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WHEN PRODUCT LIFE CYCLE MEETS CUSTOMER ACTIVITY CYCLE

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ABSTRACT

Manufacturing companies have traditionally focused their efforts on designing, developing and producing products to offer on the market. Today global competition and demands for greater company responsibility of products throughout their entire life cycle are driving manufacturing companies to shift market strategies from a transactional approach to an approach based on the establishment and management of customer relationships (Grönroos, 1999). A growing number of studies and research programmes have focused on the potentials of business strategies based on providing the value of utility of products throughout their life cycle by designing integrated solutions of products and services. This approach has been dubbed '*product/service-systems (PSS)*' (Mont, 2004). Although relationship marketing and product/service-system design have their roots in each their own research fields - marketing and engineering design - it seems that the two approaches are complimentary.

The principle behind PSS is a shift from a perception that value is mainly embedded in a physical artefact to a perception where the activities associated with the product are considered to be a better definition of value. In this new perspective value is created by supporting the customer's activities related to the use of products. This is done through intangible services and knowledge intensification that ensures optimal operation and performance of products in relation to the individual customer's activities. It is believed that PSS approaches can be a step on the path to sustainable development as this will enable and motivate companies to reuse, rationalise and enhance their products and services more efficiently throughout their life phases (Manzini & Vezzoli, 2002).

Based on a year's participation and observation in a development project in a global office furniture manufacturer, this paper attempts to uncover how a manufacturing company is making the move from selling office furniture to selling the benefit of workspace performance. A significant insight is that the definition of value is core to both relationship marketing and PSS approaches. Viewing products alone are not appropriate to determine value – instead the focus should be on the effects from customer activities. This paper presents its findings in relation to a theoretical framework of the expected managerial and organisational implications of PSS (Tan et al, 2007). The framework takes into consideration new activities, roles and responsibilities, knowledge and competencies, as well as value network relationships that the company will have to deal with when adopting a PSS approach. The observations in the case study support the notion that PSS and relationship marketing are similar approaches that might be well suited for manufacturing firms when employed in combination.

Keywords: product/service-systems, relationship marketing, value perception, workspace design

INTRODUCTION

Many manufacturing companies today are considering shifting their business strategy from a product-orientation to service-orientation, where instead of the product itself, the activity and knowledge associated with the use of the product is considered to be of more value to the customer (Tan & McAloone, 2006). In the research community this approach has been given various names such as '*product/service-systems (PSS)*', '*functional product development (FPD)*' (Brännström, 2001), '*service engineering*' (Tomiya, 2005), '*servicization*' (White et al, 1999), etc. All these terms are based on the same principle and are generally considered synonymous. In this paper we use the term '*product/service-systems (PSS)*'.

Value is not embedded in the physical product (Figure 1) but is created by supporting the customer's activities related to the use of the product. Customers need not be concerned with the responsibility of learning how to use the product, maintain or dispose of it, but merely benefit from the effects of use. PSS is seen as an innovation strategy where products (physical artefacts and components) are integrated with services (intangible knowledge, skills and activities) to create total offerings. This usually involves reconsidering the network of actors (Manzini et al., 2004) that usually operate within the business, plus a simultaneous consideration of customers' activities and product life cycle developments - or in other words, a service perspective to manufacturing.

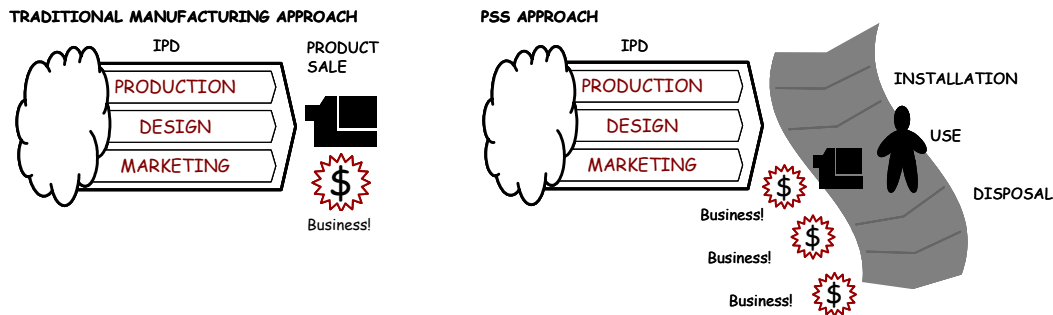


Figure 1. A traditional product-oriented approach and a PSS approach, where value is created throughout the product's life.

