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Service based Value Chain Innovation -
Status Quo in the Medical Technology Industry

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Abstract

Service has become a key factor of competitiveness in many manufacturing industries. In practice however, the development and design of distinct service and solution portfolios feature many obstacles. Service excellence can be a driver of value chain innovation but calls for a coherent service business model, derived from a given manufacturer’s strategy. Customer centric business models enable to develop services and solutions precisely covering end-to-end customer processes. By achieving service excellence, industry champions often outperform their peers in terms of brand awareness, turnover and margin.

To assess the level of service excellence currently achieved in the European medical technology industry, J&M Management Consulting performed a study among producers of medical technology equipment and its users. The products have reached a relatively high level of maturity over the last decade as properties and characteristics have become more and more comparable. The study, based on a grounded theory approach, reveals that companies see themselves halfway en route from pure product manufacturers to complete service and solution providers. They intend to develop comprehensive service and solution portfolios and plan to sharpen their respective profiles. Yet, since hospitals, as an important group of customers, today see some of their expectations towards services and solutions unmet, the present text investigates the critical aspects to be considered by manufacturers. Based on practical examples, it is further described how service excellence can itself be a catalyst for continuous innovation along the value chain.

Keywords: Service excellence, service business model, service and solution provider, value chain innovation, medical technology industry

1. Introduction

In the evaluation of medical technology equipment, hospitals as a main buying group are forced to calculate carefully. A total cost of ownership (TCO) perspective, including service, maintenance and overhaul has replaced the evaluation of mere purchasing costs.

Regardless of these criteria, not many medical technology companies have yet developed their service activities into a strategic business segment. Many firms of all sizes still focus on product innovation, neglecting the fact that product innovation will in most cases not lead to differentiation from competition.

Along with a distinct company profile, comprehensive portfolios of services and solutions provide means to strong customer relationships. If systematically defined, services and solutions enable to access latent turnover and profit potentials. To tap these potentials, our experience with global medical technology leaders suggests an integrated approach along all relevant dimensions:

- Strategic direction setting
- Processes and organisation
- Performance management
- IT and enabling technologies
- Management of change

To test and qualify the levers of above dimensions, J&M Management Consulting recently engaged in two studies: For the first study by J&M and the Karlsruhe Institute of Technology,
120 leading manufacturers of different industries participated in an online survey designed to assess their development from product manufacturers to solution providers. The study concludes with a maturity grid, describing each of the five dimensions regarding its role and impact. The second study by J&M and the German association of medical technology SPECTARIS takes an in-depth look at the level of service excellence achieved in the medical technology industry today. Through more than 20 expert interviews with executives at manufacturing companies as well as technology and purchasing officers at hospitals, we captured the status quo and the industry specific drivers of the transformation in progress. Drawing from extensive work with our clients and building on the insights of above studies, our framework is designed for the practitioner. Instead of crude recipes, we offer proven levers giving guidance to managers. To this end, we first assess the ongoing transformation and highlight the features that have in parts prevented the seamless development of service-oriented business models known from related industries. Secondly, we outline examples for each dimension of how manufacturers develop, rethink and structure service business models. Comparing innovative service and solution providers with their struggling peers, we find that leaders capitalize on consistent and well balanced business models, proving the benefit of our proposed framework. Third, we contribute to the practitioner’s tool box as we conclude how service excellence can itself initiate continuous innovation along the value chain.

2. Imminent Business Transformation Calls for Framework with Proven Levers

The market for medical technology is undergoing a radical change. Technical advances, increasingly complex customer requirements and the demand for comprehensive solutions pose challenges to manufacturers. The cost and price pressure caused by ever increasing international competition is an additional driver of current alterations. On the part of hospitals, the privatization of health care and the operating costs dominate the management agenda. Hospitals are forced to scrutinize any capital expenditure and aim for efficient service of their medical technology equipment. Apart from pure purchasing costs, spending along the product life cycle becomes a more and more prominent factor in decision making. When procuring new equipment, 95% of our interview partners at hospitals see the total cost of ownership as today’s overriding criterion. Combined, these factors have elevated service to a major building block of sustainable business models. An important characteristic of these models is their customer centricity as the laurels of all efforts to excel depend on a detailed understanding of the customer’s end-to-end processes. By enabling lean hospital processes through innovative services and solutions, medical technology companies can set themselves apart. In practice, leading companies have experienced a boost in customer retention, turnover and profitability.

