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Diagnosing and Redesigning a Health(y) Organization - An Avarto (Bertelsmann) Action Research Study

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DIAGNOSING AND REDESIGNING A HEALTH(Y) ORGANIZATION – AN ARVATO (BERTELSMANN) ACTION RESEARCH STUDY

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Abstract

Empirical results clearly indicate that managers spend a great amount of their working time on communication (Mintzberg 1971, Mintzberg 1973). One task of management is to design the communication within the organization in an effective way. Therefore, we argue that the adequate design of information channels within organizations is a crucial prerequisite for the long-term effectiveness of any organization. Based on an action research study carried out at one of arvato's sites, we sketch how organizations can be analyzed and redesigned in a structured way by combining cybernetics with conceptual modelling. We show how informational and organizational problems have been identified and solved for an organization that has been acquired by arvato.

Keywords: Information Channels, Modelling, Organizational Engineering, Cybernetics, Complexity.

1 INTRODUCTION

arvato AG – a Bertelsmann subsidiary – is an international media service company. In 2005, arvato generated revenues of €4.4 billion in comparison to €3.8 billion in the previous year. arvato is one of the world's biggest service providers in Customer Relationship Management and a global provider of Supply Chain Management with more than 42,000 employees (in 2005). arvato services healthcare is a fast growing business unit within the arvato network. As a European third party logistics (3PL) service provider, the company focuses exclusively on the healthcare industry. The goal of arvato services healthcare is to become one of the top five players (referring to market share) in logistics in Europe in the healthcare industry within the next five years. Therefore, arvato acquired a European competitor with facilities in Germany, France, United Kingdom and Belgium in 2005. In Germany (arvato services healthcare Germany), the former general manager retired in December 2005 and has been replaced by somebody from the original arvato organization. Six month before, the former operation manager who was responsible for logistics and customer service activities left the company and a new operation manager was hired and trained.

The strategic task of this new site management was to retain existing customers, to acquire new customers and to focus on the extension of business with existing customers in 2006. However, during his first few weeks, the new site manager faced the problem that there was no real time to focus on sales and strategy, because he was totally occupied with internal operations, reporting and internal communication. The site manager was interrupted many times during the day by uncoordinated face-to-face meetings. In addition, the new operation manager pointed out that he was overwhelmed by information from different internal and external units and frequently could not communicate back within the defined time frame. It was difficult to get decisions implemented quickly, communication seemed sometimes uncoordinated and non-effective and there was no time left to implement the predefined strategy. As a consequence, the new site manager decided to analyse and redesign the information flows and interactions within the organization at the beginning of 2006. In this context, the following questions were of special interest for site management:

- What are the reasons for the perceived information overload? How can we overcome these obstacles?
- How should we organize internal communication and interaction to become more effective within the organization in general?
- Which are the major communication bottlenecks and/or conflict points within the organization?
- Do all managers receive the information they require to fulfil their function within the organization after the acquisition?

To visualize and conceptualize the organizational problems at arvato services healthcare, we will introduce the Viable System Model (VSM) in the next section. Originally developed by Beer (Beer 1981, Beer 1985, Beer 1979), the theory has been previously applied in various management studies (Espejo & Harnden 1989, Espejo et al. 1996). By applying the VSM in an action research study in section 3, we will show why the VSM is appropriate to analyze communication problems and redesign information channels within organizations. Based on this, we derive learnings for enhancing the VSM. Finally, we summarize our findings and future prospects are discussed.

2 COMPLEXITY AND THE VIABLE SYSTEM MODEL

The interaction between information technology (IT) and organization is very complex and influenced by many mediating factors, including the organization's structure, standard operating procedures, politics, culture, environment and management decisions (Laudon & Laudon 2005, p. 77). As the mixture of obstacles presented in the introduction clearly demonstrates, one of the main problems for an organization in achieving viability is the complexity and uncertainty exhibited by itself and its

environment (Jackson 1989, p. 413). But since complexity is a manifold term which has many possible meanings (Flood & Carson 1993), it is difficult to exactly determine and reduce organizational complexity.