PSS research has built upon product based research in 'life cycle thinking' from two different perspectives, an economic (Wise & Baumgartner, 1999) as well as an environmental perspective (Olesen, 1992). The economic and environmental aspects of a product are considered throughout its total life - from raw material supply, manufacturing, sales, use, to final disposal. It is believed that PSS approaches have considerable business potential and will enable and motivate companies to reuse, rationalise and enhance their products and services more efficiently throughout their life phases (Manzini & Vezzoli, 2002). In parallel, relationship marketing has emerged from service marketing, as services are inherently relational. From a relationship marketing point of view, "value for customers is created throughout the relationship by the customer, partly in interactions between the customer and the supplier or service provider" (Grönroos, 2000). Here the focus is on identifying, establishing, maintaining and enhancing relationships to customers and stakeholders to ensure long-term profitability (Grönroos, 1999). Relationship approaches takes upon the perspective that it does not make sense to determine whether customers buy products or services, what they actually buy is the benefits that products and services provide them with. From this perspective all companies basically offer services, even manufacturing firms.

Even though their roots are from two different fields of research – engineering and marketing, a common theme for both PSS and relationship marketing is the renunciation of business based on transactional exchange. Traditionally manufacturing companies did not considered their customer's activities as part of their value creation process, but merely as value extracting when a product was sold (Prahalad & Ramaswamy, 2004). A product's value was perceived as embodied in the physical artefact and business was based on the transfer of ownership of physical products. With PSS and relationship approaches value is defined by the use of products and the on-going interactions between customer and company. Here the company has the potential to learn through the interactions with the customer (Peppers et al. 1999) and thereby continuously respond to the customer's ever changing needs. This view recognises the customer as a co-creator of value and emphasises the importance of relationships with customers.

Vandermerwe (Vandermerwe, 1993) elaborates on how companies may focus on customer relationships through a methodology called 'customer activity cycles'. Its focus is on the activities that customers go through to get the benefits of the offered products and services. A customer activity cycle consists of three stages, *pre* - what goes on before the customer achieves the result, *during* – what happens while the customer derives the core benefit, and *post* – what happens after the experience. Vandermerwe states that the customer activity cycle model can help to enable the

company to identify offerings that the provider company should strive to provide with value either directly or indirectly. A key concept here is the life time perspective, whether one thinks of it in terms of product life or in terms of the customer’s activities (Figure 2). Life cycle thinking maps out the connections between the various activities that products and stakeholders play a part in. This perspective takes a broader, holistic and longer-term perspective, which often reveals the business potential of the whole value chain. It is only when a product interacts with a customer, or stakeholder, in an activity that we can actually determine the benefit, costs or even, the environmental effects. Today many manufacturing companies acknowledge the potential for growing the business through a life cycle perspective. The challenge here for manufacturing firms is to integrate views of both product and customer when proposing value to the market.

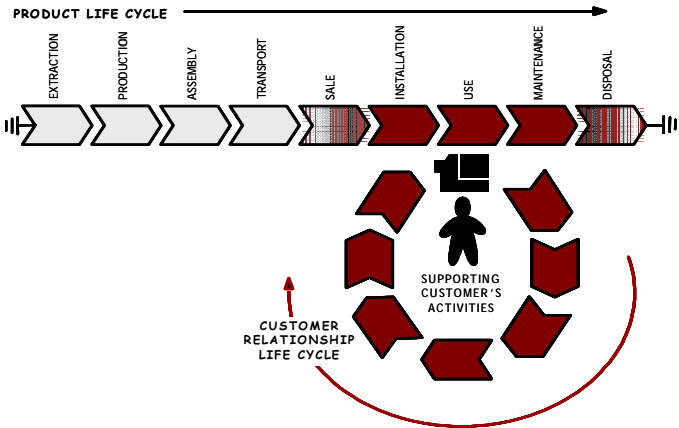


Figure 2. The two life cycle perspectives: product life cycle and customer activity cycle.

