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### Thought and action

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## **Thought and Action**

*Change to the Customer  
in Community Pharmacy Practice*

Mark P. Mobach



Rijksuniversiteit Groningen

## **Thought and Action**

*Change to the Customer  
in Community Pharmacy Practice*

### **Proefschrift**

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## Prologue

My grandfather was a great storyteller, but also a man of hard work and a respectable perseverance. At the age of 18, he was a teacher at the school of Ulrum in the province of Groningen during the first World War. At that age, he had started with the gymnasium in order to prepare himself for his ultimate aim: a study of theology. When we were little kids, one of the stories he used to tell my sister, brother and me, was that, if he was tired during his study in the night time, he would put his feet in a tub with cold water and continue his study. We realized that a study of such nature would never be achievable for us, being ordinary mortals. By telling this story he provided us with a lively and enduring image of what hard work could involve. Later, I started to realize that hard work, like working on a thesis, in itself is not enough to achieve an end. Involvement of other people is an essential constituent of working on a thesis at a Faculty of Management and Organization, and also is great fun. Without this involvement I would never have been able to realize this thesis in its present form and quality.

My supervisors Jos van der Werf and Dick Tromp were committed to this study in a special way. As with other studies, it was common to debate relevant issues in all phases of the study, and, whenever necessary, they never hesitated to put my feet in the cold water. However, while other students usually feel some kind of loneliness while they are working on a thesis, it was rather special that I felt teamwork. I could always rely on them. To both I owe my greatest respect and gratitude since their contribution made this study a good learning experience. The promotion commission shed some new light on my thesis. This was very helpful in aiding me to become aware of where I stood (and where I now stand, with this final version). My roommates, in succession Jaco Rogier, Frans Weijdener and Jeroen Singels, were always a good mirror. I tested many working hypotheses on them. Even at the most inconvenient moments of the day, they were ready to respond and give help. A reliable office was manned by Jeannette Middelbos-Jager, Rita de Boer-Zeeman, and Trudeke Sanders. Prue Gargano helped me to improve the quality of my English. Alet van de Belt and Erwin Haan provided great support in the carrying out of the pilot study and the survey, and in the subsequent data processing. Moreover, the statistical processing was well guided by Derkjan Kiewiet and Herbert Hoytink; their insight has been very helpful. Additional statistical support was provided by Dirk Akkermans, Gwenny Ruël, Patrick Hagendijk and Eric Molleman. At the Faculty of Management and Organization, the Department of Design of Management and Organization and the Sector Studies group gave interesting and useful comments on my presentations, as did the 'dRUGs' group at the University Centre for Pharmacy.

In the pharmaceutical field, the organizations stichting Verenigde Nederlandse Apotheken (stichting VNA) and Stichting Apothekers in Loondienst Apotheken (SAL Apotheken) took the initiative to finance this study without any guarantee of positive



or usable results. That took courage, especially in these turbulent days for the community pharmacy sector. At the stichting VNA, we will always remember the courage and inspiration of the late Marius Bous. Ton Kelder of SAL Apotheken and Arnold van Oort and Cees Schaap of stichting VNA also provided us with useful discussions of the material. The support of the pharmaceutical field was overwhelming. Both the design and implementation of this thesis were possible thanks to the help of many pharmacy managers, and also of second pharmacists and assistant pharmacists. A special thanks is given to the pharmacy managers of the participating groups of stichting VNA and SAL Apotheken, and to other interviewed pharmacy managers for their openness. Lars Nilsson helped us with the first research proposal of this study. Moreover, Marja Coelewij of Farmac stimulated the pharmacy managers of stichting VNA to cooperate in this project. Drs A. Knapen of PharmaPartners, drs S. Rozema of Zorgverzekeraars Nederland and mw drs J.M.M. Hansen of Hoofdinspectie voor de Geneesmiddelen made comments on the questionnaires before the carrying out of the pilot study. Furthermore, I would like to thank all the people who were involved at the Royal Dutch Association for the Advancement of Pharmacy (KNMP), the Stichting Farmaceutische Kengetallen (SFK) and the Stichting Pensioenfonds Medewerkers Apotheken (SPMA) for their information and cooperation in the survey.

Words of thanks also for both my parents. They have always given me the freedom to make my own choices, even at a very early age, and have respected the choices I made. Finally, and most importantly, I thank Ettelies, my best friend and wife for the support she gave. Her support was not always about content, all the more about context. She provided me with a lot of distraction from my work and created an indispensable context for this piece of work.

Since all these people have participated, it would be complacent to use the personal pronoun singular *I* in this study. Therefore, I have decided to use the personal pronoun plural *we* in this thesis in order to indicate that others were involved in all stages.

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## A Guide through the Material

It is hard to predict the exact composition of the target group of a thesis, and it is even harder to predict how these people will read the material. At the risk of sounding too categorical, we do not actually expect that everyone will read the whole thesis, since it covers such a large variety of subjects. The subjects relate to classical survey research, action research, community pharmacy practice research, and health care policy. Consequently, one can expect at least four different groups of readers here: organization sociologists, action researchers, pharmacists, and policy makers. In order to help all these different readers, it was decided to include a guide through the material of this thesis. We present the results per chapter to give all readers an idea of the 'Leitmotif' of this study. This guide should enable you to read the chapters in which you are specifically interested without having to read the others. If you still intend to read all the material, you are of course very welcome. But it was inevitable that there be some repetition of description throughout this thesis. Specialist texts have been marked with a smaller character size and margin, and have been printed in italics. It needs no saying that if you are interested in a special background and/or according decisions, you only have to 'dive' into these text blocks. These blocks are only used in the empirical chapters 4, 5 and 6. In chapters 4 and 5 the blocks relate to statistical discussions, in chapter 6 it relates to empirical illustrations. In chapters 4 and 5, you should be able to read the thesis without these text blocks.

Chapter 1 *Introduction* is recommended for all readers. In this chapter the genesis of this study is described. The special cooperation between the Faculty of Management and Organization and the University Centre for Pharmacy is illuminated. We also describe our relationship with the financiers and customers of this project, stichting VNA and SAL Apotheken, and the influence they had on this thesis. The financiers, who own and support community pharmacies in the Netherlands, were interested in improving their knowledge of organizational change. This change consisted in an improvement of the customer orientation of community pharmacies in general, and their pharmacies in particular. It was decided to study problems of pharmacy managers in their 'travel' to the customer. Furthermore, the role of support in this 'travel' was studied. It was expected that this study would unravel problems, which, in turn, would enable the pharmacy managers, as well as the financiers, to improve their grip on this process of change. As a consequence some basic research questions were introduced: 'What problems does a pharmacy manager face if he/she 'travels' to the customer?' and 'What is the role of the support in this process of change?'.

Chapter 2 *Design of the Study* can be read by scientists with various backgrounds; managerial as well as pharmaceutical. First of all, we reflected on a dispute between scientists, preferring either 'hard' or 'soft' data. Then, the methodological base was

presented and the design of the study was determined based on the refined research questions. Since organizational change was at stake in this study, it would seem appropriate to involve some literature on management science in such a design. Furthermore, it would be convenient for us to define a point of departure and a possible destination for the pharmacy organization, based on literature from pharmacy practice research. In order to refine our analytical descriptions in practice, in *phase one* a survey was planned, but not before testing some different methods. Finally, in *phase two*, the organizational change to the customer and the role of support in this process of change would be studied in detail.

Chapter 3 *Theoretical background* may be quite interesting for action researchers and other management scientists, and, in addition, for pharmacists. A theoretical starting point is defined for management science (3.2.) and for pharmacy practice (3.3.). With respect to management science, it is argued that a difference between intention and realization, respectively labelled as *thought* and *action* later in this study, can be expected, as well as the emergence of strategies ‘along the way’. Obviously, we would expect some time to pass from intention to realization. Consequently, the methods applied should be able to visualize this process of change over time. For the organizational process of change, it was decided to use Soft Systems Methodology (SSM). SSM is a methodology which could enable us to unravel ‘knots’ related to subjectivity and complexity. Based on our theoretical description, we also would expect many problems with the formulation and usability of aims and criteria, the latter comprising norms and monitor instruments. With respect to pharmacy practice research, three pharmacy mixes of activities were analytically postulated: the product mix (pharmaceutical activities), the process mix (financial activities), and the customer mix (customer activities). Whereas the term ‘activity’ relates to the modelled world or is the neutral term for the carrying out of an act, the term ‘action’ relates to the observed real-world action. It was assumed that the pharmacy manager would prefer to stress one set of activities rather than another. In addition, it was assumed that the Dutch community pharmacy manager generally seeks to structure the organization in accordance with the customer mix.

