined with the complementary elements in the organization theory[1]. This enables link the *descriptive theorizing* of services to the real world contexts that is characterized by uncertainty and the bounded rationality of the business managers. In services, organization, technology and productivity are interdependent. As the knowledgeable labor is the dominant factor of production in most services, organizing human resources into 'appropriate' working units becomes the integral component of the technology itself (see e.g. Nelson and Winter, 1982). The organizational method put forward here implies that when technology, strategy and the organization of a service firm are mutually consistent, it is possible to address the *intangible* aspects of service productivity through the *tangible* characteristics of the firm's organization and the underlying strategy (cf. Lawrence and Lorsch, 1967). The argument is illustrated by addressing the productivity properties of two *classic* forms of organizations, the unitary form (U-form) and the multidivisional form (M-form)[2].

The organizational method in addressing service productivity is illustrated in the banking industry. The discussion here draws on the comparative case study of two Nordic banking corporations, Nordea and Svenska Handelsbanken (Viitamo, 2012). From the productivity point of view, the banking sector is of particular interest as the service offering of a bank may involve standardized, tangible elements such as bank accounts and cash management solutions, as well

[1] Organization theory focuses on the structural features and operational routines of an organization and the behaviour of the organization as a collective actor (Scott and Davis, 2003).

[2] While the origins of these organizational forms dates back to the industrial capitalism of the 19th century (Chandler, 1990), their many variants are still in use in a number of manufacturing and service industries.

as customized, intangible elements such as investment consulting and risk management services. Consequently, the business models of competing banks can be highly different as well. The evidence from the banking industry is used to show that the organizational design of a business corporation reflects its conceptualization of *productivity*. The concept of *productivity regime* is used here to summarize the managerial perceptions of productivity, and how productivity is utilized in the business operations to yield competitive advantage[3]. The observed differences in the case banks' productivity regimes suggest that the propositions of the organization theory may have a wider validity across organization types. The paper makes tentative propositions how the productivity regime of a business corporation shows up in its inter-firm relations and network strategies[4].

The paper is constructed as follows. Section 2 outlines the principles of the integrative frame of service productivity. Section 3 extends the integrative frame with the productivity-related propositions in the mainstream organization theory. Section 4 illustrates how the organizational approach to service productivity can be utilized in practice. The main findings and the implications are summarized in the concluding Section 5.

2 The integrative framework of service productivity

2.1 The conceptualization of productivity in services

The integrative approaches to service productivity aim to the reconcile the traditional supplier-based view in assessing service performance (Inklaar et al., 2006) with the socioeconomic perspectives (Metcalfe and Miles, 2006) that stresses the importance of customer value and the perceived quality (Djellal et al., 2008; Grönroos and Ojasalo, 2004). The integrative framework that is outlined here takes a microeconomic stance and specifies the technological linkage between scale-efficiency and effectiveness. The firm level definition of productivity in Bernolak (1997) provides an appropriate template for the further characterization of productivity in services. According to Bernolak (1997) productivity means how much and how well is produced from the available resources. If more or better goods are produced from the same resources, productivity increases. Or, if the same goods are produced from fewer resources this also increases productivity. The same holds for services. If more services or better quality services are produced from the same resources, productivity increases. By resources Bernolak refers to all human and physical resources, people who produce the goods and provide the services, and the assets with which the people can produce the goods and provide the services. The resources include land and buildings, machines and equipment, tools and raw materials, inventories, and other current assets.

Applicable to goods and services equally well, the productivity definition of Bernolak conforms to the generic interpretation of service by Vargo and Lusch (2004) and Penrose (1959). If the resources are understood as consisting of all human and physical assets, productivity results from the overall delivery of services by the resources, which are used in the productive activities of the firm. As the definition of productivity is contingent on the use and the availability of

[3] The discussion here is based on qualitative data on the banks' strategy, organizational models as well as the managerial views of service productivity (Viitamo, 2012).

[4] The paper provides contributing insights to the 'systems approach to networking', which is the conceptual frame of the REBUS -research program (see http://www.fimecc.com/programs/rebus).

(qualified) resources, the firm's productivity is reduced, if its resources are not properly used, or if there is a lack of them. The use of productive resources is manifested in the quality of the output and how it is perceived by the customer (markets). As quality assessment requires a benchmark, it is implicitly assumed that the relevant characteristics of the output can be prescribed objectively prior to the production or the relevant characteristics of the output is learnt and evaluated subjectively in the market. This results from replication and the routinization of activities (Nelson and Winter, 1982) in production and the transactions with the clients. With regard to the quality of the resources and the output the general implication of productivity is symmetric. A higher productivity of activities is attainable through a decrease of wasted and idle resources or through a higher volume and the quality of the output.

Having the customer's specifications of the product and the service, the producer's main objective is to attain the lowest possible unit cost of the production and delivery. To the extent that the input prices are also given, cost reduction implies the pursuit of *efficiency*. The user, on the other hand, is primarily interested in extracting high utility and (perceived) quality from the product or service, given its costs and price. This other component of productivity is generally called *effectiveness* (Neely et al., 1995). Efficiency growth of a service can be decomposed into three effects and sources (Varian, 1984) Improved *operational efficiency* or *cost-efficiency* implies cost reduction given the existing technology and the scale of production. Higher cost-efficiency reduces the waste of resources and moves the actual costs closer down to the firm's average cost curve. 2) Improved *scale-efficiency* implies a move along the producer's average cost curve towards the point, where the average costs reach the minimum level[5]. In the presence of *economies of scale* this implies an increased volume of production. 3) *Technological advance*, which reflects improved total factor productivity (TFP), shifts the firm's average cost curve downwards. The above efficiency concepts are also applicable to a multi-product firm, which utilize the *economies of scope*[6]. In this case the firm decides how to allocate resources across the production lines to achieve high cost-efficiency and scale-efficiency (Baumol et al., 1988).

While efficiency is characteristically *unambiguous,* bounded by the inputs, the output and the technology, this is not the case with the general conceptualization of effectiveness. It is a more diffuse term and in most cases very difficult to quantify. Such definitions lead to an interesting concept: there are usually no limits as to how effective an organization can be (Tangen, 2005). However, competitiveness of a service firm requires that productivity is assessed in relation to both components (cf. Jackson and Petersson, 1999; Vargo and Lusch, 2008). This in turn implies that the service provider (firm) - in making the production plan - has prior information (idea) how to attain effectiveness and how the goals in effectiveness are reconciled with the firm's goals concerning the production efficiency. To be economically feasible and predictable for the service firm, the level of effectiveness needs to be bounded from above[7]. In the context here, effectiveness is defined technically from the producer's perspective as the level of customization of the service to the needs of an individual customer. This conforms to the conceptualization of effectiveness in Neely et al. (1995).

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[5] In textbook microeconomics, this point shows the maximum productivity and it is allocatively efficient.

[6] In general, economies of scope over a given bundle of products and services prevail, when the average production costs in the integrated production are lower than the sum of the average costs in the separate production.

[7] The requirement that the desired effectiveness is technologically feasible means that it locates within the firm's production possibility set.