A prerequisite for both PSS and relationship approaches is the ability to gather, store and analyse data about products and customers that then can provide information on how to enhance the value of customer activities. Today, manufacturing companies have two types of IT systems that attempt to cater for this, Product Lifecycle Management (PLM) and Customer Relationship Management (CRM). Each system has their own focus, PLM systems administer product specific data and information throughout its entire lifecycle, but as companies are rarely responsible for the use and disposal phases of their products, the gathering and processing of information here is rather poor. On the other hand CRM systems capture, store and analyse customer information and communication, but again not much information is obtained from the activities where the product is actually in use. From a product development point of view, a systematic gathering of information of product use would be extremely valuable to the development of new products and services. If a perpetual coupling of product and customer information during operation was possible (Figure 3), insights and knowledge could be gained to ensure that the customer’s activities were continuously aligned with their customer’s needs and behaviours. But for now the management, accessibility and relevance of knowledge to product development and designers is still not well established.

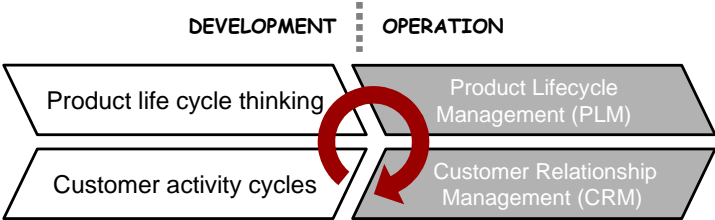


Figure 3. Creating a perpetual learning link between the product life cycle and customer relations in both operations and development.

Traditionally in a manufacturing company, product development and marketing are seen as separate activities that are performed in different parts of the organisation. In order to improve the performance

of product development many manufacturing companies have adopted systematic product development approaches that integrated the development activities across the organisation. Here development projects are organised around multidisciplinary teams consisting of resources from product design and development, production and marketing. Under the terms *concurrent engineering* and *integrated product development* (Andreasen & Hein, 1987), models outlined each of the development phases and how they related to each other. This enabled people across the organisation to understand their roles and responsibility in development project, so that these could be managed in a more efficient manner. Although integrated product development approaches have been heavily adopted by manufacturing companies, they have been criticised on various aspects, such as the risk of the development project being built on the wrong assumptions, limiting innovation and hindering the involvement of customers (Engwall, 2003), besides the fact that they no longer represent appropriately how companies actually perform product development. Today it is generally recognised that both development and marketing activities are not limited to specific organisational units but occur throughout the organisation (Grönroos, 1999). Therefore, PSS design research like relationship marketing also incorporates the expansion, co-operation and integration of development activities, both internally in an organisation as well in development partnerships in value networks (Manzini et al., 2004).

This paper describes a case study of how one particular office furniture manufacturer (henceforth called OFM) is making the move from selling office furniture to selling the benefit of sustainable office workspace performance - measured in economic, social and environmental terms – to their customers. By relating the customer's own business performance to the activities associated with the use of office workspace, the company may enhance the value of their products. This approach of re-defining the value of a company's offering is seen as key to both PSS and relationship marketing. Using a theoretical framework that attempts to distinguish the core elements of a PSS approach from a traditional product-oriented approach (Tan et al, 2007), I will hold the observations made in the OFM case study to show how they relate to relationship marketing.

New activities

Traditionally manufacturing companies have only considered their own activities as part of the value creation process. In product-oriented development projects the process ends with a full product description or the realisation of production and sales. With PSS approaches the development task is expanded in time so that it also encompasses the use phase, and thus allows companies to ensure continuous development that is aligned with the customer's actual activities. In order to employ customers and external stakeholders as resources in the development process, the company must establish value co-creation activities in which they are encouraged to participate in.

New roles and responsibilities

A key difference with PSS approaches, when compared to traditional product-oriented approaches, is that the company plays a key part throughout the product's life. The company takes on the responsibility of the physical products during its use, maintenance and disposal phases. Exactly how and to what extent this involvement with the customer is, depends of what kind of service level is agreed. It is central that the role and responsibilities of customers in PSS should be clearly defined. Likewise responsibilities in relation to partnering companies and their role in the process must be carefully considered.