Chapter 4 *Validating our Methods* is recommended for organization sociologists. Above it was argued that, it would be convenient for us to have some point of departure before the ‘travel’ to the customer mix. In *phase one* this point of departure was elaborated. Some methods were tested in chapter 4, the first part of *phase one*, since no validated methods were available with respect to this specific issue. In chapter 5, the second and next part of *phase one*, the analytical point of departure, distilled from management science and pharmacy practice research, would be refined in community pharmacy practice by means of a survey. In chapter 4, eight methods were tested for the purpose of this survey. Ideally, the selected methods

ought to enable us to describe intention and realization in a large sample of Dutch community pharmacy managers, in the context of the three analytically defined pharmacy mixes of activities. Moreover, the selected methods ought to enable us to describe the general features of the studied pharmacies for the purpose of generalization. A total of three methods was selected for the survey. In the method selected for *thought*, or intention of the pharmacy manager, which of the three pharmacy mixes was perceived as being the most important was studied. In the method selected for *action*, or realization of the pharmacy manager, which of the three pharmacy mixes was actually performed most was studied. The method for *profile* ought to provide us with a general description of the pharmacy. The decisions for selection were based on significance, reliability, usability, and correspondence of the results for *thought* and *action*. With these three selected methods the pharmaceutical sector could be studied in a survey.

Chapter 5 *Survey* is also recommended for organization sociologists who are interested in the classical survey method. This second part of *phase one* comprised of application of the selected methods from above in a large sample. The response to the random sample was reasonable: 47% (142). This sample appeared to be a good representation of the population of Dutch community pharmacy managers. Consequently, generalization to the population was made. The results for *thought* show that product and customer actions were perceived as being most important. The results for *action* show that most of the performed actions related to product and process. As could be expected, the results of *thought* and *action* of most pharmacy managers did not correspond. Most pharmacy managers managing *inconsistently* (the situation in which *thought* and *action* did not correspond), managed in the customer mix. In contrast, most pharmacy managers who did manage consistently, managed in the product mix.

The study thus showed that most consistent positions were found within the product mix; most *inconsistencies* were found within the customer mix and the process mix. A possible explanation for the consistency in the product mix is that the pharmaceutical actions in both *thought* and *action* relate to the product-oriented tradition of the profession. The product mix relates to the field in which pharmacy managers are well-educated and trained. It appears to be their main purpose. The traditional conception of pharmaceutical tasks of the community pharmacist is still of great importance in education, work and mind of these managers. However, the observed differences between *thought* and *action* appeared to be special. Within this study, a contrast between customer and process actions was observed. Normally, in a profit-oriented organization, customer activities are expected to lead to an improved financial position. In contrast, the results of this study showed other perceptions of importance. Customer and process were not related in perceived importance. A

relation between product and customer was found. The professional quality of the pharmacy manager was perceived as being the most important issue here, and not profit. Now that we have determined our point of departure, in the following *phase two*, the ‘travel’ to the customer mix will be studied.

Chapter 6 *Managing Organizational Change* may be interesting for action researchers and other management scientists. Here, the main questions of this thesis were studied: ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer?’ and ‘What is the role of the support of stichting VNA and SAL Apotheken in this process of change?’. It was argued that in such a process of change, a pharmacy manager would be in need of an aim, for instance, ‘improve customer relations’, and a mechanism in order to evaluate whether the intended activities were successful in the light of this aim. These instruments are necessary in order to survive, and to be able to judge if the modelled activities and/or the performed actions made a contribution to the process of change, or were a waste of effort. Generally, criteria are involved in evaluation, which comprise norms and monitor instruments. In this thesis it was decided that norms would be the measures of performance by which a certain activity, set of activities or model could be judged. Measurements are instruments which visualize or monitor to what extent the norm has been achieved.

Pharmacy managers experienced problems with the formulation and use of aim, norms and monitor activities and problems linking aim and customer activities. We argued that it is not easy for pharmacy managers to define a usable aim and, accordingly, criteria which ‘cover’ the modelled customer activities. In the pharmaceutical sector most aims, norms and measurements, in order to monitor or exert control, related to the product mix and process mix. However, in the customer mix, some aims were rather abstract, vague and defined for a meso level. In this situation it was hard to find proper criteria. In terms of customer activities, and related criteria for efficacy, to monitor if these customer means worked, we argued that many managers evaluated their modelled activities in a quite correct way. Criteria for efficacy were modelled and actually used in the control process, which sometimes led to control action. However, a main problem was: What to do with the result if a measurement for efficacy was made without having a usable norm? Not all managers performed control action in managing such situations. Another problem was that some pharmacy managers did not monitor their modelled activities at all. Regarding the customer mix, a lot has to be learned. The managers were in need of aims and evaluation for their individual pharmacy practice. We also noted that support in the pharmaceutical sector was poor with respect to these problems. Although many organizations (like the KNMP) which operate in the sector are a good source of new ideas, they fail to give proper support to the individual pharmacy

manager in the formulation and measurement of aims to do with the ‘travel’ to the customer mix. Pharmacy managers are not helped by meso goals and evaluation, especially if they do not know how to translate this to their pharmacy practice. They are in need of micro-instrumentalization: aims, norms and monitor instruments for customer activities, applicable to their own pharmacy.

Furthermore, the support of stichting VNA and SAL Apotheken for their pharmacy managers was analyzed with quantitative and qualitative methods. The quantitative survey of 1996 and 1997 of 63 pharmacy managers suggested that no striking or ‘alarming’ differences were observed between supported and non-supported pharmacy managers. But we did find some subtle differences in our qualitative data. Many of the ideas for modelled customer activities came from the support structure of stichting VNA and SAL Apotheken, as did some monitor activities. In fact, many inventive and fresh customer activities, also usable in organizations other than those within health care, were modelled at pharmacies of stichting VNA and SAL Apotheken (VNA/SAL pharmacies). However, with respect to most of their modelled activities, the meetings with the colleagues were not of a great help to most supported pharmacy managers. We therefore concluded that the difference between supported and non-supported pharmacy managers was minimal in the modelled change to the customer mix. Then, having described empirically *phase one*, the point of departure, and *phase two*, the problems in the change to the customer mix, some conclusions were drawn.

Chapter 7 *Conclusion* is recommended for all readers, but was mainly directed at policy makers within health care. In chapter 3, three pharmacy mixes of activities were postulated analytically. These pharmacy mixes were refined empirically in *phase one*, which showed that product and customer were perceived as being the most important actions, although most of the performed actions related to product and process. The results of *thought* and *action* of most pharmacy managers did not correspond. With this point of departure, the ‘travel’ to the customer mix was studied in *phase two*. In this phase, it was argued that pharmacy managers experienced problems with micro-instrumentalization in the change to the customer mix. They were in need of properly defined and linked aims, norms and monitor instruments, applicable at their individual pharmacy. Moreover, it was concluded that the difference between supported and non-supported pharmacy managers was minimal in the modelled change to the customer mix. Based on these results, the pharmaceutical and organizational news of this thesis were discussed.