Generally, complexity can be described as a subjective property of a system perceived by an observer. Ashby's Law of Requisite Variety is one important driver for the management of complexity: "Only variety can destroy variety" (Ashby 1964, p. 207). This forms a problem for management because in order to make a system responsive to change, management needs to possess as much variety as the system itself exhibits. With systems that exhibit massive variety, such as organizations, only reducing the environmental variety or increasing the management's own variety enables us to cope with this problem (Jackson 2000, p. 73). Consequently, from a systemic point of view, the evaluation of information systems and information channels respectively becomes of great importance for management in order to adjust variety accordingly.

The traditional approach to information systems evaluation, based on narrow technical and accounting terms, has only little relevance to the role of information systems and management in today's organizations (Serafeimidis & Smithson 2000). Mintzberg describes the work of managers as communication of which the productive output must be measured in terms of information (Mintzberg 1971, pp. B-101). Attempts to model managerial work need to study and describe the information, information channels and control channels used for communication. Furthermore, every organization can be characterized by an interwoven network of decisions (Langley et al. 1995), which are supported by information systems and information channels. We argue that if a suitable theory for control and communication guides practitioners in the analysis, evaluation and design of information systems, information channels and control channels, and serves as the fundament of an action research approach, relevant practical problems can be addressed more rigorously (Baskerville & Pries-Heje 1999, p. 4). In order to model the information channels and control channels at arvato services healthcare Germany and to provide a rigorous theory for backup, we apply the VSM in our research. The VSM, according to Beer, specifies the minimum functional criteria by which a given organization (e. g. a company) can be said to be capable of independent existence (Beer 1981, Beer 1979, Beer 1985). The VSM has its roots in management cybernetics and describes the necessary organizational structure that is needed for a system to survive in a constantly changing environment. The VSM consists of five main components, or sub-systems, and information channels between the sub-systems which need to be designed with respect to Ashby's Law of Requisite Variety (Table 1).

System	Description
System One	On each given recursive level, Operational Divisions are responsible for certain parts of an organization's activities and have contact to the outside environment. The divisions are each managed by a divisional Management Unit. All Operational Divisions and divisional Management Units on one level of recursion together form System One.
System Two	Each System Two conducts a kind of service function for System One (e. g. Finance, Human Resources or IT services), and serves to damp oscillation and other disruptions that occur between the divisions on an operational level.
System Three	System Three supervises all internal operational activities of all divisions from a higher point of view of the total system. It optimizes the allocation of resources, assigns them to the divisions and regularly checks the use of these resources.
System Three*	System Three* is the audit channel which gives System Three direct access to the state of affairs in the operational activities. System Three can obtain immediate information by using System Three*, instead of relying on information passed to it by divisional management.
System Four	System Four deals with the diagnosis of the long-term connection of a viable system to its outside environment and its adaptation to future trends.
System Five	The ethos of the whole viable system is formed by System Five. It embodies supreme values, rules and norms for the stabilization of the whole system.

Table 1. Components of the Viable System Model

Following Beer, the essential principle for structuring within the VSM is based on recursion: each sub-system needs the same structural composition as the whole system, each level of organization is a recursion of its super-system (Beer 1979, p. 68). A system is viable if it is able to maintain its configuration over some time.

From our point of view, the VSM serves as an underlying theory in order to map the necessary information channels within an organization. In information systems research, the VSM has been used especially in the context of information systems design and development (Vidgen 1998, Kawalek & Wastell 1999, Mumford 2003). The VSM has been criticized for various reasons: For the most part it has been argued that it promotes a purely functional understanding of complex systems and ignores human individuals (Flood & Carson 1993, Jackson 1989, Jackson 2000). This critic notwithstanding, as an elaborate theory, the VSM should allow us the analysis and evaluation of arvato's information and control channels with regard to specific functions and management requirements, as set out in the introduction. Therefore, we decided to apply the VSM in an action research study as a theoretical starting point for the diagnosing phase and the action planning phase. In addition, the VSM serves as an underlying theory and is tested against the observed outcomes.