Sustainable service excellence requires an integrated view on all relevant dimensions (see Figure 1). Based on customers and competition, medical technology companies have to define their service strategy. For example, the strategy indicates how services and solutions reshape the company’s selling proposition. Service processes and organization form the backbone of successful business models and should for instance specify the level of collaboration between possibly separate products and service organizations. As the third dimension, the importance of performance management stems from the high need for transparency. Today’s emerging operating models entail performance based characteristics and therefore depend on coherent key performance indicators (KPIs). This requirement is directly linked to the fourth dimension: Automated performance indicators rely on integrated information management tied to adequate IT and enabling technologies. Management of change as the fifth dimension involves a vision to transform and outlines the required skills. Companies not assessing as-is and to-be skill sets risk a dissatisfied staff and prolonged transformation cycles.
3. **Service Excellence in the Medical Technology Industry: Status Quo**

With comparable product features in many segments, service has evolved into an undisputed key differentiator in the medical technology industry. As companies have for many years concentrated on consecutive cost optimization programs, we now see their focus shift towards previously underestimated revenue potentials. Still, the development and market launch of services and solutions lack in a structured approach as well as determination. The hospitals participating in our study claim to be rarely offered innovative service models by manufacturers. One interviewee, a purchasing officer at a group of private Swiss hospitals, stated that he was unaware of any truly innovative services or solutions. Most manufacturers still seem to perceive their products as innovative enough.

Asked about their specific situation, the interviewed medical technology companies see themselves about halfway en route from pure product manufacturers to complete service and solution providers (compare Figure 2). Until 2015 the transformation is expected to progress considerably. Our interview partners anticipate their position in between of the two poles to shift by 42%.

![Figure 1. Framework for Service Excellence (simplified) (J&M Research 2011)](image)

Our above simplified framework highlights two exemplary levers for each of the five dimensions. Through global service excellence projects with clients of various industries, we have developed and successfully applied more than 50 levers, each assigned to one dimension.

Three-quarters of the executives at medical technology companies foresee an increasing demand for innovative and individual services and solutions. For companies to thrive in facing this challenge, we next present selected levers for each dimension, tested and proven in past and ongoing client projects.
3.1 Strategic Direction: Portfolio Management and Pricing

Leading manufacturers benefit from service strategies that name and specify the critical adjustments to their present business model. However, through research and client projects we have found that the majority of companies lack strategies on how to excel at the current chances and risks. By way of example, one producer of laboratory instruments offered services to clients exclusively as a means of sales support. The full potential of its innovative services based on remote access technology was not realized until the strategic groundwork was laid. With the transformation aligned along all dimensions, customers perceived the added value, resulting in a competitive edge.

We understand the first dimension as a set of strategic parameters, safeguarding the results promised in management literature but often missed out in practice:

- Brand awareness and customer retention
- Differentiation from competition
- Value chain innovation
- Increasing Profitability

As a starting point, the mix of products and services is to be defined with regard to their designated role in the overall selling proposition. We have learned from companies with excellent product and service portfolios, precisely tied to the client’s process interfaces, that any inconsistency poses obstacles to reaping the targeted benefits. In a sample of 120 leading manufacturing companies only 29% claim to have the development of products and services aligned (Ovtcharova, Burger, Kilger 2012).

To assess both products and services in order to form a convincing portfolio, we typically identify their value along the customer’s main processes and value streams (for example through brown paper sessions). With a shared understanding of the value from the customer’s perspective, the optimal product and service mix usually is in immediate reach.

Only a few medical technology companies have yet managed to engineer mature service portfolios. Our comparison of the demand by hospitals and provided services by medical technology companies indicates deficits in process consulting, remote access, multi-vendor-services (MVS) and operating models. The demand hospitals expect themselves to generate for these services through 2015 outpaces the projected offerings of medical technology companies by far. Specifically discussing integration along the value chain, it showed that backward integration, for example the service administration for hospitals, does not draw much interest. In contrast, concepts of forward integration such as “Rent a Doctor” will get more attention.

Of the evaluated services, MVS and operating models are expected to become major catalysts of service based value chain innovation in the medical technology industry. With MVS providers, a new actor in the value chain has established itself over the course of the last decade. Their services for equipment of various vendors reduce the need for hospitals to orchestrate more than one provider. However, the reviews of hospitals with a MVS record are diverse. Some hospitals criticize the narrow range of services provided and the level of quality.

Depending on the complexity of the equipment, MVS providers face problems in matching the level of service know-how of the original equipment manufacturers. In general, small hospitals seem to benefit most of engaging one MVS provider, whereas larger ones typically opt for a mix of MVS and service by manufacturers.