In the section *pharmaceutical news* of chapter 7, the results were discussed in the context of current developments in the community pharmacy sector. We argued here that, although some of the observed problems could be solved, some special

problems would remain within the community pharmacy practice. We aim at the tension between money and care. A possible explanation for this tension can be threefold: pharmacy managers do need profit in order to enable survival, making profit by selling medicine to ill people is perceived to be not very ethical, and the authorities are in need of a reduction of public spending on health care. Within other lines of business (McDonald's, for instance), a usual aim would be something like 'maximize profit', 'minimize cost', or 'increase shareholders' value'. In fact, the aim 'maximize profit' would 'manage' the consistency between the other activities. In the community pharmacy, things are different: the pharmacy operates within a politicized line of business. However a pharmacy, as any organization, has to make profit in order to survive. This profit is problematic and under major pressure. The authorities contends that pharmacy managers concentrate on (negative) process activities and make too much money. On the macro level, it has to be acknowledged that for the authorities, increased public spending on health care is problematic. In order to solve the health-care expenditure problem of the authorities, some money has been 'pressed' out of the sector. Consequently, the income of the pharmacy organization, among many other organizations in the field, is under major pressure. In one sense, it could be argued that the authorities have been quite successful in cost containment of the pharmaceutical sector. In another sense, it could just as well be argued that this has evolved in a rather unstable regulation. We can expect the pharmacy managers to improve their financial grip on the pharmacy, reduce their costs, or even look for alternatives, which in fact might have stimulated the occurrence of the observed process-mix actions. We then argue that the reaction of the pharmacy managers is systemic and cannot be solved by further cut-backs, since this will again stimulate the money orientation of the community pharmacy. However, we doubt if that latter effect is intended. Ideally, from an organizational point of view, the activities within the community pharmacy would have to serve both profit and care in order to enable survival; or, in other words, making the Hippocratic oath profitable. But this is precisely where the main part of the pain in the discussion lies: maximizing profit by selling medicine to ill people is perceived not to be very ethical. We would argue that this problem will not be resolved within the current context of the Dutch community pharmacy system. It is assumed here that this particular complication of money and care will remain for the community pharmacy manager, as well as for other managers in the health-care chain where money and care are entwined. These managers will have to learn how to deal with this specific problem in order to improve their grip on the organization.

We consider there to be two options relevant in dealing with this problem. First, we can expect the tension between money and care to always be present; it is a systemic feature in the line of business. Based on the results so far, we suggest that it is not possible for the pharmacy manager to solve this problem alone; there has to be a

support structure showing how to deal with the tension between care and money. Preferably, the support should be on an individualized basis and should be aimed at micro-instrumentalization of aims, activities, norms, and measurements. Second, we can try and eliminate financial incentives for pharmacy managers. In this situation, if the authorities took caring for the community pharmacy seriously, we would expect them to pull the financial incentives out of the market. Such a measure would for example be the cooperative purchase of medicine organized by the Department of Public Health. If this happened, the pharmacy manager could improve the attention given to pharmaceutical and customer activities at the pharmacy. It has to be admitted though, even in this situation there would still be a tension between money and care.

Within the section *organizational news* of chapter 7, we discuss how both the quantitative and qualitative studies provide a relevant and new view of this pharmaceutical matter. The quantitative study helped us in the definition of a starting point. As could be expected, no pure types of the product mix, process mix, or customer mix were observed. It also became clear that by using theories (even classical ones) we were able to constate new facts relevant to particular lines of business. We found that the seemingly evident link between the customer mix and the process mix, was missing, and that the product mix was still the pivot within pharmacy practice. The qualitative study was made with SSM; a powerful methodology for improving our knowledge of ‘messy’ problematic situations. We used the general shape of SSM in order to model. Furthermore, we showed that the definition of ‘emergent properties’ gave a powerful frame of reference by which we can judge the consistency within the modelled world and the real world, and between both worlds. With this frame of reference we could say something about the sensibility of the modelled activities and, in addition, of the real-world action. It is amazing to see that we just need a model, some flavour of real-world action, added with an explanation of the manager, in order to say something about the sensibility of the real-world action of pharmacy managers. Activities, actions and explanations have to form a purposeful whole, separately and together. The degrees of freedom in producing, interpreting and explaining models and real world are high. Although these degrees of freedom are apparently very high, practice showed that it is hard for managers to create consistency between their model, their action, and their ex-post explanation all together. In this study, the main aim was to find managerial problems in organizational change. We in fact found and described many of the problems faced by pharmacy managers with the use of SSM. We expect this thesis to have improved knowledge of organizational change to the customer mix within community pharmacy practice. However, the key to the solution of these problems is still out in the field. Pharmacy managers themselves will have to improve micro-instrumentalization of aims, norms and monitor instruments for customer activities, and, in addition, they



will have to learn how to deal with the tension between money and care. Hopefully, in future new research will improve our knowledge about these evolved new subjects.



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## Chapter 1 Introduction

### 1.1. Introduction

The domain of this thesis is health care, and in particular, the manageability of the community pharmacy by the pharmacist in the Netherlands. In 1994, to serve the purpose of this thesis, a project was begun in which customer activities of Dutch community pharmacies would be studied. The project was named *APOM-project* referring to the Dutch abbreviation of pharmacy, organization and management. Within this project the Faculty of Management and Organization and the University Centre for Pharmacy, both at the University of Groningen, cooperated with stichting Verenigde Nederlandse Apotheken (stichting VNA) and Stichting Apothekers in Loondienst Apotheken (SAL Apotheken). These latter two organizations, active in the field of community pharmacy practice, financed this project mainly. Some additional financial support came from the Faculty of Management and Organization. Within the context of this cooperation, we believe that this project has been rather special in several ways.

First of all, we note that the cooperation between the Faculty of Management and Organization and the University Centre for Pharmacy has been special. Although managerial issues have become increasingly important for pharmacies over the last years, only a very few studies have described managerial issues within the individual community pharmacy practice. Consequently, this study offers a rather new perspective. Furthermore, it should be noted that the research tradition between both faculties is rather different. A main part of the studies at the Faculty of Management and Organization is out in the field; at the managerial actor. The focus is on gaining insight into managerial and organizational processes. At the University Centre for Pharmacy most of the work is different, although some of the work is also out in the field. For example, in pharmacy practice research compliance, pharmaceutical interventions, patient outcome etc. is described. Moreover, it could be argued that issues like 'drug resistance of the tubercle bacillus' (WHO 1997a), 'contaminating transforming proteins' (WHO 1987) and 'helminths coating themselves with host materials in order to hide their antigenic identity' (Lachmann 1998) do also suggest the presence of managerial actors in diseases. However, it seems evident that no one would suggest immediate field research in order to study the behaviour of proteins, bacilli, or helminths and their reaction to drugs. A laboratory would appear to be a more appropriate and safe environment to start such a study. As could be expected, a substantial part of the work at the University Centre for Pharmacy is performed in laboratories. This affects the style of performing research. Whereas a pharmacist would search for algorithms underneath chemical processes, many management scientists would doubt the existence of such algorithms within managerial and organizational processes. The specialty of this project lies in the fact that scientists from both these research traditions have been involved in this project.

Moreover, the cooperation between stichting VNA and SAL Apotheken has been rather special. Both organizations originated from different ideals and are separate market parties in the field. Stichting VNA started with the penetration of new pharmacies and concentrated on the financial survival of these pharmacies. The foundation works on the acquisition of pharmacies and their temporary operation. In doing so, they give young pharmacists an opportunity to start their own business and to promote the quality of professional standards. SAL Apotheken tried to eliminate some of the financial incentives for the pharmacist. It is a foundation which concentrates on the appointment of pharmacists on the basis of wage-earning and separates the amount of medicine sold from the personal income of the pharmacist. Such differences could have been problematic in the performance of this study, for example, with respect to secrecy of delicate organizational data. However, the cultural differences did not in any way affect the performance of this study.

Finally, an increasing number of studies at Dutch universities are financed via external parties, which, in return, hope to improve their knowledge of some specific matters. This so-called contract research comprised about 11% of the total revenue for research of the University of Groningen in 1997. Seen in this light, this project is not very special since many other projects are financed similarly. However, the nature of the cooperation between the two faculties of the university and these two sector organizations was rather special. A delicate balance between the independent position of the university and the involvement of the financiers had to be found. Therefore, we refused any influence of the financiers in terms of the results and conclusions of this thesis. They were, however, the first to receive the results and conclusions, in order to give them some time to respond to the material in terms of their own organization. Furthermore, there was no guarantee given for the usability of the outcome, not even if it were a positive outcome which might be useful in improving the manageability of the community pharmacy. There was a substantial risk for the financiers, as it were. In the most extreme case this could have meant: no cure, but still pay. Fortunately, it did not come to this. In fact, the results and conclusions of this thesis were used by the financiers. We believe that their influence on the design was a crucial factor here.