3 ACTION RESEARCH STUDY

3.1 Organization and Business Processes – An Overview

arvato services healthcare Germany acts as a third party logistics service provider for the world-wide dispatch of temperature controlled medical products, instruments and spare parts mainly to clinics and laboratories. Currently, arvato's services are provided to five different customers (A-E) within four different temperature intervals. In 2005, more than 21,000 different article numbers were stored at the warehouse, approximately 145,000 delivery notes were executed with an average of three lines per delivery note and approximately 240,000 parcels were handled by on average 46 employees. arvato possesses the know-how for different transport solutions within the healthcare industry, bundles quantities for its customers and constantly evaluates different transport solutions provided by these specialized carriers. Before the acquisition, the arvato site was subdivided into six different departments. The organizational chart shown in Figure 1 gives an overview of the different functions at the site.

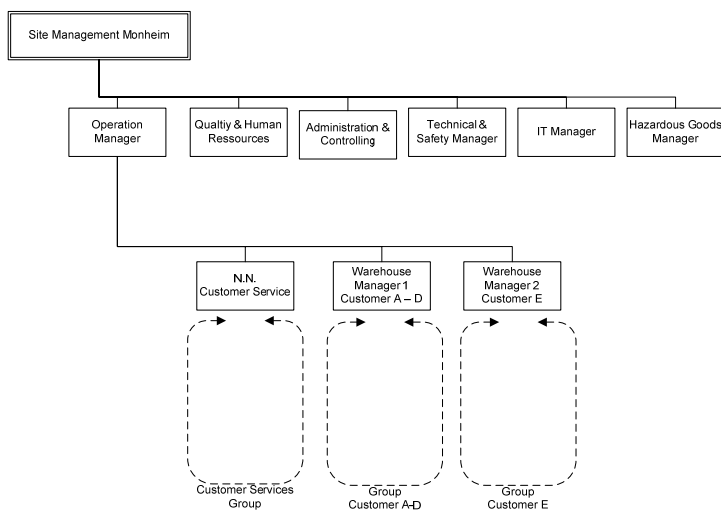


Figure 1. Organizational chart – arvato services healthcare Germany

The replenishment process at arvato typically consists of inbound transport, goods-in and warehousing. The order-fulfilment process deals with the product delivery to clinics and laboratories. Customers submit their order either by e-mail, fax, telephone, letter or web front-end to the medical products producer (or directly to arvato). After the order has been transferred to arvato, the corresponding products are picked and packed. Each shipment is double-checked, signed and finally confirmed in the warehouse management system or client system. All shipping documents are printed out and optional customs documents are included before the products are handed over to the carrier. Hazardous goods are handled separately (goods-in, warehousing and goods-out) in order to fulfil all legal requirements.

3.2 Rigour – Action Research Approach and Methodology

The over-riding concern of our approach is that the research we undertake should be both relevant to the objectives, as set out in the introduction and rigorous in its implementation. Due to our philosophical assumptions, we believe that a philosophy which integrates interpretive and positivistic approaches is required for this purpose (Lee 1991, Lee 2004). In the situation as set out in the introduction, the new site manager initiated a study to look at the company’s organizational structure and information systems. From a practical perspective, we engaged into a rigorous and systematic analysis, evaluation and design of the information channels of arvato services healthcare Germany. From a research perspective, we were interested in solving the practical problem in a manner that contributes to the existing body of knowledge about organizational engineering. In order to satisfy these objectives, we engaged into a participant action research study (Baskerville & Wood-Harper 1996, Baskerville & Myers 2004).

Participant or participatory action research realigns the roles of researcher and subject into more collaborative and synergistic forms, sharing the responsibility for theorizing with client participants (Baskerville 1999). This allows the application of theories in an organizational setting in order to test them against the observations (Type ET generalizability) (Lee & Baskerville 2003). After having created a subjective understanding of everyday meanings and common sense within the observed organization which provides the basis for the interpretive understanding the researchers create a positivistic understanding in order to explain the empirical reality – the explanation being a scientific theory which can be tested against the subjective meaning as recorded in the interpretive understanding (Lee 1991, pp. 351-354). After the planned actions are completed, the interventions need to be evaluated with outcomes being compared to project objectives, expectations and theoretical hypotheses.

The study follows the action research cycle as described in Figure 2. We conducted four cycles in total and applied the VSM at the level of arvato services healthcare Germany as the system in focus.