The decision and concept to outsource should be based on the hospital’s strategy. On a product level, the equipment’s complexity and value as well as the proximity to the patient are key factors in comparing MVS to service by the original manufacturer. About half of the hospitals participating in our study rely on MVS today with the other half planning to take the option into consideration within the next years. Since only one fifth of the manufacturers of
medical technology intend to develop MVS through 2015, the opportunity for independent MVS providers to gain market share is far from over. Operating models will become a dynamic stimulus in the competition among medical technology companies. Mature service and solution providers parallel to the increasing vertical specialization of hospitals will define operating models as a vital element. Despite proven examples such as pay per use or third party certification, medical technology companies have yet to work on feasible and profitable options. We found that both at hospitals and at medical technology companies, the opportunities of innovative operating models are still perceived as too abstract and conceptional. Standardized technical platforms will be an important factor as they drive substantial product harmonization. In addition, operating models will depend on ecosystems with dominant product manufacturers acting as orchestrators of cooperating players.

Based on the segmentation of markets, target groups and thereof derived product and service portfolios, pricing is another hallmark of professional strategic direction setting and often selected to be covered in projects with our clients. Our experience is that excellent service pricing enables leading manufacturers to outperform their peers in terms of profitability by 1.5 - 2.5%. They benefit from elaborate price / value positioning, a balanced channel mix and integrated life cycle pricing. For each lever of service pricing excellence, we have developed a template indicating the situation when applicable, the analysis methodology and the tools to be applied as well as the typical outcome, including the expected profit impact. The variety of services and solutions opens up opportunities for significant profit improvements. Over 20 expert interviews helped to refine and condense the following set of best practices:

**Best Practice for Performance-based Services and Pricing:**

1) Customer behavior:
   * Differentiated service pricing based on performance and utilization
   * Invoicing of over-delivered services

2) Competitors:
   * Reduction of complexity through modularization
   * Lean service management

3) Service and solution portfolio:
   * Value based portfolio engineering
   * Serviceability as design factor of products

4) Balance of standardization and individualization:
   * Automated standard service contracts
   * Not playing off gains in efficiency against customer focus

5) Monitoring and incentives:
   * Performance-based incentives
   * Transparent KPIs for regular performance evaluation

**3.2 Processes and Organisation: Lean Service Delivery and Collaboration**

The design of service processes and organizations aims at lean delivery on the one hand and structures cultivating innovation on the other. Related manufacturing industries are regularly used for comparison as standards have yet to be established for medical technology equipment. Leading companies in industrial machinery and components as well as the high-tech industry serve as role models.

As they see services and solutions gain in importance, manufacturers turn their focus to the respective processes and the organizational parameters. To assess how service departments
are embedded in medical technology companies, we challenged the level of collaboration with other departments in the course of our interviews. On a scale from 1-excellent to 6-inexistent, the perceived level of collaboration with other departments is positive. Notably well rated is the mutual support between service and sales units with 1.9 for field sales and 2.0 for inside sales (compare Figure 3). Likewise, the collaboration of service with product management, marketing as well as research and development is good. On the contrary, joint efforts between service and business development reveal room for improvement as the collaboration is rated just satisfactory (mark 3.4). To develop and position differentiated services and solutions, an improved alignment and bundling of efforts between these departments is critical. We found that diverging incentives and a fundamentally different perception of the targeted turnover and profit contribution currently form the stumbling blocks.

![Figure 3. Collaboration of Service Departments (J&M Research 2012)](image)

At hospitals structured planning of preventive maintenance is often nonexistent. Equipment is used to the point of defects. Partly this is due to unsatisfactory collaboration of service with medical personnel. Hospitals have a need for consulting services by medical technology companies on how to optimize the planning of maintenance. Based on solid forecasts the necessary costs could accurately be accounted for in the investment plan. Apart from promising attempts, we identified companies that mistakenly consider their monthly plan as best practice. Few medical technology companies offer comprehensive planning with tools such as spare parts kits or consignment stocks.

On average the service departments of the medical technology companies participating in our study account for 14% of the employees. Smaller companies with a turnover of less than EUR 100 million organize their service as a dedicated department, whereas larger competitors form separate business units.

### 3.3 Performance Management: Service KPIs and Operating Models

The use of deliberate KPIs is a prerequisite of performance-based services and operating models. With a transparent equipment utilization rate, significant efficiency gains can be achieved as the equipment’s need for maintenance can be diagnosed precisely. In addition, our projects with a number of industry leaders prove that comprehensive service performance management is a key enabler and amplifier of continuous improvement programs.