Although the financiers did not have any influence in terms of results and conclusions, they did however formulate some problematic situations which were actually adopted in the design of this study. Stichting VNA and SAL Apotheken intended changing their pharmacies. They wished to improve the customer orientation. Their main interest was to provide help for individual pharmacists. A study was welcome in order to analyze such a process of change. In connection with this issue, they were interested in managerial problems and the role of their support structure. We argued that, in order to provide a sketch of problems in organizational

change, it would be helpful to define some solid point of departure, which also might be useful for the debate in the field. It was decided that both a theoretical study and an empirical study would be used for this purpose. For the theoretical study, issues from management science and pharmacy practice research would be used. For the empirical study, a broad survey was intended in the Netherlands. Moreover, it should be stressed that for me, the learning experience of performing such a survey was of major influence on this decision also. Within this approach the pharmacies would be described on a more general level; the meso level. Based on these results, we would continue our study on the micro level. This part of the study was initiated by stichting VNA and SAL Apotheken. Their main interest was to improve their knowledge of managerial problems in organizational change to the customer orientation, and, in addition, to improve their knowledge of the role of their support structure in such a process of change. Consequently, the study was designed in such a way that these results could be expected.

### **1.2. Aim of the thesis**

A basic aim of this thesis is to improve knowledge about organizational change within community pharmacy practice. Or, to be more specific, we would like to make it easier for pharmacists to get a grip on such a process of change. In this context, it should be noted that the role of the pharmacist is changing in the Netherlands. Where the pharmacist concentrated on the dispensing of medicine some years ago, the pharmacist now concentrates on the customer, or at least does the utmost to improve the customer orientation of the pharmacy. It appears evident that, in this context, the pharmacist needs managerial qualities. Therefore, in this thesis, we preferred the term 'pharmacy manager' to 'pharmacist'. The pharmacy manager works on pharmaceutical tasks, and, in addition, on managerial tasks. A pharmacy organization, for example, provides care as an aspect of its role within the pharmaceutical business chain. The pharmacy manager then selects activities related to care of the patient. In addition to this, the pharmacy organization, as well as any other organization, needs turnover in order to sustain its activity. The pharmacy manager accordingly selects activities related to the economic sustainability of the pharmacy organization. It is assumed that the pharmacy manager prefers certain activities, according to his or her personal preference. Each preferred combination results in a mix of activities. In this thesis, three of such mixes were defined analytically, and related to both the care orientation and to the economic orientation: the *product mix*, the *process mix*, and the *customer mix*. It is assumed that in the *product mix*, the pharmacy manager emphasizes activities linked to pharmaceutical quality, in the *process mix*, the pharmacy manager emphasizes activities linked to financial quality, and in the *customer mix*, the pharmacy manager emphasizes activities linked to the experienced quality of the customer. In the context of these various mixes of activities, it is important to keep in mind that, there is a nuance in the use of the

terms ‘activity’ and ‘action’. In this thesis, the term ‘activity’ relates to the modelled world or is the neutral term for the carrying out of an act. For example, activities may consist of a modelled description of the activities in the pharmaceutical sector or the modelled intentions of the pharmacy manager. The term ‘action’ does relate to the observed real-world action. For example, actions may consist of empirical observations in a survey or control action of the pharmacy manager in response to an evaluation of the modelled activities. It was noted above that in the pharmaceutical sector there is a general tendency to change the pharmacy organization in the direction of the customer mix. In this study, we will try to provide some grip for this manager if he/she intends changing the pharmacy organization. The main focus has been to visualize managerial problems in an organizational change to the customer mix. It seems evident that these problems need to be described before working on a solution. So whatever description may follow, it should always be remembered that, in the end, this thesis is dealing with managerial problems in relation to organizational change in the community pharmacy. The consequences of how to deal with these problems, in this specific setting, will not be described here, but could be described in another study.

Next, some preliminary research questions will be distilled. The study consisted of two phases: *phase one* related to the point of departure, and *phase two* related to managerial problems in organizational change. Firstly, in *phase one*, it is our intention to visualize an empirical point of departure, and preferably, a solid one in which the Dutch community pharmacy sector is involved. It was assumed above that a point of departure could be helpful. It was decided that this point of departure, or sketch of the pharmaceutical field in the Netherlands, would be made with respect to the three modelled mixes of activities mentioned above. In other words, a related empirical question would be: ‘What mixes of actions are used by the Dutch community pharmacy manager?’. We will analyze whether the selected pharmacy mix forms a consistent set of actions. The methods involved would be quantitative and ‘hard’, since we would like to provide a ‘broad’ picture of the Dutch community pharmacy sector. The results ought to be applicable for the meso level and generalizable to the population of Dutch community pharmacies. In addition, a gap between intention and realization was expected, and, in addition, it was also anticipated that people would *say* that they were acting in one way while they acted in another way. Consequently, different methods for intention and realization, respectively labelled *thought* and *action* in this study, were introduced. Whereas in *thought* we studied what actions the pharmacy managers perceived as important, the performance of the actions were studied in *action*. We focused on consistency between *thought* and *action* of the pharmacy manager. The determination of this empirical point of departure should enable us to study the process of change.



Secondly, in *phase two*, the analysis of the organizational change, it was supposed that services have become increasingly patient-oriented within health-care over the last years. The patient is treated as a customer, rather than as a patient. Starting from this position in general, and from community pharmacies in particular, we will study what happens if a pharmacy organization ‘travels’ to the customer mix. Within this context, the main question of this study will be ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer mix?’. In connection with this question, the role of the support structure of the financiers of this study, stichting VNA and SAL Apotheken, was studied also. Consequently, a related question is: ‘What is the role of the support structure in the organizational change to the customer mix?’. Most methods applied were qualitative and ‘soft’ since we wanted to get an impression of managerial problems at the level of the individual community pharmacy. The results should be applicable for the micro level.

### 1.3. This present thesis

It is argued that the theoretical basis of this study consists of three pharmacy mixes of activities; the product mix, the process mix, and the customer mix. The pharmacy manager stresses a set of activities which is related to one of these pharmacy mixes. In addition, the Dutch community pharmacy manager generally seeks to structure the organization in accordance with the customer mix. It was decided that, in order to make a broad sketch of the pharmaceutical field, we would perform a survey. In this survey the theoretical pharmacy mixes would be refined in community pharmacy practice. We also thought that before doing so, it would be wise to make a pilot study and test some questionnaires first. Subsequently, problems in organizational change would be studied. For the organizational process of change, Soft Systems Methodology (SSM) was used (Checkland 1981, Checkland and Scholes 1990, Checkland and Holwell 1998). SSM is a methodology which could enable us to unravel ‘knots’ related to subjectivity and complexity. With this first framework we can now present the content of the other chapters in further detail.

In chapter 2, the study is designed. The preliminary research questions, mentioned above, were used to refine the design of this thesis and to formulate the research questions more precisely. In addition, we illustrate what methodological choices were made. A discussion with respect to quantitative and qualitative research was used to position this study within these research approaches. Since a time series is involved in this study, the time frame and related research activities are given. Finally, the involvement of Dutch community pharmacy managers is described in terms of ‘How many pharmacy managers were involved?’ and ‘How were they selected?’.

In chapter 3, some issues from management science are introduced in order to describe the background of the differences between *thought* and *action*. The reasons

for the preference for SSM and some main issues of SSM are described. With the use of SSM and some related theories we try to describe some expected managerial problems in an organizational change. In addition, some issues from pharmacy practice research (Leufkens 1992, Mays 1994, Leufkens *et al.* 1996) are described. Some organizational terms are used in this context of community pharmacy. Via the formulation of purpose, mission and objectives, the activities of the pharmacy manager are described analytically. Consequently, three pharmacy mixes of activities are postulated: the product mix, the process mix, and the customer mix. Finally, the background of a general tendency, the change of the community pharmacy to the customer mix, is discussed.

In chapter 4, several methods are tested in the community pharmacy practice. Since no validated methods to collect data on the issue of this thesis were present, we had to formulate and test some methods ourselves. We started with four methods for *thought* and three methods for *action*. In addition, a method to describe the *profile* of the community pharmacy was formulated and tested in practice also. The main purpose of this chapter is method selection for a broad survey. In the end, an individual method for *thought*, *action* and *profile* was selected and made ready for use in the survey.

