



BEHIND THE SCENES OF OPERATION THEATRES

Executive summary of

Kotiranta, Annu, **Kulvik**, Martti, **Maijanen**, Sirpa and **Seppälä**, Timo (2016).

Harsoja ja hallinto – Terveysarvoketjujen anatomiaa
Helsinki: Taloustieto Oy (ETLA B271).

ANNU KOTIRANTA - MARTTI KULVIK -
SIRPA MAIJANEN - TIMO SEPPÄLÄ

Executive summary

ETLA, The Research Institute of the Finnish Economy, has applied value chain analysis in a multitude of business settings. This innovative research has gained significant positive recognition from industry, governmental institutions and international trade organizations, including WTO.

Even though value chain analysis has proven to be problematic when applied to services, we apply the methodology to the complex world of health care services. As Finland has decided to restructure both its social welfare and health systems, any tools and approaches yielding new insights into this sector are worthwhile.

Two worlds unite as healthcare meets industrial value chain analysis

In Chapter 1 of this book we set the scene with an overview of some differences between health care service markets and markets for industrial goods, as the latter has been the focus of ETLA's prior value chain analyses. In health services, providers can exercise power on customer behaviour because of a particularly strong information asymmetry between patients and health care professionals. Further, the sector is heavily regulated in order to control not only quality but also costs.

We continue with a discussion about values in health care, realizing that they can be shaped by political decisions. We conclude Chapter 1 by modifying a framework presented by Olhager (2012) and using a patient-centred perspective to evaluate the benefits of the value chain.

Chapter 2 describes the ETLA value chain analysis methodology. At the level of an entire institution, the approach is very straightforward: using available income statements, we can calculate added value for the entire organisation, in this case a hospital. Looking at a single sub-unit, such as an emergency room (ER), adds challenges correlated with the size of the hospital. Larger entities usually have more complex organizational structures, including independent profit centres and specialized sub-units that make understanding organizational borders more difficult; extensive engagement in outsourcing further complicates matters.

Case examples demonstrate the complexity of health care: a Hospital is not simply a bundle of assembly lines

Chapter 3 introduces our case studies. The **first** value chain analysis concerns basic dental care: a **two surface dental filling**. We compare the value chains of the private and public service providers. Similarities and differences particularly from a value creation point of view is of special interest, as one of the main goals of the forthcoming Finnish social welfare and health systems reform is to harmonize the private and public sectors' business environments in basic health services.

The dental repair procedures of our private and public sector case-examples turned out to be virtually identical. However, the public sector captures 82 percent of the created value and the private service provider captures about ten percent less. For further comparison we pooled data from 76 private entities and found that they capture on average only 51 percent of the created value. The variation is largely due to outsourcing. Finally, we can also calculate that 90 percent of the public side created value remains in Finland, with a comparative value of 77 percent on the private sector.

Our **second** case set looks at **hernia repair**, a clearly defined procedure provided by specialized health care. The first of our examples is a public central hospital, the second a private regional hospital and the third a private larger consortium. We also look at the hospitals' Italian counterpart, with data from a private and a public clinic.

Our first observation is that our example hospitals perform hernia repairs in six different ways, in addition to using four different methods of anaesthesia, with costs vary accordingly. Despite these variations, we find that even with the very same product, *e.g.*, hernia operation with Lichtenstein method using spinal anaesthesia, the prices vary from slightly over 1 000 euros to more than 2 000 euros.

Within one specified procedure, materials comprise only six percent of totals costs, and the hospitals and surgeons perform the procedure very similarly suggesting that the procedure is nicely streamlined. Significant shares of cost result from **allocated indirect costs**, which are outside the control of the unit. It is important for the hospital administration to recognize where costs in reality arise and who can influence them. From a cost point of view it seems that, *e.g.*, the speed of the surgeon is *not* that crucial after all.

Approximately half of the created value is captured by the service provider in the central and regional hospitals, but only a fifth by the larger private hospital. This difference reflects differences of organization: surgeons in the central and regional hospitals are on a monthly salary, whereas the large private hospital buys its services from the surgeons working as private practitioners. As with the dental case, more than 80% of the total created value is captured in Finland.

Our **third** case looks at **thrombolytic therapy of stroke** performed at a university central hospital. Despite being an internationally defined procedure with very strong and uniform guidelines, the value chain analysis turned out to involve more than 1 000 different combinations of procedures, depending on the specific situation of the incoming patient. The costs vary from 3 000 euros to 20 000 euros.

As the thrombolytic therapy has to be initiated within 4.5 hours after onset of symptoms, the procedure includes a significant reliance on a timely and unambiguous diagnosis. This diagnostic precision is a major difference compared to the two other cases where it is very straightforward. With thrombolytic therapy the diagnostics and other pre-thrombolysis procedures accrue roughly half of the costs, and the thrombolytic agent alone about 40 percent of total costs. Two thirds of the value creation is, however, captured in Finland.

Value chains as means to analyse and manage organizations

Chapter 4 looks at how the value chain approach could function as a management support tool in public health care. The chapter compares two metrics of hospital functions: the more familiar Diagnosis Related Groups (DRG) system and the value chain approach best known from industry applications. We develop a value chain approach modification and test it on publicly available data from Finland's largest hospital consortium, The Hospital District of Helsinki and Uusimaa.

In Chapter 5, we first modify Porter's 1985 value chain framework to better apply to health care settings. We then use this approach to evaluate thrombolytic therapy for stroke. We analyse three different views into internal processes: a patient viewpoint, an economic and power viewpoint, and the viewpoint of available resources. We continue with a discussion on value chains as a way to compare different organizations –both in and beyond healthcare settings.

In Chapter 6, we conclude with a general discussion based on the main findings presented in the previous chapters.

Healthcare processes, private and public alike, retain most of the value within the country

Most of the value in our cases was captured in Finland, characteristic of the way health care today is provided: locally and with a significant part of the created value stemming from professionals' work. It seems that this finding holds true for most countries. However, will totally new technological concepts unleash local bonds and lead to a diminished share of value created by human inputs? And will increased patient mobility, strongly promoted by the EU, disconnect the geographical connection between the payers and the value creators?

Healthcare value chain analysis describes particularly the production – but opens spill-over insights into the service in focus

The value chain analysis seems to capture the characteristics of the single healthcare products, or operations, beautifully. However, as the prices of the operations are dominated by the overhead costs, in reality the analysis provides us more an overview on the production unit than of a specific product. Analogously, the optimization of a single healthcare product is more like polishing up the details than making actual and economically significant production changes. On the other hand, the product level analysis revealed a multitude of insights into the diversity and complexity of healthcare operations that do make a difference even at a national level.

Finally, all our cases are compact services provided within one day, with a clear beginning and an end. Not all conditions share these features, however. Therefore, the next step is to test and develop the value chain tools for open-end processes.