Not all medical technology companies we interviewed have established service performance indicators yet. About three-fourths use KPIs to develop and steer services while 50% use the numbers for client reporting. The prevalence of service KPIs monitored at hospitals is significantly lower as only 25% manage services on the basis of dedicated KPIs (compare Figure 4).
The performance indicators in most cases unilaterally represent financial parameters. Process characteristics and the customer’s perspective of services and solutions often remain uncovered. For instance, only 36% of the interviewed medical technology companies track their 1st time fix rate and just 18% know the number of patients treated with their equipment. However, our scan of performance management at medical technology companies also revealed examples of balanced scorecards that incorporate financial, customer, process and learning aspects. The high level of service quality positively stimulates customer satisfaction for these firms. The majority of our interview partners confirm the payback of managing service performance systematically.

3.4 **IT and Enabling Technologies: Integrated Information Management**

Information technology (IT) is for business models what research and development is for products and services (Oesterle and Kagermann 2006). In their pursuit of sustainable services and solutions, medical technology companies depend on integrated information management with IT playing a key role. On average IT provides our interviewed managers with only 60% of the information required.

The share of IT in medical technology equipment is rising and triggers a demand for connectivity and remote services. Integrated information management requires seamless IT platforms and architectures. The challenge faced by many manufacturers is that historically distinct IT architectures limit rather than enable service and solution innovation. To establish frictionless end-to-end integration is, given the present IT architectures and the data privacy standards in health care, a demanding task. To align strategy and IT is the first step the management boards at many companies have yet to take (compare Figure 5).
Through online communication with their interconnected products, leading manufacturers plan maintenance activities on the basis of actual hours of operation, procedures completed and incoming alerts. Spare parts planning gains in accuracy, ultimately reducing the working capital involved. More generally medical technology companies benefit as their improved understanding of how products are used and handled allows them to tailor product, service and solutions still in the pipeline.

Customer relationship management and supporting tools is another element which has helped industry champions to outperform their peers. Less than half of the participating companies have implemented CRM systems. Managers regard the incorporation of service and solutions in CRM as a major challenge.

3.5 Change Management: Service Mentality and Skills

Medical technology companies have started to adjust their skill set. A cultivated service mentality to sharpen their respective service and solution profiles is setting industry leaders apart. Even as product know-how remains top priority for service personnel, other skills add significant value.

Comparing to-be and as-is skills we identified process know-how, social skills and project management as areas to close the gap (compare Figure 6). Process know-how is given a high priority by our interview partners. Services and solutions add maximum value if engineered and delivered with a thorough understanding of the customer’s processes and value chain. Industry leaders work on spreading this know-how through training programs instead of having it concentrated on few experts.

Social skills allow capitalizing on opportunities inherent to services and solutions to strengthen customer loyalty. As for process know-how and project management, social skills drive and cultivate service mentalities that separate comprehensive service and solution providers from pure product manufacturers (compare Figure 2). Our clients benefit from the following three step approach to develop customized training concepts:

1) Identify topics and develop required tools
2) Segment target groups and define matrix of content
3) Develop rolling training plan

![Figure 6. To-Be and As-Is Skills for Medical Technology Companies (J&M Research 2012)](image)

Transformation is not a by-product but requires a systematic approach. Only 40% of the German manufacturing companies of various industries have launched specific efforts to strengthen their service mentality (Ovtcharova, Burger, Kilger 2012). Leading medical technology companies recognize change management as a catalyst of their transformation towards end-to-end solution providers. They show top management commitment, highlight a vision and move along a structured process of change.

Ignoring the last dimension of our framework, many of our clients had to learn the hard way how both disruptive and incremental service innovation depend on a deep-rooted culture and mentality of ongoing change.
4. Conclusion

This article has illustrated the current state of the transformation of the medical technology industry towards comprehensive services and solutions. As services and solutions add promising options to the configuration of business models, manufacturers have started to adapt. Despite best practices from related industries and the prospect of profitable growth, few have yet mastered the transformation to the point they can reap the expected benefits. In addition, we presented selected levers along five dimensions introducing a systematic approach that has proven its worth in global service excellence projects. Service excellence entails re-engineered business models that take an integrated view of the industry’s value chain. Leading companies outpace their competitors partly on the grounds of their first class understanding of their clients’ process interfaces and challenges. Converted into services and solutions that add clear value, these companies have altered their selling proposition and show that the transformation, if managed systematically, can be accomplished within a reasonable period of time.

References