With regard to the overall productivity, the focal issue in service management is whether the firm is capable to attain the desired level of effectiveness and the desired level of production efficiency, given the production technology. Hence, the general formula the overall productivity of the service can be presented as a function of efficiency and effectiveness, where the marginal contributions of both components are locally positive [8]. The decomposition of service productivity into efficiency and effectiveness and their role in the production process (transformation) is illustrated in Figure 1. In this setting, *quality* is equally important for the scale-efficiency and the effectiveness of services. Based on the notion by Vargo and Lusch (2004)[9], it is assumed here that the customer's perceived quality is always the driving factor. The willingness to accept a trade-off between standardization quality and customization quality, usually for a commensurate trade-off in price (inclusive of other sacrifices) is eventually a form of customization. In the present context, the level of a customer's productivity is equalled to the level of perceived quality, which is a continuous combination of the customization quality and the standardization quality. For simplicity reasons, the customization quality is assumed to be a growing linear function of effectiveness, while standardization quality is assumed to be a growing, linear function of scale-efficiency. Thus, given the variation (differentiation) in customers' preferences with respect to standardization and customization, customer satisfaction and productivity can attain compatibility[10].

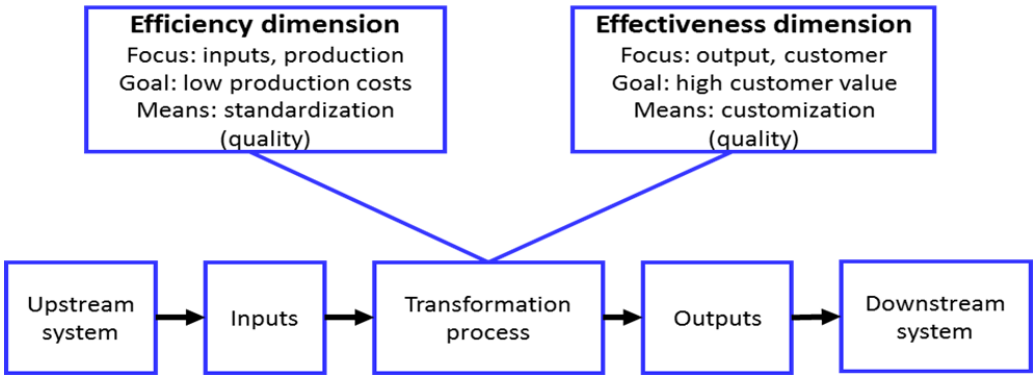

Fig.1. Productivity in service transformation and value creation.

2.2 Service technology and productivity strategy

Based on the above conceptualization, the characterization of service productivity in Figure 2 assumes that the production possibilities of a service firm can be approximated by a continuous and concave functional relationship between scale-efficiency and effectiveness. The curve with the symbol S indicates the firm's constant and maximum levels of productivity. The continuity

[8] That is, given the level of efficiency, an incremental growth in effectiveness should lead to an incremental growth in productivity. The deduction is symmetric for scale-efficiency.

[9] Some customers prefer to engage in relatively high levels of co-production (tailoring), and some prefer to have the offering firms provide services more directly. When customers make trade-offs, they are not necessarily making value trade-offs. Goods and services are appliances, and the customer must add mental and physical effort to co-create value. This effort is part of the total cost of ownership and use of an appliance (Vargo and Lusch, 2004). However, because the firm does not pay for the consumer's effort, it does not usually enter into the firm's financial statement and determination of profit and productivity.

[10] A more detailed discussion of service quality and customer's productivity is available in Viitamo and Toivonen (2013).

of the surface S reflects the intrinsic flexibility of service technology. The concavity reflects the impact of economic scarcity and the diminishing marginal rate of technical substitution (MRTS) between effectiveness and scale-efficiency (cf. Kreps, 1990; Varian, 1984). Accordingly, along the surface S there is a trade-off in using the firm's resources most productively at any point of time: part of effectiveness has to be given up to obtain higher scale-efficiency. This holds for the moves in the opposite direction as well: sacrificing scale-efficiency for higher effectiveness.

In this framework, the key issue is not only the level of productivity and quality, but also the optimal employment of the provider's resources with respect to customer preferences on service quality. Contingent on their *flexibility and redeployability*, a provider's resources can be used in the production of low number of customized services (point A in Figure 2), or high number of standardized services (point B in Figure 2). It is realistic to assume that the productivity surface S evolves through the provider's learning of and experience in how to attain customer satisfaction in different types of customer segments. Productivity outcomes are ultimately contingent on how the firm's activities and the *resources* available to it are employed and how the customer is involved and used as a productive asset. It is realistic to assume that *the customers' participation in service production increases with the higher degree of customization of the service*[11].

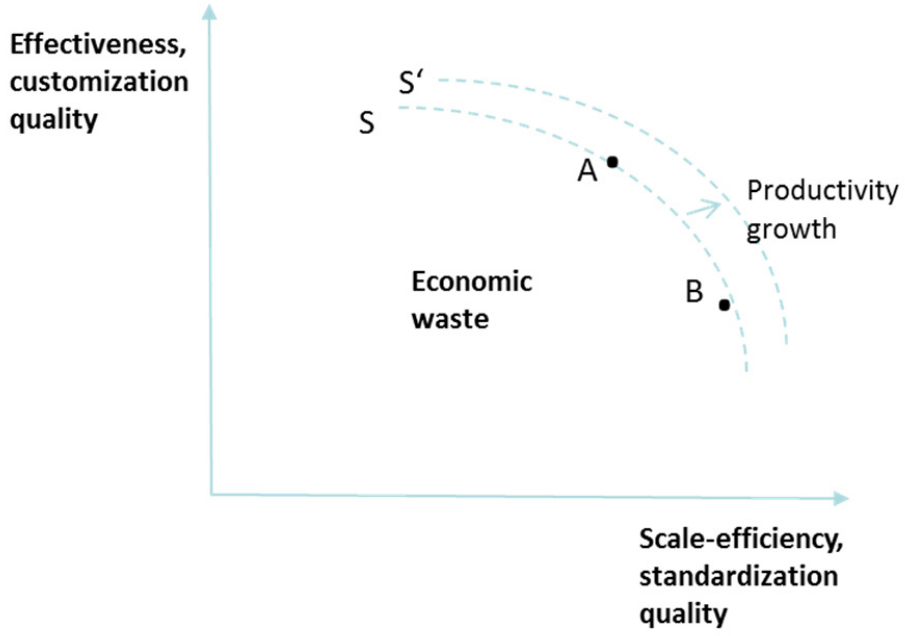

Fig. 2. The graphical illustration of service productivity.

The surface (frontier) S also describes the best practice service technology available to the firm. Its principal objective to stay on the productivity frontier S, where the maximum level of productivity and the *right* balance between effectiveness and scale-efficiency for different customers and customer segments can be reached. To exemplify, if the preferences of a customer

[11] In reality, this increases the uncertainty *ex ante* on the service outcome. For simplicity reason the impacts of uncertainty is excluded from the analysis here.

change so that a higher level of customization is required, the firm has to allocate more resources to serve this particular client. In Figure 2, a move of the symbol A to the left on the frontier S illustrates this situation and the customer type. The move implies a higher uncertainty in the service outcome and a diminished opportunity to utilize economies of scale (replicability and standardization) in the service provision. Since customer time and the amount of other resources are fixed and fully employed in the frontier S, scale-efficiency needs to be enhanced in the service of other clients. This implies that more standardized services will be offered to the customers of type B in Figure 2, i.e. the point B moves to the right on the surface S. On balance, when the shifts along the frontier S correspond to customers' preferences, the overall productivity of the services and the firm's resources will remain unchanged.