New knowledge and competencies

The shift of perspective from a product-oriented view to a service-oriented view represents a gap in knowledge for many manufacturing companies (Ericson & Larsson, 2005). The knowledge and competencies in manufacturing companies are typically directed at embedding knowledge into a physical artefact. With PSS approaches, knowledge and competencies can be aimed directly at the customer's activities, e.g. through the education and training of the customer. Value is attained by learning through the close interaction with the customer during a product's use phase, as new insights about the product and a better understanding of customer value may be gained. If captured and integrated into the providing company's organisation, these insights can be a vital source of competitive advantage.

New relations and networks

Typically a company's development activities are derived (top-down) from the company's overall corporate strategies in relation to its position on the marketplace. This assumes that industry structures are relatively stable (Porter, 1985) and is well suited to manufacturing industries, where products can easily be compared on specific parameters, (e.g. price, size, functionality, etc.). PSS approaches attempt to uncover new relationships and rearrange the value network of actors. The markets in which PSS companies operate on are not as stable in comparison, as they will rapidly follow emerging opportunities. Often the determining competitive advantage will be based on the forming and orchestration of new networks that can provide unique value to the customer (Manzini et al., 2004).

The objective of this paper is to explore how a manufacturing company is shifting from product-orientation to service-orientation. I will reflect on the observations made in the empirical research regarding the opportunities, barriers and complexities of moving from a transactional to a relational business approach. These reflections will be made in particular with the activity and role of product development in mind, when carrying out conceptualisation and development of PSS.

RESEARCH APPROACH

The research this paper is based on is derived from participation and observation in a development project at a manufacturing company over a year. The fieldwork conducted was of a descriptive and qualitative nature. The data used is based upon participation in a development project following the strategy of participatory action research, where the object of study was not only observed but also influenced by the researcher (Robson, 1993). The researcher in this manner is not an 'objective' observer of the occurring phenomenon and therefore risks being biased in his observations, but as the aim of this research is to explore the development activities of a company, emphasis is placed on being present under the whole development process and not just in formal, periodical project meetings. This gives a deeper understanding of the project and its context in the company, as well as total access when gathering data.

The goal of the development project was to demonstrate how the company could support the move from doing business based on product sales to business based on the achievement of sustainable office workspace performance, related to activities in the physical work environment. The network of actors was mapped, actors interviewed and their competencies that would contribute to this new business model were considered. Parallel to this, relations between the individual design elements of a workspace and the performance of workspace activities were illustrated. The project is intended to manifest itself in the form of a computer based tool relating value-base data from workspace planning to actual business (product and service offerings) specifications for the company.

At the time of writing, this research project is not yet completed and is still in progress; this means that the observations in this article only reflect the work performed in the concept phase from initial idea and intent to a working prototype of the tool that could be used to validate the general business case, i.e. 'proof of concept'. The core project team was composed of 5 persons and its base in the organisation was within the company's corporate research department, but was closely tied to the company's sustainability department as well as international marketing.

INDUSTRIAL CASE STUDY

The case study in this paper derives from a research project performed in collaboration with OFM, a global manufacturer of office furniture. The company believes that the physical office workspace environment is a strategic asset (on the same level that people, technology and business processes are) that can leverage their client's strategies and help them achieve their business goals. OFM operates mainly on the business-to-business market and has a strong global presence supported by independent dealers throughout the world, but their market position is strongest in North America. The company positions itself as a company that understands and is knowledgeable about the way people work in offices as well as the social aspects of the activities associated with work. This allows them to provide customers know-how about workspace layout planning. Manufacturing and the sale of physical products (i.e. tables, chairs, panels, etc.) still constitute the majority of the company's activities, but OFM does provide a variety of service offerings such as workspace planning, leasing, sales through

the internet, reselling of furniture, asset management, ergonomic training, reparations, refurbishment, inventorying, handling moves as well as strategic workspace consulting.