In chapter 5, the methods are applied to a large sample of community pharmacy managers. The expected differences between *thought* and *action* were present, but in a rather special way. The results were used for generalization to the population of Dutch community pharmacy managers. It was at that point that we finalized the description of the point of departure and were prepared to start analyzing the organizational change to the customer mix.

In chapter 6, the management of the organizational change to the customer mix is described. The customer activities of pharmacy managers were modelled and evaluated after some time. SSM was used as a framework to model these customer activities, and this enabled us to collect and analyze the data of this process of change. The focus here was on managerial problems in the change to the customer mix.

In chapter 7, an overview of the results is given. The meso and micro levels are described, which at this stage should not be surprising: in combining issues from management science and pharmacy practice. Issues of management science on both the meso and micro levels concentrated on *thought* and *action* as well as on managerial problems in this specific organizational change. Finally, some organizational news and pharmaceutical news is discussed.

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## Chapter 2 Design of the Study

### 2.1. Introduction

In **chapter 1**, one of the main preliminary research questions was: ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer mix?’. This question is the central theme of this thesis. Since we would like to discuss some methodological issues in this chapter, we will start with a methodological discussion about quantity and quality. Furthermore, within this chapter we will consider what other information we might need in order to find a decent answer to this research question. This involves a description of research questions, design of the study and applied methods in detail. Soft Systems Methodology (SSM) will be used in order to model and structure this study; we will illustrate the main ideas in presenting a so-called ‘root definition’ and ‘activity model’ of this study.

### 2.2. Why real men collect soft data<sup>1</sup>

Before a presentation of the theoretical background of this thesis, and before our ‘dive’ into the pharmaceutical field, we would like to give you an impression of a relevant scientific debate. Whilst some researchers prefer quantitative research, others do prefer qualitative research; sometimes labelled respectively soft and hard research. The title of this section suggests that this debate about quantitative and qualitative analyses is rather intense. As was mentioned earlier, this thesis contains both forms of analyses. But the main interest of this section is a general one: ‘Why would we select a quantitative method rather than a qualitative one, or vice versa?’

In their recent work Miles and Huberman (1994) illustrated the contrast between quantity and quality with a quotation of a fairly extreme quantitative researcher: “There’s no such thing as qualitative data. Everything is either 1 or 0” (1994: 40). In addition, Gherardi and Turner (1987) argued that “quantitative work is courageous, hard biting, hard work. Collecting hard data means making hard decisions, taking no nonsense, hardening one’s heart to weaklings, building on a hard core of material, using hard words to press on hard won results which often carry with them promises of hard cash for future research and career prospects. By contrast, soft data [are] weak, unstable, impressible, squashy and sensual. The softies, weaklings or ninnys who carry it out have too much of a soft spot for counter-argument for them to be taken seriously, they reveal the soft underbelly of the social science enterprise, are likely to soft-soap those who listen to them. They are too soft-hearted, pitying, and maybe even foolish to be taken seriously, so that it is only right that they should be employed on soft money” (Miles and Huberman 1994: 49). In contrast, Miles and Huberman also illustrated the argument of qualitative research with another quotation:

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<sup>1</sup> Freely rendered from Gherardi and Turner (1987) *Real Men Don’t Collect Soft Data* (compare also Miles and Huberman 1994: 40).

“... all data are basically qualitative: To a raw experience, we may attach either words or numbers. Or as Campbell (1974) remarks, all research ultimately has qualitative grounding” (1994: 40).

These statements seem rather blunt. Although this debate is rather intense, we prefer to give you a more refined account of this discussion. Miles and Huberman (1994) argued that “fierce battles have been fought in this topic ...” (1994: 40). However, they counter that “the quantitative-qualitative argument is essentially unproductive” (1994: 41). They see “no reason to tie the distinction to epistemological preferences. The question is not whether the two sorts of data and associated methods can be linked during study design, but whether it should be done, how it will be done, and for what purpose” (1994: 41). They also added: “the fact [is] that numbers and words are *both* needed if we are to understand the world” (1994: 40). We agree with this argument. In this context, it might be noted that much work has been done in order to synthesize qualitative and quantitative analyses (compare for example, Fielding and Fielding 1986, Bryman 1988, Cook and Reichardt 1979, Brewer and Hunter 1989). Miles and Huberman gave an example of the productive use of both approaches: “the careful measurement, generalizable samples, experimental control, and statistical tools of good quantitative studies are precious assets. When they are combined with the up-close, deep, credible understanding of complex real-world contexts that characterize good qualitative studies, we have a very powerful mix” (1994: 42). They also advised us to think about the purpose of the study ahead: “In the light of my research questions and the audiences for my study report, will qualitative information be enough, or should it be complemented by a numerical data set of some kind?” (1994: 43). Moreover, Yin (1994) provided us with an overview of relevant situations for the various approaches (**table 2.1.**).

strategy	Form of research question	Requires control over behavioral events?	focuses on contemporary events?
survey	who, what, where, how many, how much	no	yes
experiment	how, why	yes	yes
case study	how, why	no	yes

**Table 2.1.** Relevant Situations of Different Research Strategies (Yin 1994: 6).

He argued that these approaches must be used in different situations. For example, “‘what’ questions, ‘who’ and ‘where’ questions (or their derivatives - ‘how many’ and ‘how much’) are likely to favour survey strategies .... These strategies are advantageous when the research goal is to describe the incidence or prevalence of

a phenomenon” (1994: 6). The investigation of prevalent political attitudes would be a typical example, or, as in our study, the investigation of applied pharmacy mixes in practice. In contrast, he noted that “‘how’ and ‘why’ questions are more *explanatory* and likely to lead to the use of case studies, histories, and experiments as the preferred research strategies. This is because such questions deal with operational links needing to be traced over time, rather than mere frequencies or incidence” (1994: 6). Since, we would like to visualize problems in organizational change in this thesis, and since most changes take some time, we can safely argue that the experiment and the case study seem appropriate for our purpose.

Hutjes en Van Buuren (1992) gave examples of mixes of these three forms of research: a mix of case study and (quasi) experiment, and a mix of case study and survey. “In combination with the (quasi) experiment, the case study improves the visualization of causal relations and unforeseen and unintentional side effects, furthermore it is flexible, it can easily be adapted whenever necessary. In addition, the survey illustrates how the case study is embedded in the general picture, and the case study improves the rather superficial image which is provided by the survey” (1992: 26-27). Consequently, this would make us conclude that combinations could improve the quality of this thesis. In this thesis, a quasi-experimental design, in which both a survey and some case studies were involved, seemed rather interesting in order to draw some solid conclusions.

In addition, we note that the discussion about ‘hard’ of ‘soft’ approaches within systems theory is related to the debate about quantitative and qualitative research previously referred to. Checkland and Holwell (1998) gave a usable distinction between ‘hard’ and ‘soft’ for our purpose here (**table 2.2.**).

	<b>the ‘hard’ tradition</b> (Simon)	<b>the ‘soft’ tradition</b> (Vickers)
<b>concept of organization</b>	social entities which set up and seek to achieve goals	social entities which seek to manage relationships
<b>underlying systems thinking</b>	‘hard’ systems thinking: the world assumed to be systemic	‘soft’ system thinking: the process of inquiry into the world assumed to be capable of being organized as a system
<b>process of research and inquiry</b>	predicted upon hypothesis testing; quantitative if possible	predicted upon gaining insight and understanding; qualitative

**Table 2.2.** Two broad traditions within system theory (Checkland and Holwell 1998: 48).

They argued that the ‘hard’ systems approach had its roots in the 1960’s. In this approach the “human and organizational behaviour was seen as decision making/problem solving in pursuit of goals” (1998: 46), which was associated with the

work of Simon (1945). The 'soft' systems thinking originated in the 1970's and 1980's and was related to the work of Vickers (1965). In connection with this approach, Checkland and Holwell argued that "Vickers (1974) started to reject this goal-seeking model of human behaviour as being too poverty-stricken to match the richness of life as we experience it" (1998: 46-47). Furthermore, they argued that standards or criteria were not given from outside, but were generated by the previous history of the system itself, and actions were perceived as relationship maintaining (or eluding) rather than as a striving to achieve goals (1998: 47). Earlier, Wilson (1984) related the difference between 'hard' and 'soft' approaches to *how* and *what* questions in research. He argued that "the well-defined problem of a flat tyre is a hard problem, whereas the situation in Northern Ireland is extremely soft" (1984: 7). He added that "a 'hard', or structured, problem is one which is exclusively concerned with a 'how' type of question" (1984: 7). This kind of problem is exemplified in the domain of the design engineer who seeks effective and economic answers to the 'how' type of question. In contrast, "a 'soft', or unstructured, problem is one which is typified by being mixtures of both 'what' and 'how' questions" (1984: 7). This was exemplified by a manager facing the problem that production performance could be better. "This statement of the problem gives no guide to *what* he should investigate to identify areas for potential improvement, or *how* he could then introduce change to realize that improvement" (1984: 8). He continued by arguing that in order to help managers to tackle these 'soft' problems we should enable them to convert mixed questions of 'what' and 'how' into ones only of 'how'.