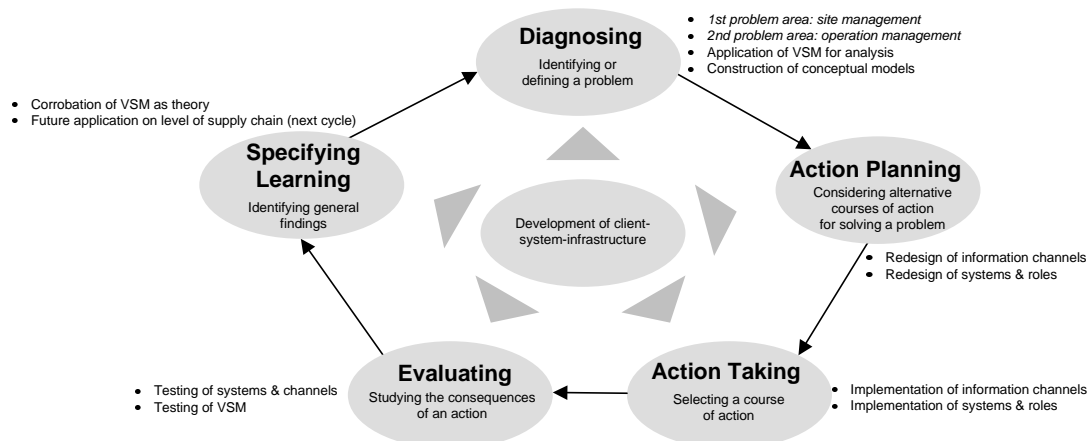


Figure 2. Action research cycle at arvato services healthcare Germany

As Silverman argues, information systems researchers would do well to think a long time before rushing into yet another interview-based study for decontextualized accounts of ‘meanings’ are very limited guides to the complexities of human-computer interaction (Silverman 1998, p. 19). Instead of focusing on how people ‘see things’, we should focus on how people ‘do things’ (Silverman 1998, p. 3). Following this, we focused on how the information systems and information channels at arvato services healthcare Germany actually worked in practice.

Since one of the participant action researchers was part of arvato services healthcare’s management, we had full access to the operational processes, information systems and reports. Administrative documents, work descriptions, print-outs of reports and field notes of the researchers from experiencing and enquiring were collected in a project diary. The diary served as the main source of data for the following interpretation. Additionally, we used the MetaMIS approach (Holten 2003) for designing conceptual models and for analysing and redesigning the reporting. Our interpretive understanding was refined by insights gained from operational experience and observation of actual activities and resulted in a presentation of facts about the reporting in such a way that all project participants could understand it and relate it to their objectives. We applied the VSM as a theory for matching our interpreted data during the diagnosing phase and the action planning phase. Primarily, it was used to derive the cause of the observed problems (Davison et al. 2004, p. 74). The development of the VSM of arvato was the responsibility of one of the researchers who reflected on the obtained and interpreted information. The other researchers provided feedback and critique on the model.

3.3 Relevance – An Exemplary Action Research Cycle for Site Management

In the following, we will exemplarily sketch one of the four conducted cycles and present the main findings for site management. Two possible dimensions for levels of recursion were determined within the VSM based on 1) the medical product producers (arvato’s customers A-E) and 2) the functions carried out by arvato. The first dimension was chosen for the first level of recursion for further diagnosis since we decided that a customer-oriented analysis was required. Figure 3 sketches the resulting VSM before any intervention has been carried out. The sub-systems of the first level of recursion are labelled in capitalisation (e. g. System One as “ONE”), whereas the second level of recursion uses numbers (e. g. System One as “1”). After having analyzed the current situation and concrete practical problems with the help of the VSM, actions for improvement were planned and implemented and the results for the problems and the underlying theory were evaluated.

3.3.1 Diagnosing

Problem Description: As pointed out before, the site manager was not able to focus on the acquisition of new customers and on extending existing business since he was totally involved with managing daily operations and internal communication. The most time-consuming daily core activities of the site manager at beginning of 2006 are presented in Table 2.