The market for office furniture

The office work environment has changed drastically in the past few decades. Work is increasingly information and knowledge intensive, traditional organisational hierarchies have given way to flat, decentralised structures where work is based on projects, teams and networks, and the emergence of information and mobile communication technologies has drastically changed the way people may communicate with each other. This has resulted in ‘work’ no longer being confined to a particular time or place, but can be performed at any time, any where. People today can work from other locations, such as their homes, and flexible working hours allow employees to decide when they want to work. In addition globalisation has increased the rate that companies establish and relocate their offices. The global tendency that an increasing amount of the workforce is employed in the service industries also implies that the global demand for office furniture will also increase. The market competes mainly on product design, quality and durability, price, on-time delivery, and service and technical support, but with many competitors delivering comparable designs, quality levels and product features, the market is very price sensitive (Besch, 2005). Companies typically view office furniture and the physical work environment as necessities that represent costs, which at best only contribute marginally to their business performance. Office furniture is seen as something companies must have, but not an investment that pays back over time. OFM usually sells to facility managers and purchasers in companies. These employees are typically measured on how good they are at minimising costs while maintaining the same quality level. The effects of the physical workspace environment and how it is planned is usually not valued. OFM argues that in office workspaces employee salaries are by far the greatest cost to companies and the physical workspace is just a tenth of the total costs (Harrison et al., 2003), but the impacts of the physical workspace on work, account for a considerable amount of the companies’ everyday business performance.

The development project

The project this case is based on was performed mainly with OFM team for future workspace trends. The team is an executive function to the company’s strategic team, and its objective is to carry out early research and application development. Its focus is on understanding users and changing work patterns, as well as the impact of emerging technologies in the workplace. The objective of the project was “to develop a computer based information system linking workspace design with business results and sustainability performance (in economic, environmental and social terms) to support decision making when planning office workspace”. Ultimately the project should demonstrate and actively engage OFM’s customers to show that the physical office workspace has vital economic, environmental and social impacts to their strategy and business performance (Figure 4). The idea was to position OFM as an expert on all activities related to the physical workspace and not just an office furniture manufacturer.

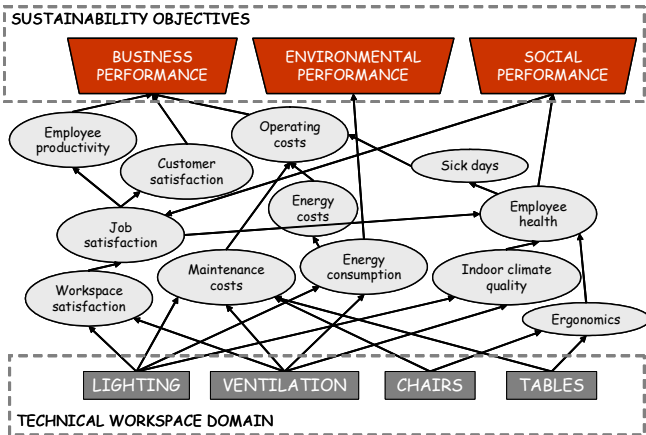


Figure 4. The general principle (only limited correlations shown) behind the computer based information system tool, showing correlations between technical elements in workspace design in relation to sustainable performance.

By being actively being involved in the project over a period of a year, access was gained to the company's internal stakeholders, external partners in the value chain, and even some of the company's customers. Using the theoretical framework described earlier the following observations were made.

Activities

As the result of the project is expected to be used with OFM customers to support their decision making process regarding office workspace design, it was perceived in the organisation as a sales consultancy tool. When representatives from OFM's service organisation were asked how the tool would fit into their dealings with customers, they were interested in knowing if the tool could actually support not just the planning of office workspace, but all the customer activities associated with the physical workspace. Using *customer activity cycles* (Vandermerwe, 2000) the relationship between customer's activities and OFM's activities were mapped (Figure 5). This gave a good overview of where and how OFM could support their customers best. Although not common in product-oriented part of the company where the project was based, it was later discovered in the project that OFM's brand and customer experience department used similar mapping techniques.