In Figure 2, the area below the surface S is, by definition, inefficient (unproductive) and thereby it reflects the waste of the firm's resources. Correspondingly, the move towards S indicates an improvement in the use of the resources and an increase in the *operative cost-efficiency* of the firm. Productivity growth, which is manifested in technological progress and innovation, may shift the firm's productivity frontier outward from S to S′. For the exogenous factors inducing such a shift Anderson et al. (1997) note that appropriate applications of *information technology* may improve both customer satisfaction and productivity simultaneously. It is realistic to assume that the outward shifts of the surface S are mostly asymmetric and demonstrate the impacts of learning, improved skills of the service professionals, improved quality of the complementary inputs, or the *re-organization* of the service processes. However, the provider's strategy to increase its own productivity *unilaterally* does not necessarily generate the first-best solutions for the customer. For example, this is the case if the improvements in cost efficiency lead to the points on the productivity frontier S that are not preferred by the customers A or B.

It is apparent that the extent to which the firm's technology is smooth and continuous as indicated by the frontier S, is an empirical matter and depends on the industry characteristics. It is plausible to assume that through learning and routinization of the processes firms become more specialized (differentiated) in the production of specific types of services for specific types of customer segments. In that case *A and B in Figure 3 represent two differentiated firms, whose technology is approximated with the common productivity frontier S of the service industry.* Accordingly, competing firms may adopt differentiated productive strategies in services markets (cf. Porter, 1985, 1998; Barney, 1991). The main implication of the above analysis is that the (re)creation of competitive advantage in service productivity requires continuous balancing between the provider's and the customer's productivities. Moreover, as technical progress fosters productivity growth and knowledge-intensity in services, organizational adaptation (redesign) is often required to appropriate the economic benefits of technical progress.

3 Organizational perspective to productivity

3.1 Linking organizational fit to productivity

The notion that there is no such thing as good organization in any absolute sense gains a wider acceptance (Ashby, 1968). An organization that is good in one context or under one criterion may be bad under another. This is the key argument of the contingency theory (Lawrence and Lorsch, 1967) and implies that organizational attributes and changes thereof are central drivers of a firm's competitiveness. The discussion in Section 3 points out that the mainstream organization theory is predominantly concerned with the competitiveness and the productivity of

organizations. The focal question of why some organizations perform better than others (Scott and Davis, 2003) implies that the distinction between organization theories, strategic management and economics of organization becomes actually blurred[12]. The mainstream organization theory help identify the drivers (external and internal) that shape the productive strategies of the service firms. This provides the integrative framework in section 2 with explanatory and practical perspectives that enable managerial implications as well.

The productive performance in organizations builds on *rationality* (Thompson, 1967), which *largely* coincides with the productivity of resources. In the control of technical systems a viable concept is *technical rationality*. It focuses on the desired outcomes and beliefs about the cause-effect relationship. Hence, given the prevailing knowledge on the technological options, a set of activities is technologically rational to the extent they are capable of producing the desired outcome with the available resources. Technical rationality can be assessed by two criteria, *instrumental* and *economic*[13]. In case of an instrumentally perfect technology, the actual outcome of production is fully consistent with the desired outcome, which in the service productivity framework corresponds to the definition of *effectiveness*. Economic rationality is also a matter of degree and is attained to the extent the desired outcome is derivable from the least cost expenditure of resources. Clearly, economic rationality approximates economics efficiency even though in Thompson's reasoning there is no absolute standard for perfect economic rationality. The overall rationality (productivity) of the technical system is determined through the co-effect of instrumental and economic rationality.

The main contribution of the organization theory to the analysis of service productivity is manifested in the *contingency theory* developed originally in Lawrence and Lorsch (1967) and Thompson (1967). The logic of the contingency theory can be highlighted by the *structural-adaptation-to-regain-fit* (SARFIT) model in Figure 3. Environments with inherent uncertainties create requirements for organizations influencing the strategic choices of the management. Strategies and the consequent choices of technology create contingencies such as economies of scale and scope, and the drivers of diversification, for which some organizational modes are better suited than others. *Organizations emerge because the rationality of underlying technological systems and the managers that operate them is inherently bounded* (Simon, 1961). In case of a mismatch caused e.g. by technological change, the performance suffers. This will trigger a new search for the organizational 'fit'. Hence, organizational innovations should improve the performance and the resource productivity (Scott and Davis, 2003)[14]. The deduction of the contingency theory can be reversed. If consistent, *organizational design* reflects the underlying *strategy,* and the characteristics of the *technological system* and the specific

[12] It is in the interest of the management, those who design and manage organizations that the work of the organization be carried out as effectively and efficiently as possible (Scott and Davis, 2003).

[13] According to Thompson (1967), it is necessary to distinguish between the instrumental (effectiveness) and economic (efficiency) questions because present literature about organizations gives considerable attention to the economic dimension of technology but hides the importance of the instrumental question, which in fact takes priority.

[14] Modifications of the contingency theory can be found in the sub-fields of industrial economics. As noted by Dosi et al. (1998), organizational systems mediate the impact of technology on competitiveness. In the absence of robust and adaptable organizational systems in firms, among firms and between firms and external institutions, the fruits of technology will become dissipated. Conversely, well-designed organization structures and effective management are the handmaidens of competitive advantage, economic development, and growth.

characteristics of productivity. This is particularly relevant in many service industries, where organization of work is an inseparable part of the labour-intensive technology.

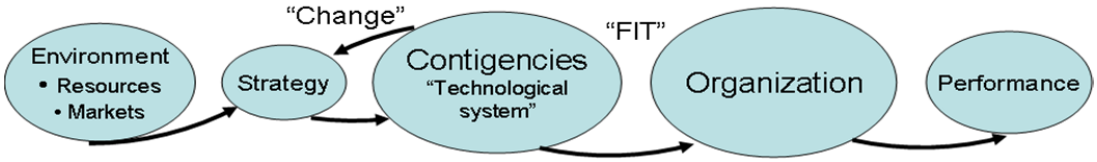

Fig. 3. A schematic presentation of the contingency theory (Scott and Davis, 2003).

3.2 Three archetypes of service technologies

Since all organizations are inherently *open* and subject to external contingencies and uncertainties (Thompson, 1967), perfect technical rationality is a theoretical abstraction. Technologies differ, however, and their specific characteristics indicate how distant they are from the perfect rationality. Thompson (1967) identifies *three broad classes* of technologies (technological systems) in the modern societies. The discussion in this section aims to show that the characteristics of the three types of technologies bear on the productivity of organizations more generally. *Long-linked technology* involves a serial interdependence in the sense that the act Z can be performed only after successful completion of the act Y, which in turn rests on the act X, and so forth. Typical example is a vertically linked value chain in industrial mass-production. A long-linked production mode is the closest approximate of perfect rationality, as it enables highly predictable and standardized processes with a constant flow of production. Hence, the dominant mode of productivity in case of long-linked technology is scale-efficiency (economic rationality).

Mediating technology links customers who are or wish to be interdependent. Thompson (1967) notes that *universal banks*, for instance, link depositors to borrowers and insurance firms link customers who want to pool common risks[15]. The complexity of mediating technology follows from the requirement of standardization of the geographically dispersed service operations and their compatibility with the needs of multiple clients that differ in time and space. As the customers with their specific needs are involved in the production of the services, the opportunities for standardization and control of the processes are inevitably limited. Hence, in comparison to the long-linked technology, the mediating technology is further away from the closed system of logic and the hypothetical perfect rationality[16]. This implies a more balanced approach to the utlization of scale-efficiency (economic rationality) and effectiveness (instrumental rationality) in mediating services.