Problem	Description	Time spent
1)	Meeting with the operation manager in order to discuss the actual work-load in the warehouse and customer service and to define appropriate corrective actions.	approx. 1.5 hour per day
2)	Analyze different operational reports received by e-mail and answer, write and forward e-mails.	approx. 3 hours per day
3)	Have many different face-to-face meetings with departmental heads since they were not trained to receive and answer e-mails.	approx. 3 hours per day
4)	Carry out regular visits to the warehouse since all employees were expecting site management to visit the warehouse once per day. The daily visits to the warehouse had been established by former general management.	approx. 1.5 hours per day

Table 2. Observed Problems / Time-Consuming Tasks for Site Management

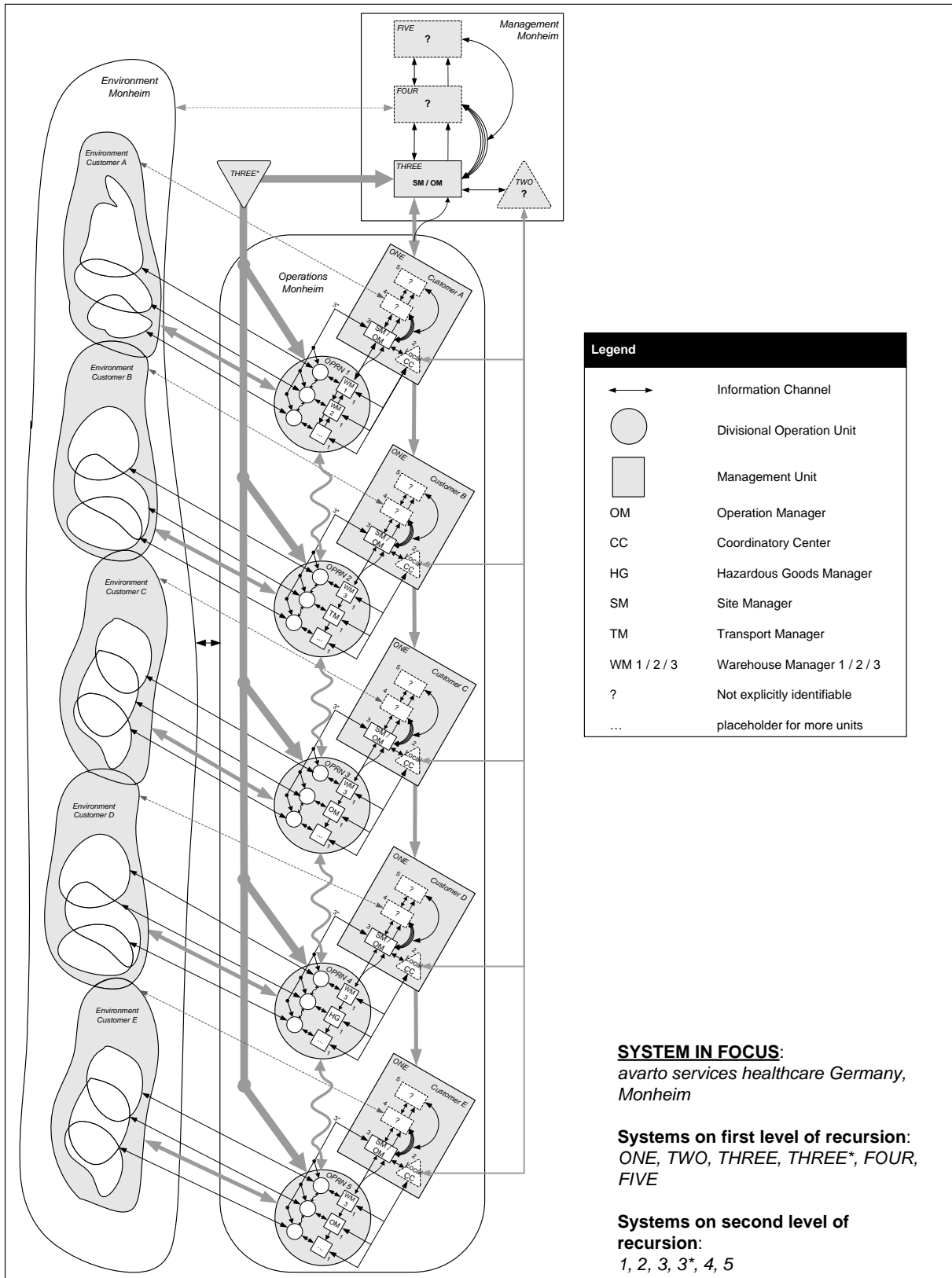


Figure 3. The Viable System Model of arvalo services healthcare Germany before any intervention

Theory: First of all, it became very clear by modelling the organization with the help of the VSM that there was nobody really focussing on the future development of the organization. The “external eye”

(System FOUR) of the organization was missing since management was totally involved in internal daily operations. Furthermore, no additional resource for business development and sales was at hand and nobody focused on the development of existing customers (System 4). In respect to the mentioned problems listed above, the causes for the problems were derived as summarized in Table 3.