### 2.3. Methodological base

Before we start to model, we will again introduce a statement of Wilson (1984): "The best we can achieve is to derive conclusions which are defensible (and hopefully appropriate to the situation). The defensibility can be argued on the basis of the intellectual constructs used; the appropriateness comes from the selection of the intellectual constructs themselves" (1984: 5-6). Within SSM, the creation of CATWOE, root definition, and activity model are well-known and form a basis of the modelling process (we refer to **chapter 6** for an elaborate discussion). Checkland and Scholes (1990) argued that the CATWOE mnemonic refers to customers, actors, transformation process, Weltanschauung, owners, and environmental constraints respectively. "The 'customers' are the victims or beneficiaries of T. The 'actors' are those who would do T. The 'transformation process' is the conversion of input to output. The 'Weltanschauung' is the worldview which makes this T meaningful in context. The 'owner(s)' are those who could stop T. The 'environmental constraints' are the elements outside the system which it takes as given" (1990: 35). Furthermore, they argued that a root definition can be seen as "a system to do X by Y in order to achieve Z" (1990: 36). With these descriptions we can start to sketch an activity model in which we "aim to express the main operations to bring about the

transformation (in the light of the CATWOE) in a handful of activities. The guideline is  $7 \pm 2$  activities. If this seems sparse, there is no problem: each activity in the model can itself become a source of a root definition to be expanded at the next resolution level” (1990: 37-38).

Let us, for example, formulate a root definition of this thesis: ‘A community pharmacy study system (X) which analyzes the community pharmacy sector with the use of management science (Y) in order to describe managerial problems of the pharmacy manager in the change to the customer mix (Z)’.

A possible CATWOE could be:

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C	Customers	researcher, pharmacy managers
A	Actors	researcher, pharmacy managers
T	Transformation process	community pharmacy → studied community pharmacy
W	Weltanschauung	it is possible to describe managerial problems in organizational change of pharmacies by using management science
O	Owner(s)	researcher, Faculty of Management and Organization, University of Groningen, stichting VNA, SAL Apotheken
E	Environmental constraints	cooperation and motivation of pharmacy managers

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Based on this root definition, and following CATWOE, we can start to build an activity model. Within the construction of an activity model it might be helpful to use ‘backwards modelling’. We argue that the assessment of ‘problems of pharmacy managers in the organizational change to the customer mix’ (cell 8) was a core activity, contingent upon many other activities (**figure 2.1.**).

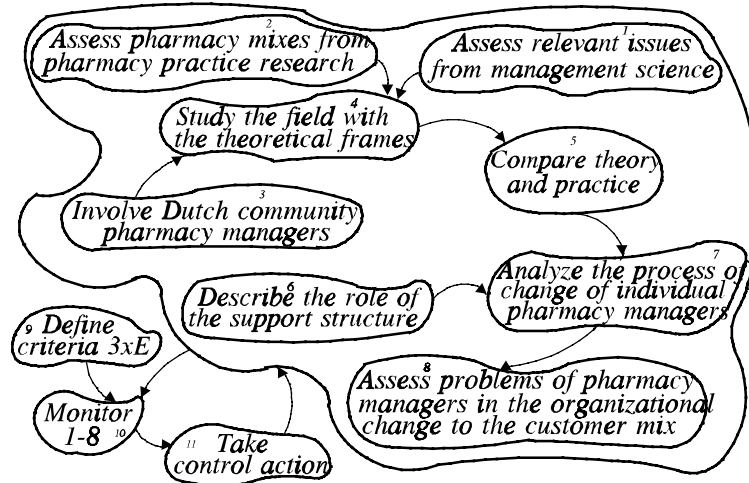


Figure 2.1. Activity model for the design of the thesis.

For example, before we can assess problems, the process of change should be analyzed (cell 7). In **chapter 1**, we noted that we would prefer an individual approach, since the managerial problems should preferably be described at the micro level. In addition, it was noted that stichting VNA and SAL Apotheken were involved in this project. They were interested in the role of their support structure in this organizational change. Consequently, the role of the support structure in the change to the customer mix would obviously have to be described and studied (cell 6). Furthermore, it was assumed that it would be convenient to know where we are now, if we intend to ‘travel’ with an organization to a new position. Ideally, a comparison between theory and practice would be made (cell 5). It was decided that in order to make a broad sketch of the pharmaceutical field, a survey would be performed (cell 4). With the result of this survey, the pharmacy mixes distilled from pharmacy practice research, would be refined. In such a survey we would, of course, be in need of the participation of Dutch community pharmacy managers (cell 3). Their involvement would be vital for the feasibility of this part of the study. In order to be able to compare theory and practice, a theoretical study of management science and pharmacy practice research was introduced (cell 1 and 2). We thought that it would be wise to prepare ourselves with a point of departure and a destination for the pharmacy organization, which should be described from the pharmaceutical perspective. The analytical description of this perspective originated mainly from pharmacy practice research (cell 2). In addition, this study described some relevant issues from management science with respect to organizational change (cell 1).



Moreover, in using SSM, we would be in need of the criteria 3xE (cell 9). The criteria 3xE consist of effectiveness, efficacy and efficiency. These criteria would enable us to monitor the research process (cell 10) and intervene whenever necessary (cell 11). With the criterion for effectiveness we can monitor in what way the longer term aim, expressed by Z (a description of organizational problems of the pharmacy manager in the change to the customer mix), is achieved. The general expression of this criterion is: 'Is the transformation (community pharmacy→ studied community pharmacy) meeting this longer term aim Z?'. In this study, 'a thesis describing managerial problems of pharmacy managers in the change to the customer mix' would be such a criterion. As can be seen, the description of these managerial problems has become tangible. With the criterion for efficacy we can monitor whether the means chosen (cell 1-8 in the model) actually work in producing the output of the transformation process (studied community pharmacy). The general expression of this criterion is: 'Does the means work?'. In this thesis, there is monitoring via frequent consultations with the supervisors in order to check if the modelled activities would provide us with sufficient relevant data to study the community pharmacy. We argue that enough data have become available to conclude that the community pharmacy was studied. With the criterion for efficiency we can monitor whether the transformation (community pharmacy→ studied community pharmacy) is being carried out with a minimum use of resources. The general expression of this criterion is: 'The amount of output divided by the amount of resources used'. In this study there is monitoring with regard to time and money: 'can the modelled activities be performed in four years without overrunning the budget?'. Although the study was completed within four years, the budget was exceeded and the faculty paid our debts. With the description of this activity model, a sketch of the study was made.

In terms of this chapter we suggest that the activities in cell 1 '*Assess relevant issues from management science*', cell 2 '*Assess pharmacy mixes from pharmacy practice research*', cell 4 '*Study the field with the theoretical frames*' and cell 7 '*Analyze the process of change of individual pharmacy managers*' are the most vital, since they would involve some methodological choices. These research activities will be elaborated in the design. So far, from the presentation of this model, we can easily distil our research questions.

#### **2.4. Research questions**

The aim of this study was to visualize managerial problems of the change to the customer mix. With this aim some related activities, which can be translated into sub-questions for this thesis, have been distilled. With the coming research questions and the activity model from above we will try and construct a design for our study in the next section.