Intensive technology employs a variety of techniques in order to achieve a change in a specific object (Thompson, 1967). The selection, combination and order of the applied techniques are influenced by the feedback from the object, which can be human or non-human (property). The intensive technology is a *customized* technology in the sense that it rests on the appropriate

[15] In this case mediating technology is associated with networked technology. Accordingly, banking and insurance belong to a group of industries called the *network services* (Salter and Tether, 2006), which draw on physical networks as well as on elaborate information networks. The productivity of networks is based on scale economies derivable from the universal presence and the delivery of the financial services.

[16] Owing to the characteristics of mediating technology the analysis of Thompson also demonstrates that banking is located between traditional manufacturing and services.

combination of selected capacities required by the individual case or project. Owing to intensive customer participation in the production and delivery as well as the obscurity of the technology itself, intensive technologies are distinctively based on the open system logic. Clearly, the definition of intensive technology is a close equivalent to the characteristics of the classical services (Hill 1977; Gadrey et al., 2002)[17]. Consequently, the productivity of customized services that utilize intensive technology is addressed more in terms of effectiveness (instrumental rationality) rather the scale-efficiency (economic rationality).

3.3 Implications to corporate structuring

While the mediating technology performs the 'traditional' financing function of the banking institution, the operative processes (production and sales) of a bank are in various ways based on the long-linked and the intensive technologies. More generally, the latter two types of technologies characterize the internal coordination of the firm's activities and the *corporate structures* of firms. The discussion of corporate structuring in this section highlights and puts in action the key propositions of the organization theory. The arguments will be further systemized from the service productivity point of view. Thompson (1967) addresses corporate structuring in relation to the complexity of contingencies of the business environment and to the requirements for efficient adaptation. Scott and Davis (2003) note that in response to greater amounts of complexity, uncertainty and interdependence, organizational forms are likely to exhibit increasing differentiation, structural flexibility and capability of coping with increased information processing demands. This suggests that there exist a vast number of organizational forms. For instance, the taxonomy of the organizational forms in Scott and Davis (2003) highlights the evolutionary search of the optimal structure in response to the technical change and other contingencies arising from the business environment. The focus here is the productivity implications of the main corporate structures, the functional or the unitary form (the U-form) and the multidivisional form (the M-form). Their practical implications to banks' strategy and service technology are illustrated in Section 4.

The functional form draws on the logic of centrally coordinated specialization and the utilization of the economies of scale and scope in the corporate activities (Thompson, 1967; Chandler, 1990). A distinctive feature of the U-form is departmentalization around varying, specialized activities, which contribute to the common goals. It includes hierarchically organized line departments involved in activities directly related to producing or distributing goods or services, as well as more independent staff departments involved in support functions such as accounting, finance, and personnel (Scott and Davis, 2003). The organizational logic of the other basic structure, the *multidivisional form* is coupling divisional autonomy with centrally controlled performance evaluation and resource allocation. More specifically, the multidivisional form is based on groupings by products or markets overlaid on functional forms (Thompson, 1967). Divisional units operate in a relatively autonomous manner from each other, and each contains departments organized along function lines. The superordinate corporate level oversees divisional performance and allocates resources accordingly (Chandler, 1990; Scott and Davis,

[17] In particular, the service transformation process discussed in Gadrey et al. (2002) conforms to the characteristics of intensive technology.

2003). Hence, operational decisions reside within the division, while strategic decisions are made at the corporate headquarters[18].

For the principles in assessing the organizational fit of the M-from and the U-from, there is a distinct difference in the emphasis between the organization theory (Thompson, 1967; Scott and Davis, 2003) and its specific sub-field, *transaction cost theory* (Williamson, 1989; Chandler, 1990). In the latter, the approach is more normative and builds on the *hierarchical decomposition* –principle. It urges balance the high powered incentives of *markets* with the aligned incentives and intervention of *hierarchy* in organizing the corporate activities. According to Williamson (1981), internal organization should be designed in such a way as effect quasi-independence between the parts, the high frequency dynamics (operating activities) and low frequency dynamics (strategic planning) should be clearly distinguished, and incentives should be aligned within and between components so as to promote both local and global effectiveness. Hierarchical decomposition -principle suggests the comparative advantage of the M-form over the U-form in the face of (diversified) corporate *growth*. The functional form is exposed to the communication overload (Chandler, 1990) and the costs of bounded rationality as the number of internalised transactions and business lines increase. The congestion of managerial skills and services compounds the 'Penrose-effect' (Penrose, 1959)[19]. Decomposition and decentralization of the managerial responsibilities along product lines and markets would mitigate the costs of bounded rationality. The organizational innovation of the M-form, which has a mainly bounded rationality origin, has unanticipated positive side effects on corporate goals by attenuating sub-goal pursuit and opportunism (Williamson, 1989). Such an argument (the M-form hypothesis) has inspired a whole stream of empirical studies in applied economics and strategic management. The empirical evidence, however, gives the M-form hypothesis only to a qualified support (Hoskisson et al., 1993). The evidence from the banking sector (Viitamo, 2012) suggests that state-of-art in ICT applications have substantially mitigated the Penrose-effect in the U-form.

Organization theory takes a more objective stance that there exists no 'one best way' to structure corporate activities, given the complexity, variation and unpredictability of the task (business) environment (Ashby, 1968; Thompson, 1967; Scott and Davis, 2003). The more heterogeneous the overall task (business) environment is, the greater are the constraints (anticipated variation) presented to the firm, and the more dynamic (uncertain) the task environment is, the greater are the contingencies (unanticipated variation) presented to the firm. The principle of 'organizational fit' suggests that the corporate structure cannot exclusively be based on the internal requirements of coordination and incentive alignment that are stressed in the transaction cost theory. Whereas *internal* coordination is important for the effective operation of the technological core of corporations and managing the interdependencies between the activities, adjustment to *external* constraints and contingencies, which are mostly beyond the direct control of the management, is

[18] More complex organizational forms, such as matrix forms, and to a higher extent adhocracies and networks accommodate multiple objectives and divided authority. Derivable from the characteristics of the main cases (the U-form and the M-form), the more advanced and complex organizational forms show a shift from the reliance primarily on buffering tactics and sealing out or suppressing uncertainty and variety from the core, to the use of bridging tactics and expanding boundaries to incorporate uncertainty within the core activities (Scott and Davis, 2003; Thompson, 1967).

[19] American economist Edith Penrose is best known for the **Penrose Effect**, the idea that managerial competences limit the rate at which a firm can profitably grow.

equally important. In any organization with the boundary-spanning activities[20], responsiveness to environmental contingencies is a prerequisite to reach the highest possible (bounded) rationality (Thompson, 1967). Consequently, the basic drivers in search of the organizational fit are 1) the heterogeneity and dynamics of the task environment, 2) the internal interdependencies between the corporate activities, and 3) the consequent need for organizational differentiation, flexibility and the information-processing demands (Scott and Davis, 2003).