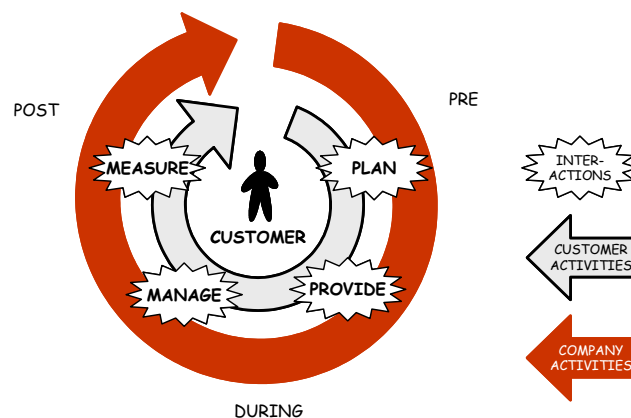


Figure 5. A simplified Customer Activity Cycle (Vandermerwe, 2000) – Mapping the customer life cycle activities and interactions in relation to the company's activities and offerings.

Another observation made was that if the information system could also be used to support workspace performance measurement before and after implementation of a new workspace, then OFM could, with time, also 'learn' about the impacts of the physical workspace to sustainable business performance. This systematic gathering of knowledge was considered valuable to the company. OFM saw a potential of building up a database of both customer and product data that could be analysed and used to provide information on how to best support a customer. Correlations could be made between data in the information system of the technical artefacts in the workspace, and customers' use and satisfaction, thereby allowing OFM to learn from these engagements. This was something that was not currently supported in their existing CRM or PLM systems.

When studying an existing tool that structured customers' inputs to a new office building and let them simulate the effects of their decisions straight away, it became apparent that the use of the tool itself could lead to an engaging activity that in itself be of value to customers, as well as allowing the company to gain deep insight to their customers' needs.

Roles and responsibilities

When presenting the project internally to a (product) sales representative, BF, he pointed out two aspects with the project that he perceived as challenging. The aim of the tool was to encourage OFM's customers to realise the social and environmental impacts of their workspace. According to BF, although customers did have an increasing interest for the social and environmental impact of office furniture, they considered these obligatory properties without economic value. Any additional efforts by OFM regarding sustainability would not be considered to have much value on the market. The other aspect that BF thought would be challenging to the organisation was that as OFM attempted to re-position themselves as providers of productive workspaces they would find themselves competing

against consulting firms (such as Accenture and PricewaterhouseCoopers). BF questioned what claim an office furniture manufacturer could have in such a business dealing with customer’s strategic issues. Opposing this point of view was individual customer comments picked up from other parts of the organisation which indicated growing awareness of sustainable issues, and caused them to think about their own office’s social and environmental impact. Traditionally only a concern of manufacturing companies, it seemed that white-collar and office real estate companies were interested in learning more about sustainability – and that they saw OFM with its long-standing efforts with environmental issues, as an appropriate partner. These two perspectives demonstrate two different perceptions of OFM’s role as either a very product-oriented or service-oriented company.

Knowledge and competencies

As mentioned earlier OFM acknowledged that their traditional focus on office furniture alone would not be credible enough to customers when positioning themselves as ‘sustainable workspace performance providers’. Knowledge of the correlation of all the technical elements in the office to workspace performance had to be uncovered and accessed (Figure 6). This did not mean that OFM suddenly had to become an expert in all these knowledge areas, but it was considered essential that they could bridge between these knowledge areas and demonstrate how this related to their customers’ objectives and activities.

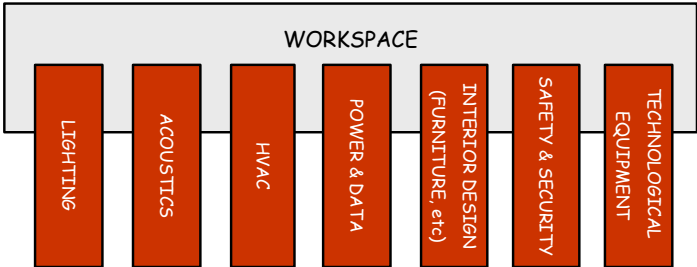


Figure 6. Workspace planning integrates 7 technical domains of the physical office environment. OFM is only a supplier of some of the components of a workspace.

Shortly after the project was defined OFM’s team of strategic workspace consultants were identified as the pilots for using the information system with customers. Although a fairly small team under the sales organisation, they had a good understanding of and were used to discussing workspace issues with customers on a strategic level. In addition their services were paid for separately and not dependent on the sale of furniture. Even though their purpose was to support sales, because their services were not directly linked to furniture selling, it was easier for them to develop trust in customer relationships. The competencies of the average sales representatives were not deemed sufficient, as well as the fact that the sales organisation was traditionally geared to a very product focused approach. The tool would either have to be more simplified or staff had to be trained specifically to grasp this relationship approach.