Problem	Hypothesized Causes with Respect to VSM
1)	The old job descriptions, responsibilities and reporting had become obsolete after the integration into the Bertelsmann group. The site manager was e. g. too involved with internal stability (daily operation management, System THREE / System 3) from a cybernetic perspective. Based on the VSM, the daily meetings between site management and operation management were not required, since daily operation entirely belonged to the responsibilities of the operation manager (as System 3). In addition, the frequency of meetings and number of interactions (System THREE / System 3) was too high and consumed a lot of time for both employees. Daily operational issues were not solved in a decentralized, autonomous manner but automatically communicated up the hierarchy. The operations manager was not able to focus on extending business with existing customers, since he was too involved with internal communication with site management.
2)	Site management decided to analyze all reports available within the organization, since reporting consumed a lot of time. MetaMIS was used as a conceptual modelling language to model the actual reporting, to get an overview of the company-wide reporting and to establish a fit between the information channels and the new functions after the integration into the arvato group. The main findings concerning site management's reporting were: <ul style="list-style-type: none"> • Some existing reports showed a non-appropriate level of aggregation (e. g. detailed report of to be replenished deliveries per day). • Some reports were not showing the required dimension scope (e. g. the profit and loss reporting was not available on a customer basis). • Some reports were provided too frequently (e. g. outstanding shippers report per day). • Customers had different "internal" operational reports showing different key performance indicators and/or different dimensions. The comparison of operational reports of different customers was therefore not possible (a System TWO was missing). • Based on the operational units defined within the VSM (second level of recursion) some key performance indicators and/or entire reports were not monitored for services provided by arvato (e. g. transport management). • Alarm channels had been defined, but responsibilities, backups and interactions had not been defined clearly enough. <p>To sum it up, the reporting was not appropriate any more for the new structure and strategy of the organization and had to be reorganized.</p>
3)	The many daily interactions between the site manager and the departmental heads produced unplanned interruptions throughout the day. Some of the daily interactions between site management and departmental heads concerned minor important or non-urgent issues for the organization. Moreover, many of these interactions required new interactions, since involvement of other employees became necessary. An appropriate channel for a standardized and coordinated exchange of information was missing (no System TWO / no System 2).
4)	System THREE* as the audit channel had been established by former general management as an essential part of running the company. The frequency of warehouse visits (audits) was very high and consumed a lot of site management's working time. In addition, the daily warehouse visit partly served to establish a System FIVE / System 5 (feedback culture).

Table 3. Hypothesized Causes of Problems, based on analysis of the VSM

3.3.2 Action Planning & Taking

First of all, the Bertelsmann group and the new overall strategy were presented to all employees at the beginning of 2006 (new site management acting as System FIVE). In order to quickly establish a balance between the internal and external eye of the site (responsibility of System FIVE), the site manager decided to hire a new employee for sales activities and business development (System

FOUR). Additionally, interns were hired for market research purposes. Further actions are described in Table 4.