*Management Science*

1. What problems can be expected in the analysis of actions of pharmacy managers? (chapter 3)
2. What problems can be expected in the analysis of organizational change? (chapter 3)

*Pharmacy Practice Research*

1. What theoretical pharmacy mixes can be distinguished? (chapter 3)
2. Why is there a change to the customer mix? (chapter 3)

*Point of Departure*

1. What methods can be best applied in a survey? (chapter 4)
2. What is the empirical use of the three pharmacy mixes? (chapter 5)
3. What is the correspondence between *thought* and *action*? (chapter 5)

*'Travel' to the Destination*

1. What problems does a pharmacy manager face if he/she 'travels' to the customer mix? (chapter 6)
2. What is the role of the support structure in this change? (chapter 6)

**2.5. Design of the study**

For the presentation of our design we will go back to the main activities of our activity model. Since we would like to prepare ourselves for the 'dive' into the empirical field, a literature study was made, both with respect to management science and pharmacy practice research. These two activities will be described in **chapter 3**. In this chapter the term 'activity' will be used most. We refer to the modelled world, where, in the context of this chapter, activities relate to analytical descriptions of the activities of managers, and specifically of the activities of managers in the community pharmacy sector.



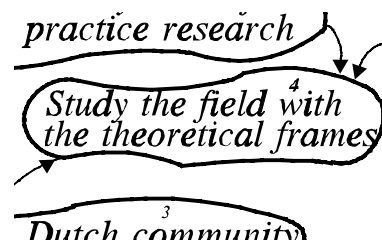
**Figure 2.2.** Cell 1 and cell 2 of the activity model; a description with relevant issues from management science and pharmacy practice research.

The activity of cell 1, 'Assess relevant issues from management science' implies that the relevancy of the issues within management science can be determined. Let us try and do so, by using the main research question: 'What problems does a pharmacy manager face if he/she 'travels' to the customer mix?' A process of organizational change could be compared with a train travel. In general, it would be convenient to have a point of departure and a destination in such a travel. Some other activities would be helpful also, for example, we could cycle to the station and purchase a

ticket. Furthermore, it is likely that the railway company would enable us to determine whether we have arrived in the right place; for example, by using signs on the platform of a station. However, this modelled example appears rather simple when compared with the real-world action of organizational change. If we use our common sense, we would expect some managerial problems of quite a different order. For example, determination of the point of departure and destination could be more complex, and would consequently be less evident in organizations. We would also expect differences to be present between intention and realization (within this thesis labelled as *thought* and *action*). In the example, the intended activity ‘cycle to the station’ will change if the neighbour offers a lift to the station, or the train travel could even be skipped if the neighbour offered a lift to the final destination. In addition, evaluation could also be more complex in an organization. It may be hard to define and perform an evaluation, for example, if the destination is not clear. If this description is to be taken seriously, the process from strategy formulation to real-world action could be of interest here. Within this context, the issues of intention and realization were distilled from management science. Furthermore, the issue of evaluation could be of major importance; for the manager it could be helpful to determine the contribution of the activities in the light of the destination (for a more elaborate discussion compare **chapter 3**).

In cell 2 ‘*Assess pharmacy mixes from pharmacy practice research*’ of the activity model, we will describe what pharmacy mixes can be expected in the community pharmacy. A mix relates to a selected set of activities by the pharmacy manager. Earlier, we assumed that such activities would relate to pharmaceutical issues, financial issues, and customer issues. The nature of these issues and the according pharmacy mixes will be elaborated in further detail in **chapter 3**. In addition, it was argued that there is a general tendency to change in the direction of the customer mix. The content of this tendency will be refined also.

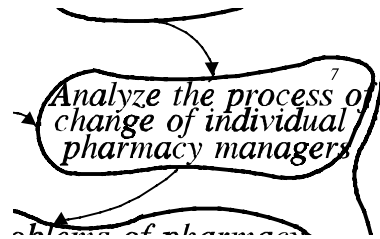
One of the other main activities was cell 4, which comprised ‘*Study the field with the theoretical frames*’ (**figure 2.3**). Earlier, it was decided that we were in need of a point of departure if we wanted to sketch a process of change. The empirical description of the point of departure is described in **chapter 4** and **chapter 5**, and is labelled *phase one*. In these chapters, the term ‘action’ will be used most. We refer to the real world, where, in the context of these chapters, actions relate to an empirical description of the importance and use of the pharmacy manager’s actions. In this thesis, the point of departure is



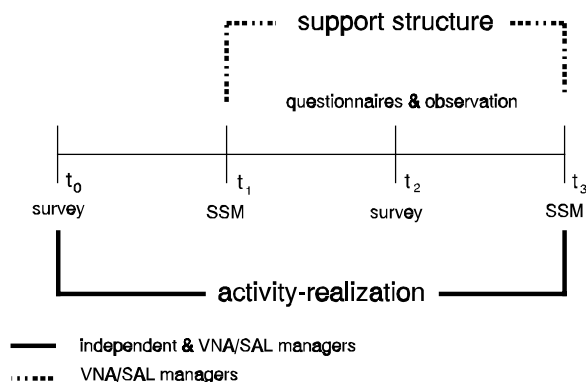
**Figure 2.3.** Cell 4 of the activity model; three pharmacy mixes in practice.

to flesh-out the nature of actions in Dutch community pharmacy practice; by means of a description of the product mix, the process mix, and the customer mix. Because we aimed at solid comparisons between theory and practice, and because of the usability of the material in the debate in the field we decided to make a broad sketch of the field. For that purpose, a survey was constructed and performed. However, we thought that it would be wise to make a pilot study and test some questionnaires first, since no usable validated methods were available. For the purpose of the pilot study, 24 community pharmacy managers were selected. Twelve community pharmacies were randomly selected from the twelve Dutch provinces, one pharmacy out of each province, and twelve pharmacies were selected by stichting VNA and SAL Apotheken. We expected a gap to be present between intention and realization, and it was also expected that people would *say* that they were acting in one way while they acted in another way (Mintzberg 1978, 1979, 1994, Argyris and Schön 1978, Argyris 1992); for a more elaborate discussion compare **chapter 3**. In addition, the results of a pre-pilot showed that the participating pharmacy managers experienced most of the three pharmacy-mix actions as being very important. As a result, there was hardly any difference between the scores per pharmacy mix. We could of course have agreed with these results, but we were interested in the difference between these mixes and the finer points between them. Consequently, we introduced separate methods for *thought* and *action*. In the methods for *thought* we tried to ‘catch’ what actions pharmacy managers perceived as being important. In the methods for *action* we tried to ‘catch’ what actions pharmacy managers actually performed. In the pilot, a total of seven methods were tested; four methods to visualize *thought* and three methods to visualize *action*. At each pharmacy two methods for *thought* and at least one for *action* were tested. The combination of the methods and the pharmacies was made randomly, with the precondition that 50% of the selected pharmacies were pharmacies of stichting VNA and SAL Apotheken (VNA/SAL pharmacies), and 50% of the selected pharmacies were additional pharmacies, for all individual methods. Two methods were selected, one for *thought* and one for *action*. The two selected methods for *thought* and *action* were then ready-for-use in the survey. The design of the survey consisted of a study with a relatively large sample in order to provide broad information on the subject, and in order to use this information for a more detailed study of individual pharmacies later. A total of 333 out of 1521 Dutch community pharmacy managers were invited to participate in the survey (1996). A file of the KNMP was used for the selection of a random sample of 300 pharmacies. There was no overlap present between the pharmacies of the random sample and the selected pharmacies of the pilot, in order to prevent learning effects. The remaining 33 community pharmacies were VNA/SAL pharmacies. We invited all responding pharmacy managers for a follow-up of the survey (1997).