The proposition of organizational rationality and structure by Thompson (1967) provides the basic rationale for organizing the corporate activities productively. *Under norms of rationality, organizations facing heterogeneous task environments seek to identify homogenous (market) segments and establish structural units to deal with each* (ibid.). The key dimensions of heterogeneity are geography (the number of markets served), the social composition of the environment (the variety of customers), inputs, and other organizations the corporation is dealing with. When the task environment is heterogeneous - a plausible assumption for all companies with multi-market operations - and *stable*, organizational rationality assumes several functional divisions (specialized production, distribution, procurement etc.) capable of coping with the diversity of environmental constraints. The adaptation of the functional divisions to the environment is based on standardized responses and rules, which enable the utilization of economies of scale and scope[21] in the corporate activities. Under these the conditions the U-form presents the most feasible corporate structure. The dominant form of technology from the corporate perspective is long-linked technology and the underlying *sequential interdependence* between the operative activities. The sequential interdependence is optimally coordinated by *plan* (Thompson, 1967). Hence, the principal source of productivity in the U-from is scale-efficiency. Effectiveness in terms of markets and customers is mainly determined residually through preplanning and systematic effort to control the future uncertainty. As a corollary, service quality is understood principally as *standardized quality.* It reflects the extent to which the pre-designed effectiveness is achieved.

When the task environment is both heterogeneous and dynamic (uncertain), the adaptation based on rules needs to be displaced by on-line monitor of the environment and responses. This calls for a decentralized corporate structure[22]. Moreover, Thompson (1967) notes that *under conditions of complexity (heterogeneity and dynamics), when the major components of an organization are reciprocally interdependent, these components* will be *segmented and arranged in self-sufficient clusters, each cluster having its own domain*. The M-form represents a feasible organizational response to the dual needs to adapt to heterogeneous and dynamic environment, and to manage reciprocal interdependence between the technical core and the boundary-spanning activities. It is straightforward to see that the overall rationality of the M-form with respect to the U-form becomes more constrained. This follows from the stylized fact that the technical core is

[20] The boundary-spanning activities of a firm can be defined as the opposite ends of the firm's value chain (Porter, 1985). These internal activities at the opposite ends are linked to external activities of other firms and organizations. For instance, the procurement is linked to the external sales of the supplying firms, and sales activities are linked to the procurement of the customers of the firm.

[21] Given the heterogeneity-stability condition above, Thompson (1967) proposes that when technical-core (production) and boundary-spanning activities can be isolated from one another except for scheduling, organization under norms of rationality will be centralized with an overarching layer composed of functional divisions.

[22] Thompson (1967) notes that under conditions of complexity (heterogeneity and dynamics), when the major components of an organization are reciprocally interdependent, these components will be segmented and arranged in self-sufficient clusters, each cluster having its own domain.

not separated from the boundary-spanning activities in the M-form. As the boundary-spanning activities follow the open system logic (Thompson, 1967; Scott and Davis, 2003), the technical core in each of the decentralized (clusters) business units is exposed to the dynamics and external uncertainty of the local environments. The dominant form of technology from the corporate perspective is intensive technology showing *reciprocal interdependence* between the operative activities in each of the decentralized business units. The coordination calls for *mutual adjustment* between them (Thompson, 1967). Hence, the principal source of productivity is effectiveness with respect the locally differentiated markets and customer demands. As the decentralized value chains operate in the same industry[23], the M-form sacrifices the potential economies in scale-efficiency. Efficiency draws principally on the cost control, which is maintained through high-powered incentives and adaptation in the local business units (Williamson, 1985). As a corollary, service quality is understood predominantly as a *customized quality*. It reflects the extent to which the case-sensitive effectiveness of the offering is achieved.

The argumentation here that corporate structuring results from the search for the organizational fit is highly sensitive to the implicit assumptions of uncertainty and bounded rationality. For instance, in a situation, where the consistency between technology, strategy and organization holds and the rationally of the managers in a specific industry is 'equally' bounded, the characteristics of service productivity – i.e. the productivity regimes (see below) - and the organizational form of the competing firms should largely follow from a) the level of *external* uncertainties of the business environment and b) the principal mode of technology, and interdependence (sequential and reciprocal) in the operative activities. In these circumstances the emergence of 'dominant organizational design' can be expected. However, if the rationality of managers is unequally bounded – which is a more realistic assumption - their skills and perceptions of the external uncertainty and also the principal mode of interdependencies may also differ. This fosters imperfect competition based on organizational differentiation. In that case various forms of organizations (M-form and U-form) and productivity regimes (scale-efficiency and effectiveness) may co-exist in the industry.

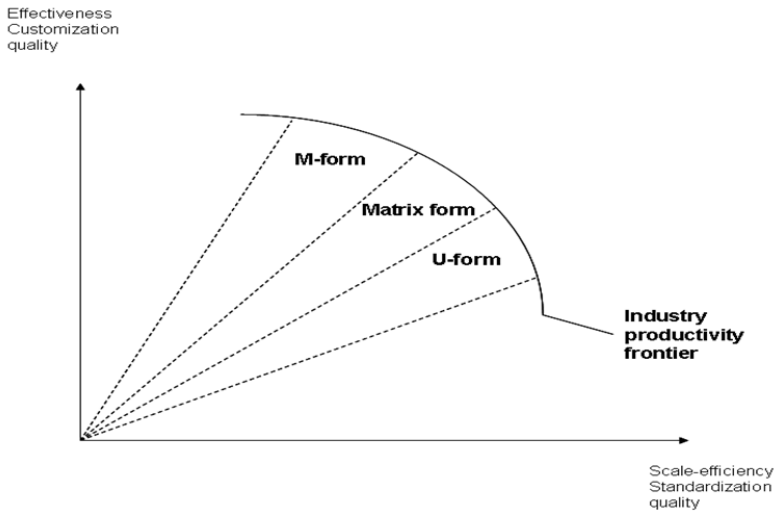

Fig. 4. Organizational fit and productivity illustrated.

[23] This is the implicit assumption here.

Figure 4 illustrates the organizational fit with respect to service productivity. Based on the assumptions in Section 2 the productivity frontier of the industry is concave and continuous combination of scale-efficiency and effectiveness. Given the inherent rigidity and the limited adaptability of the organization structures, the 'approximate' or the highest organizational *fit* will hold in specific regions within the productivity space. In practise this would entail organizational *discontinuities* along the service productivity frontier. In Figure 4, the U-form is the fittest organization in the regions of high scale-efficiency and low effectiveness, whereas in case of the M-form it is the opposite. In between there may be a number of mixed forms of matrix (hybrid) organizations[24].

4 Organizational design in universal banking

4.1 Centralization vs. decentralization

This section illustrates how the organizational approach based on the integrated framework of service productivity in Section 2 can be applied in the empirical research. The evidence from the case study on the Nordic banking industry[25] is used to show that the intangible aspects of service technology (scale-efficiency and effectiveness) can be addressed through the more tangible aspects and *routines* in the banks' organizational model. From the productivity point of view, financial services are particularly interesting as the offering of a universal bank[26] involves standardized product-like elements such as bank accounts and cash management services, as well as customized service-like elements such as investment consulting and risk management. The former stresses scale-efficient processes whereas the latter stresses effective outcome. Hence, the overall business models of competing banks may be highly different. This holds for the two case banks in focus, Svenska Handelsbanken and Nordea. Nordea has been deeply involved in the restructuring of the Nordic banking industry and it represents the *traditional,* product-oriented approach to banking business. Svenska Handelsbanken instead, has largely remained intact in the restructuring of the financing sector. The bank has committed to a *radically different business* model that was introduced in the early 1970's. Interestingly, both banking corporations have shown marked financial performance over the last ten years.