Problem	Description of Action
1)	Due to the acquisition, job descriptions and responsibilities were updated, discussed with each employee and signed afterwards. The functions and corresponding responsibilities were defined accordingly to the new role of each employee within the VSM, e. g. the operation manager became fully responsible for operation management (internal eye of the VSM, System THREE / System 3). Therefore, the daily meetings between the operation manager and the site manager were reduced to a weekly basis. An operation meeting (a new System TWO) has been established to bundle discussions. However, in case of exceptions (alarm channel), the operation manager is still able to contact the site manager at any time. The operation manager has been enabled to decide autonomously. Based on the weekly interaction, there is now more time for the operation manager to focus on extending existing business (System 4).
2)	The reporting information system has been reorganized corresponding to the new job descriptions. The frequency of reports concerning operational issues provided to site management has been adjusted to a weekly basis and the level of aggregation of some reports have been changed to weekly (number of shippers, number of lines, outstanding shippers). At the same time, reporting standards have been defined (System TWO / System 2), corresponding to the different recursion levels in the VSM (customer-oriented and functional view). Mainly, operational key performance indicators were standardized between customers (System TWO). Financial reporting is now customer-oriented since operational and financial reports have been set up per customer and an activity-based costing per customer has been implemented successfully (e. g. a profit and loss report per customer now fits the structure of first level of recursion of the VSM). Important reports for transport management (number of complaints per carrier, number of on-time deliveries per country per carrier) and goods-in service levels (number of on-time replenishments per day) have been implemented. Additionally, internal deviations are now documented, categorized and analyzed on a monthly basis. Important alarm channels have been reviewed and extensively been discussed with selected employees to clarify responsibilities and actions to be taken.
3)	General rules for communication have been introduced on the highest hierarchy level. If an issue arises, every departmental head first of all has to evaluate if the issue is important and urgent for the entire company before escalating it to site management. If the issue is less important or non-urgent, it is to be discussed jointly within the new established weekly departmental head meeting (new System TWO) and possible solutions are to be prepared beforehand and presented during the meeting. Furthermore, e-mails are now used more frequently to exchange information and to balance the work load. In addition, upcoming issues are tracked and prioritised by an incident management system.
4)	The frequency of audits (System THREE*) has been reduced. Now, site management visits the warehouse and customer service approximately two days per week for one hour. As a substitute, a meeting with all employees (System FIVE / System 5) has been introduced to allow employees to give structured feedback on a regular basis.

Table 4. Implemented Actions for Site Management during Intervention

3.3.3 Evaluation

Due to the reorganization of information channels (weekly operation meeting, no mandatory daily visits to the warehouse, redesign of reporting), the site manager has been able to spend more working time on the future development of the site (System FOUR) and to build up an overall company culture (System FIVE). Within six months, a network of contacts with potential customers have been set-up, the sales pipeline has been filled, seven offers have been sent out and three contracts (referring to one new customer and two service extensions with existing customers) have been signed. Standard reports for business development activities have been set up. In addition, based on the market research carried out, the pharmaceutical industry has been identified as an interesting future target market. Therefore, the application process to obtain a pharmaceutical license for storage and distribution of drugs has been initiated to increase the number of possible potential customers to be contacted.

After having set up standardized financial and operational key performance indicators (System TWO / System 2), a comparison of different customers (e. g. in respect to productivity, service levels and profitability) has become possible. The profit and loss analysis carried out per customer showed an overwhelming dependency on one customer and reemphasized the focus on sales activities to diversify and to balance the dependency between all customers. In addition, arvato now monitors the service quality of different carriers for different countries. Goods-in service levels (replenishment time) are documented on a daily basis and analyzed on a weekly basis.

An additional consequence of the new reporting has been *empowerment*. In the past, lower echelons in the hierarchy (e. g. the warehouse managers) were not fully responsible and therefore not fully taking care of daily operations. Now, the warehouse managers use the daily reports to control their business and to autonomously initiate corrective actions respectively. New roles and responsibilities have been accepted and decisional power has been delegated, e. g. for short term resource planning (Management Unit on third level of recursion).

The site manager receives fewer reports by e-mail per day and now discusses only all unsolved operational issues on a weekly basis during the operation meeting (System TWO). Furthermore, the number of daily interactions has been minimized and standardized with the departmental heads. The weekly departmental heads meeting (System TWO) ensures that decisions can be prepared jointly and speeds up decision making, since knowledge from different areas is present at the same time in the same room. A prerequisite for effective departmental head meetings is that everybody is prepared and collects relevant information for different solutions beforehand in order to speed up decision making. Topics are now discussed in the team and protocols are used to document decisions, working tasks, responsibilities and deadlines in a structured way. E-mails are used to communicate non-urgent requests and information beforehand. Because of the reorganization and bundling of issues, the site manager is finally able to focus more on the future development of the site (System FOUR) and on the balance between the internal and external eye (System FIVE).