Relations and networks

In order to access knowledge about the technical elements of the office that was not part of OFM’s portfolio, OFM would have to partner up with companies that supplied these other elements. Two companies (a lighting and acoustic ceiling solution company) were contacted and even though on some accounts the companies’ product portfolios overlapped, both companies expressed interest in participating in the project. An observation made in discussions with these potential partnering companies was that one of the motivations for the other companies to collaborate was that OFM was seen as the workspace supplier closest to the end user of their products. In many rented office buildings the lighting and ceilings are decided upon by real estate developers long time before the actually occupiers of the workspace is known (Figure 7). This meant that often the qualities of the lighting and ceiling solutions were not really given proper importance, as those deciding what to put into the workspace, usually did not know how this would affect the end-user. The potential partners were interested in getting closer to their end users and being able to influence decisions about

workspace design. Even though it seemed that it would be possible to form a network of workspace suppliers in this project, the idea was not pursued any further due to limited resources to establish and coordinate these network relations.

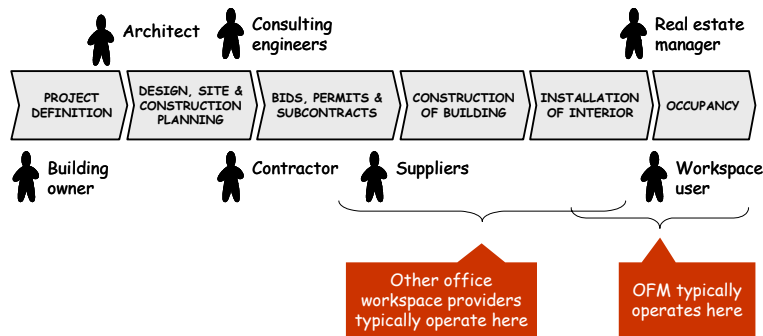


Figure 2. The process of designing an office workspace in relation to actors. OFM is the workspace provider closest to the end-user. The suppliers of the other technical components are usually involved much earlier in the construction process.

A clear objective of the tool was to attract interest from business leaders of client companies. As mentioned earlier facility managers and purchasers in client companies are typically responsible for the physical workspace. OFM wanted to draw attention to the strategic aspects of the physical workspace and thereby initiate a dialogue with key decision makers such as business leaders that would then see OFM as a strategic partner to their business activities. By establishing relations on a strategic business level this would ensure OFM a strong position on the market.

DISCUSSION AND PERSPECTIVES

Is the case study representative of a step towards PSS and relationship marketing?

PSS and relationship marketing are both academic terms and not new phenomena. To a certain extent, manufacturing companies have always offered a combination of products and services together. Before discussing whether PSS and relationship marketing approaches are complimentary approaches, it should first be determined whether the industrial case presented in this paper can actually be seen as part of a PSS approach.

Although the project was not formally formulated as a PSS development project, OFM is familiar with the concept of PSS and is aware of the increasing challenges of being a furniture manufacturer in the future. The project is viewed as something that will be able to transform the company’s manner of working with clients and doing business. As Senior Vice President and leader of the future workspace team, MG mentioned in relation to the project, “*We have to move up the food chain. Profits are slim in manufacturing. We have to move in to services!*” The project originally rose from environmental efforts based in the product-oriented part of the organisation, but as the project progressed more service-oriented aspects were included in its development and now it appears to cater more for the service/customer relationship-oriented part of the organisation. Finally the fact that OFM chose to collaborate specifically with the author of this article, leads to the belief that the company’s general intentions and basic principles of PSS approaches were aligned. The author is a PhD student doing research on service-oriented product development.