Yildirim (2005) notes that organizational design in the banking industry balances between flexibility and efficiency in using the bank's resources. The former favours decentralized structure whereas the latter favours centralized structure in the operative processes. The decentralized model in Svenska Handelsbanken represents the multidivisional form (M-form), where the functional activities of the corporation are integrated and organized horizontally in the

[24] Actually, the fittest organization forms in Figure 4 may also overlap in some regions of scale-efficiency and effectiveness.

[25] The industry case study was conducted in 2008-2010. The case material involves primary and secondary data. The former consists of company interviews of the executives of the case banks. The latter consists of industry studies, annual reviews of the case banks and statistics. The case study showed that the subjective views of the interviewed executives on productivity are highly consistent with the organizational attributes that manifest the *productivity regime* in the two banking corporations.

[26] When the bank is engaged in retail banking, universal banking, private banking and investment banking, it is positioned in *universal banking*. Universality implies extensive diversification, as the bank operates in all customer segments with full range of banking services and products. Moreover, they are accessible (almost) anywhere.

autonomous business units, regional banks. The organizational model in Nordea represents the classic unitary or U-form, where the operative activities, production, sales and the supporting activities of the corporation are separated and organized hierarchically with the bank. Assuming that technology, strategy and organization are mutually consistent, the specific characteristics of a bank's organizational model can be used for the outline of its *productivity regime* – the concept adopted here to refer to the managerial view (recipe) of how scale-efficiency and effectiveness are balanced in the production and the delivery of the bank's offering. On the basis of Section 3 and Figure 4, it can be proposed that the *productivity regime in Svenska Handelsbanken is more responsive to the effectiveness of the financial offering and the differentiated demand than the scale-efficiency in the production and delivery*. In Nordea it is the opposite. *The productivity regime in Nordea is more responsive to the scale-efficiency and specialization in the production processes and less responsive to the effectiveness and the differentiated demand*[27]. In the following, the above propositions are illustrated via the characterization of the dominant technology and the mode of coordination in the case banks.

4.2 The hierarchy of divisionalization

The examination of the of the corporate structures in the two case banks builds on the notion by Yilidrim (2005) that banking corporations tend to divisionalize their activities in two dimensions; *horizontally* by geographic markets, product lines or customer segments and *sequentially* (vertically) by the subsequent stages in the corporate value chain. The *hierarchy (model) of divisionalization* of the operative activities is used here to highlight the differences in the organizational forms and the dominant technologies in Nordea and Svenska Handelsbanken. This also manifests managerial perceptions of the dominant form of interdependence between the operative units of the bank (c.f. Thompson, 1967).

The model of divisionalization in *Svenska Handelsbanken* is depicted in Figure 5. On the top of the hierarchy the main division of the activities is made *horizontally.* This is indicated by the geographic markets i.e. country (rectangle 1a), and the product lines (rectangle 1b)[28]. Regional banks are independent, administrative profit centres accountable to the headquarters in Stockholm, whereas the product lines involve the principal 'product owners' that hold the highest responsibility for the banking products and services[29]. Svenska Handelsbanken's model lacks explicit sequential division between production and sales, as the products and services sold in each region (country) are produced variably by the central units at the headquarters, by the regional banks, or the local branches. Accordingly, there is a geographic division of product lines at the *regional* and the *local* levels. This is indicated by the rectangles 1c and 2c in Figure 5. Most of the standard banking products and services sold by the branches are produced and delivered by the product units of the regional bank (rectangle 2b), whereas some of the more sophisticated products and services e.g. in capital markets products and in asset management services are produced and delivered by the 'product owners' at the headquarters (rectangle 2c). These business units appropriate part of margin of the sales and through the local branches.

[27] This was confirmed through the managerial views of service productivity.
[28] In Figures 5 and 6, the white boxes indicate the order and the mode of divisionalization, whereas the coloured boxes indicate the accountable business units.
[29] The loan products in Figure 5 constitute a separate product group also including the lending activities of the subsidiaries Stadshypotek and Handelsbanken Finans.

Having the principal customer responsibility the branches retain the profits from the products and services produced locally. As independent profit centres, the branches purchase some of the intermediate banking inputs' from the product owners of the 'bank', and the other inputs (office appliances) from the local suppliers. With the distribution and the sales of the banking products and services, the activities of a branch in Svenska Handelsbanken encompass the processing of the purchased banking products as well the transactional and administrative services provided with the customers of the branch. *The branch-centric* organization in Svenska Handelsbanken puts high emphasis on the local entrepreneurship and the flexibility of human resources in the cost-efficient coordination of the reciprocally linked activities. The 'indeterminate' organization of the products and services in Svenska Handelsbanken owes to the economic independence of the regional banks in adapting to the geographically differentiated markets and demand[30], and the managerial view of the bank's dominant technology. The hierarchy of divisionalization in Svenska Handelsbanken suggests that the conduct of banking operations is perceived more in terms of *intensive technology* at the customer interface rather than long-linked technology that enable scale-efficiency in the production and sales (cf. Thompson, 1967). The organizational model stresses reciprocal interdependence of activities at the regional, and the local levels.

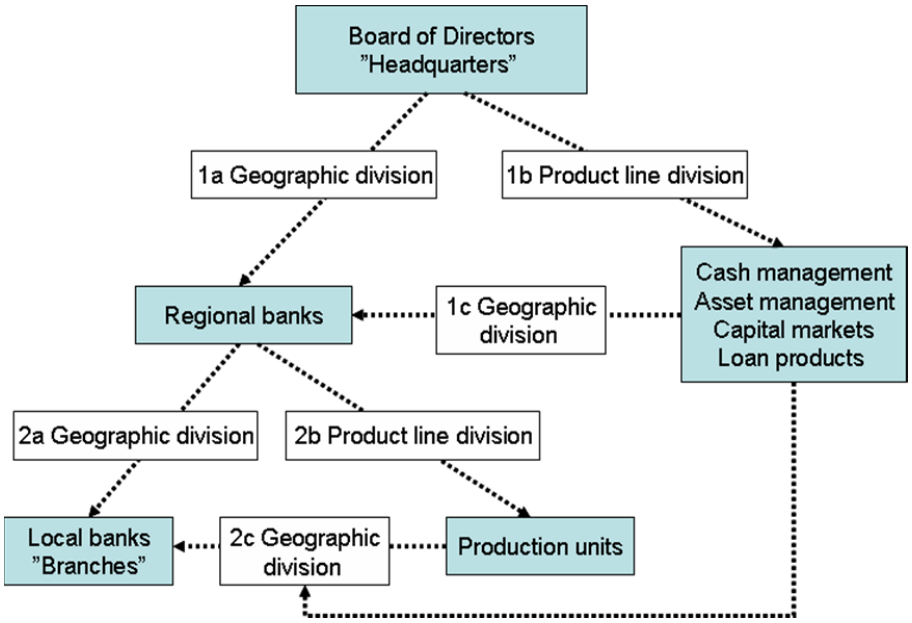

Fig. 5. The hierarchy of divisionalization in Svenska Handelsbanken.