3.3.4 *Specifying Learning*

Based on an action research study carried out at one of arvato's sites, cybernetics and conceptual modelling have been combined to diagnose and redesign an existing organization. The VSM helped to structure a given situation and provided many useful hints for improving information flows within a real organization. By combining the VSM with conceptual modelling, it became possible to analyze the former reporting information system and the information channels within the organization. This fact tremendously helped the new site manager to get an overview of the company (functions of employees, interactions and IT systems) during the first weeks after the acquisition of the company.

An interesting finding was that empowerment worked out after the new roles – defined on basis of the VSM – had been accepted by the corresponding employees. It was critical that employees accepted the new adjusted reporting to really control operational activities. The jointly definition of reports for controlling and monitoring business processes was necessary to ensure the later acceptance in daily business. In our study, the warehouse managers had to see for themselves that the reports were containing the appropriate productivity measures. In order to get used to the new reporting, operational reports are presented and discussed every week in the operation meeting with warehouse managers. Additionally, we learned that by having all weekly meetings (departmental heads meeting, operation meeting and staff meeting, i. e. Systems TWO) on the same day and in an ordered way the communication and implementation of decisions into the organization have been further improved.

The primary contribution of the VSM and the conceptual models were that they helped stakeholders and researchers to challenge their previous assumptions regarding the flow of information between departments and individuals. Thus everybody was able to see the big picture as well as the actual flow of information to and from the functions and the impact on other systems of the VSM and functions respectively. It highlighted the overload of specific functions and individuals within the departments

and allowed us to form hypotheses about reasons for problems. The planned actions were designed to address these hypothesized causes.

The information and control channels within arvato have been improved by applying two types of actions: 1) changes in information systems, and 2) organizational changes (definition of new functions and roles, introduction of communication rules, standards and meetings). However, the VSM contains no general recommendation about the frequency of certain information exchanges or interactions. In addition, no instructions or guidelines are provided on how to implement information channels. Moreover, information about the most appropriate type of communication (e-mail, face-to-face, electronically, et cetera) for specific information channels is missing. During our analysis of the reports it became clear that the modelling of alarm channels and definition of actions to be triggered remains an open methodological issue. Last but not least, organizations are social systems and therefore highly depend on the people willing or not willing to communicate with each other. The VSM is no panacea, but provides a language to analyze a given situation in detail and to identify possible bottlenecks within an organization. Even though, some problems may only be solved with the help of sociological and psychological measures.

4 CONCLUSION AND OUTLOOK

Based on a real case scenario at arvato we introduced the organization, business processes and the existing information channels of an acquired arvato site. Two concepts, the VSM and MetaMIS, were applied to structure the analysis of existing information channels within the organization and to identify bottlenecks. With the help of both instruments, actions for improvement have been derived and implemented. We argue that the combination of both concepts is exceptionally suitable for analysing and redesigning the organization and improving the communication between all stakeholders. The VSM helped us to integrate the organization into the Bertelsmann group and to design a viable and healthy organization for the future.

Thus, our paper contributes to the field of Organizational Engineering (OE) in order to model, analyze and re-design a changing organization and to align business strategy and business support systems. Enterprise Architecture (EA) supports OE and aims at supporting business strategy by providing the technology and process structure for an IT strategy (Open Group, 2007). The concepts applied in our paper are therefore part of EA, because we model information flows — which define the requirements for information system design — within an organization for successful implementation of business strategy.

However, many of the required information channels have been set up by defining rules or by establishing meetings, and not solely by redesigning information systems (e. g. reporting). We propose that it would be useful to combine the VSM as a socio-technical meta-model for analysing and redesigning information channels with a) conceptual modelling for the design of information channels based on information systems and b) social science for the design of information channels between employees. Future research will aim at addressing these issues and at applying the concepts to the next levels of recursion (European Bertelsmann group level, supply chain level).

Thus far, no methodology is available that enables management to analyze and redesign complex inter-organizational scenarios and to validate and monitor the proper establishment of relevant interfaces respectively. We will therefore elaborate on a methodology for management for effective business integration. We are strongly convinced that the VSM can also be applied to inter-organizational scenarios and will provide useful insights for designing inter-organizational information channels in an effective way.

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