PSS and relationship marketing similarities

When it comes to redefining what value OFM is actually bringing to their clients, OFM is already well aware that the true value of their offerings does not lie within their tables and chairs, but is much more related to how the settings of the physical work environment in combination with particular behaviours, affect workspace performance. One could say that OFM is already mentally prepared to deliver their clients real needs – most clients don’t want to worry about their furniture and facility operation, they just want to concentrate on their own business objectives. The challenge is really that the people (i.e. facility managers and purchasers) that regularly do business with OFM are not holistic

strategic thinkers. OFM needs to target their client's business leaders to influence the right workspace decisions. It would seem traditional organisational responsibilities and economic structures need to be decomposed and rearranged with PSS development. Thus PSS approaches tend to redefine a company's core business and compel developers to design a system that supports the new business best. Often the new business paradigm (e.g. sell *'more efficient use of furniture'*) will oppose the existing operational organisation's business logic (e.g. sell *'more of the furniture on stock'*) – as was discussed in the product-oriented sales organisation. – and therefore, should possibly be deployed in a separate organisation. This seems to be aligned with Grönroos (Grönroos, 1999) that in relationship marketing, *"the firm cannot rely on a prefabricated product. It must develop resources as personnel, technology, know-how, the customer's time, and the customer itself as a resource"* and *"that a satisfactory total service offering emerges over time."*

OFM understands that if they want to offer their clients a total product and service offering for the work environment they will need to create (horizontal) partnerships with other companies. It is not sufficient to only optimise the vertical value-chain in PSS, but instead create value networks. The major task here is the on-going management of the many external relations and how to coordinate the development and operational activities. How these networks will actually function is not known at the moment, but the proposed computer-based information system may serve as a backbone information infrastructure that keeps the network linked together.

Traditional product-orientated development approaches have been derogatively called *'hit-and-run'* techniques: typically developers identified user needs, designed products accordingly and marketing got them out to the market as fast as possible, but then simply neglected to consider what actually happened to the product after it was sold, because by then they were on to the next development project. PSS - like relationship marketing - attempt to encourage interactions with the user with a life cycle perspective. The rationale is that these interactions over time are sources of valuable insight and re-enforces the customer-company relationship.

Throughout the paper many similarities between PSS and relationship marketing approaches have been identified, but are there any aspects where they differ from each other? Relationship marketing is applicable to many kinds of companies, whereas PSS approaches cater mostly to manufacturing companies. Each approach is based on its own discipline of engineering and marketing, but is possibly akin to the integrated product development approaches adopted in the 1980s, where they may be coordinated and integrated with each other. With PSS approaches the knowledge and competencies of designing, developing and producing products will probably still be core to the company, but the manner in which they are provided and how they are marketed seem to be very aligned with relationship marketing. The combination of these approaches has the potential for manufacturing companies to gain deep understanding of product, customer and product life activities that will ensure them a very strong competitive advantage.

CONCLUSION

This paper describes a project that maybe seen as the initial development steps for a manufacturing company towards both a product/service-system (PSS) and relationship marketing approach. Observations were made throughout a year of active participation in a development project, and have been presented in relation to a theoretical framework of the expected managerial and organisational implications of PSS approaches. The framework takes into consideration new activities, roles and responsibilities, knowledge and competencies, and value network relationships that the company will have to deal with. A significant insight is a common definition of value in both PSS and relationship marketing approaches. Viewing products alone are not appropriate to determine value – instead the focus should be on the effects from customer activities. The development project described in the case study appears to have characteristics that are common to both PSS and relationship approaches:

- the uncovering of customer activities that could be supported by the company,
- the move from selling prefabricated products to selling benefits,
- the expansion of technical and business-related knowledge and competencies,
- and the orchestration of a new value network collaborating with new business partners and reaching different target groups.

New challenges and different considerations have been identified in this case study where a new service offering is developed rather than 'just' a product. In this explorative case study I have attempted to shed some light on some of the issues manufacturing firms will face when developing PSS and implementing relationship marketing approaches. The implications identified in this case study are:

- to consider what has to be done to establish relations to the (new) intended target clients of the PSS offering, while still satisfying the usual stakeholders,
- to determine whether the suggested PSS approach can co-exist with the established product-oriented operational organisation, or it needs to be developed in a separate organisation that is service-oriented,
- to form relations to partners and create a new unique value network that collaboratively can provide the total customer offering,
- to establish an information infrastructure that can manage both product data, as well as information of the customer and use activities,
- and to uncover how value-added activities and engaging interactions are designed with the customer.

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