The model of divisionalization in *Nordea* is depicted in Figure 6. The dominant mode is *sequential divisionalization* (rectangle 1) that distinguishes between the sales and the production activities. In specific product lines, the sales and the production are further linked by processing activities. All processing activities, which may be mobile (experts) or located in the branches, are administratively integrated in the production units. On aggregate, the sales activities in Nordic banking are segmented by customer type (rectangle 2a), where the main division is made between the household and the corporate customers and the institutional customers, the latter

[30] An interviewed business manager notes instructively "the products side in Svenska Handelsbanken has been an overlooked area in focus". To mitigate the problem Svenska Handelsbanken has launched a project to specify the product ownership in each product line and at each level of the corporate hierarchy.

being mainly non-profit organizations in the public sector. The segment division is followed by the geographic division (rectangle 3a) into the four regional banks, which are responsible for each of the Nordic countries and the respective markets. In line of the standard product classification in the banking industry, the production and processing is further divided into the four product lines (rectangle 2b). The product line division is followed by the geographic division (rectangle 3b), where the location of the production sites and internal logistics of the bank is guided by economies of scale and scope in the four product lines.

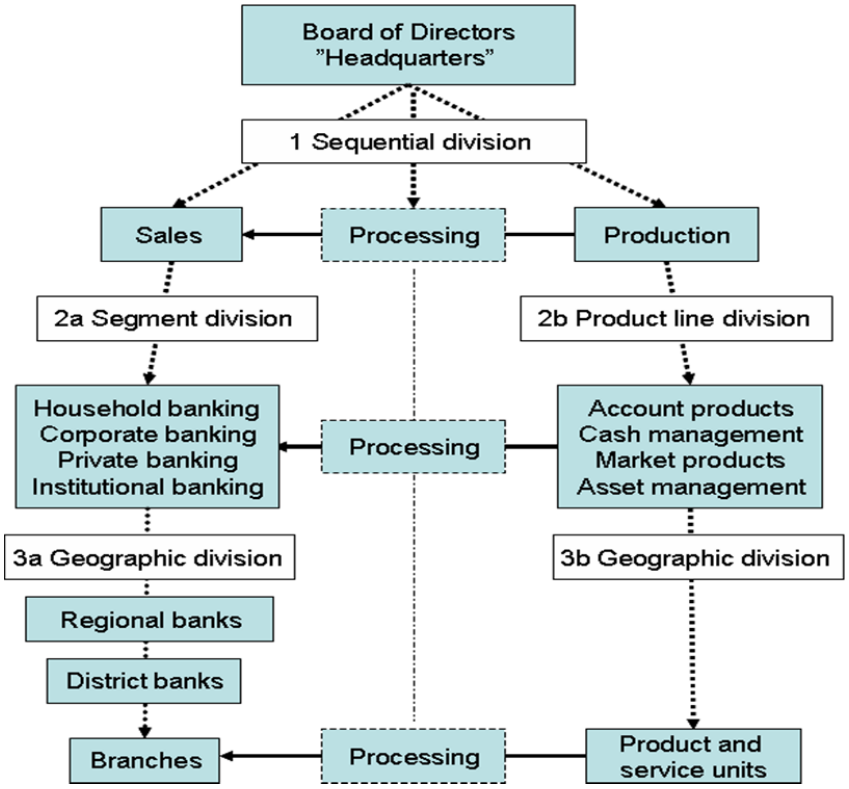

Fig. 6. The hierarchy of divisionalization in Nordea.

The managerial decisions of the regional banks and branches are bound by the corporate strategy and the associated targets in the *key performance indicators* (KPI). They are set by the executive team at the highest level of hierarchy. The regional banks can, 'within some limits' decide how to implement the corporate strategy in the regions and in the districts to achieve the corporate goals[31]. Equivalent hierarchical control is employed by the district bank with respect to the branches within the districts. While most of the branches are profit centres in accounting terms, their autonomy is in practice highly limited. Branches are local sales units whose operative costs are to a high extent determined at the corporate level. The corporate procurement unit, which purchases the office appliances and other non-financial inputs for the branches *centrally*, negotiates the contracts with the external suppliers. The development in Nordea projects further fosters specialization of the branches in sales and the customer relationship management. The hierarchical administration in Nordea puts high emphasis on the division of labour and specialization of the resources as the source of scale-efficiency in coordinating the interlinked

[31] These 'adjusted regional strategies' are aligned with the organic growth strategy at the corporate level.

banking activities. The product-centric organization and specialization in Nordea is manifested in the low economic independence of the regional banks and the branches, the top-down approach in corporate strategy and the managerial view of the bank's dominant technology. The hierarchy of divisionalization in Nordea suggests that the conduct of banking operations is perceived more in terms of long-linked technology that pursues scale-efficiency in the production and sales, rather than *intensive technology* and effectiveness at the customer interface (cf. Thompson, 1967). The organizational model stresses the sequential interdependence in the centralized operative activities.

4.4 Coordination of the operative activities

The technological systems of the case banks can be further characterized with the modes of coordinating the interdependence of the banks' operative activities. This can be highlighted with the managerial practises in business planning and *budgeting* by the case banks. Jan Wallander, The former CEO and the originator of Svenska Handelsbanken's present business model considered *corporate budgeting* as an unnecessary evil and in most cases outright dangerous for any business planning. According to Wallander (2002) budget is a sophisticated estimate on the revenues and costs for the next (fiscal) year, two years or several years ahead. It is a goal that should be attainable with a reasonable exertion. The problem is, however, that any estimate is always continent on simplistic assumptions on the rules of how to predict the future. This means that estimation is nothing but projection of our historical experiences into the future. If the future is influenced by something we have no experience at all, any estimate will be wrong. We know nothing about the future. The predominance of Wallander's thinking in the bank's present policy is confirmed in the company interviews as well. Though still in suspect by the main competitors, Svenska Handelsbanken makes no conventional budget. For the rationales, an interviewed business manager notes that "for instance, the budgets made by our competitors in the fall 2006 for the year 2007 lost their basis, thanks to the evolving financial crisis. As there exist so many things that we cannot control it makes no sense to use much effort to guess what is happening somewhere, and then to conduct the activity according to the stated objectives…budgeting leads usually to a situation, where the objectives on the volumes [quantities] become prioritized and then they need to be sold to the customers. In that case customer's approach is surpassed by the product approach. We do not have a medium-term planning or annual budgets. We stress the importance of the present, this moment that we work sensibly just now, because with a high probability it generates a good outcome. And then we have the long term policies and Wallander's theses". This implies the business environment in Svenska Handelbanken is considered highly dynamic and uncertain, and therefore a continuous monitor of profitability and the *adaptation* of the production costs with the sales revenues relative to the industry average is the preferred mode of coordination. This is a special case of what Thompson (1967) calls *mutual adjustment* of the *reciprocally* interdependent activities.

The market-driven, adaptive coordination in Svenska Handelsbanken contrasts with the traditional top-down, intervening approach in Nordea. The coordination in Nordea is based on the sophisticated *budgeting procedure* and the financial key performance indicators (KPIs). The targets of the KPIs for the coming fiscal years are set at the highest level of authority (the executive team) to promote organic growth of the bank. As noted by the interviewed region manager "this is quite a *top-down* goal setting, the starting point is what is expected from us, and they [the highest executive body] see from above how this can be achieved…there are mutual

discussions but ultimately the corporate goals flow all the way down". In practise, the corporate objectives, focused largely on the growth of the 'gap' – the difference between the revenues and cost – are translated into more detailed plans on specific products, their volumes, prices and costs at the lower levels of managerial hierarchy. A central body in Nordic banking is the *market meeting*, which specifies the objectives for each region, i.e. country. The market meeting is attended usually by the corporate executive, the regional executives and the segment managers of the segment group. According to the interviewed district manager, "the region manager and the district manager agree on the objectives of the district bank…[and finally] the branch managers and the account manager agrees on the personal objectives for the account manager". At the most disaggregated level, the account manager makes a detailed sales budget, which is an estimate of the profits generated from the clients. The budget objectives are brought into accounting template, where the monitor is based on rolling financial forecast (RFF) of the next four quartiles. Whereas the goal-setting in the corporate budgeting is a top-down process, the control and monitor of the business processes is a bottom-up process. Hence, in deviation to Svenska Handelsbanken, the coordination of production and sales in Nordea is based on the implicit assumption that the dynamics and the uncertainty of the business environment is generally low and controllable. This presents a special case of the above notion by Thompson (1967) that *plan* is the optimal mode in coordinating the *sequential* interdependence.

5 Conclusion and discussion

From the perspective of organizing and productivity, the 'classical services' whose principal resource is physical and non-physical (knowledge) labour, represent perhaps the most generic form of the production technologies. This owes to the intrinsic divisibility and flexibility of labour in its productive employment. Hence, the service productivity model presented in Section 2 can also be considered as a generic framework of productivity that applies to the manufacturing and other (hybrid forms) production processes equally well. The productivity framework implies that the competitiveness of a firm depends on the levels and the mode of productivity, that is, how effectiveness and scale-efficiency is balanced to match with the characteristics of the markets and demand. These considerations are intrinsic in the manufacturing industries as well, though the technical and economic potential for such balancing is often more limited.

Organization is an auxiliary asset that interacts with service processes and outcomes in a number of ways. *First*, when human resources are organized or reorganized into 'appropriate' working units, the organization itself becomes an integral aspect of the technology. *Second*, irrespective of its actual forms, organizing involves implicitly the pursuit for improved division of labour and specialization in the conduct of complementary activities. This in turn is aimed to enhance service productivity. At the same time on the other hand, organizing tends to entail inherent rigidities in the service technology that limits the divisibility and the flexibility of the available resources. In that sense organizing can be seen as a *strategic choice* which is technically manifested in the focused area in the scale-efficiency-effectiveness space (c.f. Figure 2). *Third*, owing to the above rigidities of service organizations, it is possible to address the *intangible* aspects of service technology and performance through the more *tangible* characteristics of the organization and the underlying strategy.

The methodology of identifying productivity regimes in Section 4 demonstrates that the premises of the mainstream organization theory are useful in the empirical studies of service productivity, more generally. The findings from the banking sector support the conclusion that scale-efficiency and effectiveness become mutually exclusive types of performance at the high levels of overall productivity. For instance, Nordea and Svenska Handelsbanken with the contrasting productivity regimes have shown distinctively high cost-income –ratio[32] which is the main productivity indicator in the banking sector. In big complex organizations like banking corporations the ways of utilizing productivity in the complementary activities is partly different, and partly similar. One of the central issues for the further research is how the choices concerning the productivity types in the complementary activities are influenced by the strategic and technological considerations by the management. A related and topical issue is how productivity and the flexibility of resources are utilized in small entrepreneurial service firms having simpler organization structures. These questions go hand in hand with the need for an improved measurement of the productivity components.

Productivity management in a firm is the manifestation of its strategy and business culture; the beliefs, experiences and the evolving routines. Based on the premises of the organization theory, the paper argues that the differences in the firms' productivity regimes are reducible to a) the *objective* variations in characteristics the firms' markets and b) the *subjective* views by the firm's management on uncertainty and the heterogeneity of the business environment. In both cases the search for the organizational fit follows the logic of the contingency theorem, and is subjected to the bounded rationality of the business managers. The conceptualization of productivity, technology and coordination are partly derivable from the epistemological views on *purpose* of the organizations (Scott and Davies, 2003). These *systemic paradigms* provide added insights on *how* and *why* the productivity regimes differ in various organizational settings. The specific focus here is the contractual relations between the focal firm and its partners in a wider *network*. Some possible directions and tentative hypotheses for the subsequent research are presented here.

Many scholars and corporations view organizations as *rational systems* (c.f. Scott and Davis, 2003). In the rational systems paradigm the distinctive features of organizations are high *specificity of goals* and *formal structure*. A theoretical benchmark of rationality is a determinate system (Thompson, 1967), which approaches *closure* in the sense that the transition from a state to another is *unique*[33]. Closure of a system implies perfect rationality; variables and their relationship are fully comprehended, and there is *perfect control* over the transformation of the inputs to the outputs. The intrinsic performance metrics in the rational systems is scale-efficiency that is best enhanced via *planning* within a hierarchical (centralized) structure. Hence, when the focal firm within the network shows systemic rationality, the boundary spanning activities and relations with respect to its suppliers and customers are also subjected to the goals of systemic rationality. The emphasis of a formalized structure and processes imply that the network be well-defined and the systematically coordinated. While the relations with the central network partners may show relational orientation too, the inter-firm relations in the rational systems are intrinsically transactional. As being part of the business environment the supplier-customer base is utilized as an external asset to support the capabilities and the strategy of the focal firm.

[32] See Viitamo (2012), www.nordea.com, and www.handelsbanken.se.
[33] An example is a production function of the textbook microeconomics.

Some scholars and firms view organizations more in terms of *natural systems* (c.f. Scott and Davis, 2003). In the natural systems approach organizations are collectivities whose participants pursue multiple interests, both disparate and common, and recognize the value of perpetuating the organization (Scott and Davis, 2003). The *complexity of goals* and *informality* of structures and processes illustrates the controversy with the rational systems thinking. More urgent than the normative structures is to look into the behaviour of the actors and what they actually do. Whereas the organization is considered as a valuable asset itself, the complexity of human nature calls for self-guided elements in the coordination as well. The intrinsic performance metrics in the natural systems is effectiveness that is best enhanced via *adaptation* within a *decentralized* structure. Hence, when the focal firm within the network follows natural systems logic, the boundary spanning activities with respect to the suppliers and customers are also coordinated on the relational (reciprocal) basis. Informal structures and processes imply that the networks are contextual lacking systematic management. Instead, networks evolve. They grow through evolutionary processes and spontaneous behaviour.

The state-of-the-art in the organization studies builds on the *open systems* logic and the synthesis of the rational and the natural systems. Open systems are congeries of interdependent flows and activities linking shifting coalitions of participants in the wider material-resource and institutional environments (Scott and Davis, 2003). Organizations consist of interdependencies between their constituent parts. Individuals and subgroups form and leave coalitions, which makes the coordination complex and the determination of the boundaries of the organization arbitrary, and most often a secondary issue. These characterizations make the open systems paradigm a natural starting point for the integrative analysis of inter-firm coalitions and networks. Reflective of the open systems logic, the following propositions are suggested as the basis for the subsequent studies.

Successful networks a) involve the elements of the rational and the natural systems, where b) effectiveness and scale-efficiency of inter-linked activities are balanced and coordinated across the firms' boundaries; c) Successful networks show dynamic competition and co-operation that is manifested in shifting coalitions among the network members; d) Successful networks are capable of *self-maintenance* based on throughput of resources from their environment. Relatedly, e) in successful networks activities and capabilities are continuously motivated, produced and reproduced.

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