Having decided upon our design for our point of departure, we ought to say something about our design for the process of change. This activity was described in cell 7 'Analyze the process of change of individual pharmacy managers' (figure 2.4). The empirical description of the organizational change to the customer mix is presented in **chapter 6**, and is labelled *phase two*. In this chapter the term 'activity' will be used most. We refer to the modelled world, where, in the context of this chapter, activities relate to the modelled customer activities by the pharmacy manager. In addition, control action of the pharmacy manager was described in response to the implementation of the modelled activities in some cases. A substantial part of the strategies and activities of the pharmacy manager were expected to emerge (Mintzberg 1978, 1979, 1994); for a more elaborate discussion see **chapter 3**. They would evolve 'along the way', as it were. Consequently, the organizational change could be hard to 'catch' in a model. Furthermore, also based on the material of **chapter 3**, we would expect that the strategy of the pharmacy manager would be implicit (Mintzberg 1979). In this case we might very well have to deal with personal beliefs and/or the personality of the manager: complexity and subjectivity were at stake here. SSM is a methodology which could enable us to unravel 'knots' related to subjectivity and complexity (Checkland 1981, Checkland and Scholes 1990, Checkland and Holwell 1994). Within SSM, subjectivity was defined as the crucial characteristic of human affairs. Again, we stress that we were interested in the individual pharmacy manager and his/her problems in the organizational change. Subjectivity was a core issue in this part of the study. Moreover, SSM was most frequently applied to complex organizational problems; 'messy' problems. We argue that most organizational processes of change are complex, and therefore SSM could be suitable for our purpose. In addition, we note that the role of the support structure in the organizational change to the customer mix had to be visualized. Some additional methods (a mix of quantitative and qualitative methods), were introduced in order to describe the role of the support structure.



**Figure 2.4.** Cell 7 of the activity model; the organizational change.



**Figure 2.5.** Four moments of time used in the analysis of organizational change.

Within the organizational change, measurements at and between four moments in time  $t^2$ :  $t_0$ ,  $t_1$ ,  $t_2$  and  $t_3$ , were used (**figure 2.5**). A time series is involved when we have multiple observations over time (Cook and Campbell 1979). The observations can be of the same units, as when particular pharmacy managers are repeatedly observed, or they can be on different units, but with a certain similarity, as when pharmacy managers in a particular postgraduate course are observed over a number of years. In this latter case, different pharmacy managers are in the course each year. In this thesis, the same units were used for the observations; particular pharmacy managers were studied in a time frame of 1½ years.

At time  $t_0$ , May 1996, the differences between *thought* and *action* were studied in a broad survey (**chapter 5**). The questionnaires for *thought* and *action* were sent separately at  $t_0$ . The separation was made to minimise mutual influence of the questionnaires for *thought* and *action*. The second part of the questionnaire was sent if the first part had been received correctly. The sequence of sending consisted of sending the questionnaire for *action* before the questionnaire for *thought* for the first half of all pharmacy managers; vice versa for the second half of all pharmacy managers. Later these results of the survey were refined and they facilitated the study of organizational change.

At time  $t_1$ , October 1996, a description of the intentions of customer activities and related monitor activities was made with the use of SSM (**chapter 6**). What kinds of activities do pharmacy managers model if they intend to ‘travel’ to the customer mix? How do pharmacy managers intend to monitor direction and final destination before this ‘travel’? With the use of SSM in an interview the intended customer

<sup>2</sup>  $t$  relates to a time period expressed in half years.

activities and related monitor activities were modelled.

At time  $t_2$ , May 1997, the survey was repeated with a group of 63 pharmacy managers. The surveys of May 1996 ( $t_0$ ) and May 1997 ( $t_2$ ) were used to compare the general results and the group results over time (**chapter 6**). What was the general difference of the results of 1996 and 1997? Did a support structure affect these results? As with the survey at  $t_0$ , the questionnaires for *thought* and *action* were sent separately at  $t_2$ .

At time  $t_3$ , September 1997, the model constructed at  $t_1$  was evaluated. The results of these SSM interviews were compared with the ones made at  $t_1$ . A description of the use of the modelled customer activities and related monitor activities was made (**chapter 6**). What kinds of modelled activities were actually used in the 'travel' to the customer mix? How did pharmacy managers monitor direction and final destination during the 'travel'? Here we concentrated on evaluation of the model; in addition, control action of the pharmacy manager was described in response to the implementation of the modelled activities in some cases.

Between time  $t_1$ , October 1996, and  $t_3$ , October 1997, a description of the role of the support structure of stichting VNA and SAL Apotheken was made (**chapter 6**). What kinds of modelled activities were supported during the 'travel' to the customer mix? How did pharmacy managers qualify the use of the support structure? What were the differences between the outcome of the pharmacy managers with support structure, and that of pharmacy managers without support structure? Using questionnaires and observations during meetings of the support structure, the actual use of the support structure was studied.

The design for the analysis of the process of change of individual pharmacy managers involved four groups of 16 pharmacy managers. We decided to introduce a quasi-experimental design in which a survey and some case studies were involved. Cook and Campbell (1979) were of the opinion that "all experiments involve at least a treatment, an outcome measure, units of assignment, and some comparison from which change can be inferred and hopefully attributed to the treatment. *Randomized experiments* are characterized by the use of initial random assignment for inferring treatment-caused change. However, random assignment is more difficult with individuals or larger social groups than with objects, and is more difficult with humans in the field than in the laboratory. Consequently, random assignment will be less frequent with humans than with objects, and less frequent with humans in the field than in the laboratory. The field researcher is often a guest at the sites where he or she works while the laboratory researcher has almost complete control over the setting and acts as the respondent's host" (1979: 5-6). In addition, Swanborn (1987)

also considers that “a random distribution of units is well possible in a laboratory, but rarely applied in social reality. *Quasi-experiments* do not use random assignment to create the comparisons from which treatment-caused change is inferred” (1987: 255-256). Cook and Campbell defined quasi-experiments as “experiments that have treatments, outcome measures, and experimental units, but do not use random assignment to create the comparisons from which treatment-caused change is inferred” (1979: 6).

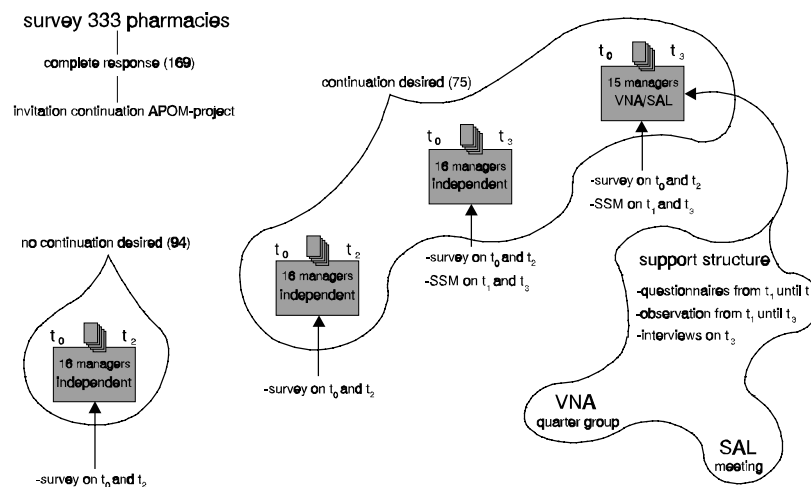


Figure 2.6. The design of methods for the organizational change.

For reasons of practicality, a specific group size within our project was determined. The number of individual pharmacy managers in the support structure of stichting VNA (10 so-called VNA pharmacy managers → one nonrespondent → 9) and SAL Apotheken (6 so-called SAL pharmacy managers) determined the size of 16 pharmacies per experiment group (figure 2.6). All 169 pharmacy managers with results for both *thought* and *action* were invited to participate in this part of the study. The selection of independent pharmacies was made after the first survey. In the invitation a text was added describing the requirements: independency and a start or continuation of a ‘travel’ to the customer mix. The selection of 16 VNA/SAL pharmacies was made before the first survey. The 10 VNA pharmacy managers were all members of the so-called ‘quarter group’ (a group which met and exchanged ideas quarterly). The six SAL pharmacy managers were all members of the so-called ‘SAL meeting’ (a group which met and exchanged ideas monthly). A total of 75 pharmacy managers, 59 pharmacy managers of the random group and 16 pharmacy managers of stichting VNA and SAL Apotheken (VNA/SAL pharmacy managers), were interested in further participation. In addition, a total of 94 pharmacy managers were not interested in further participation.



Three groups of 16 pharmacy managers were selected using criteria which were based on the results of the survey in **chapter 5**. The 15 responding VNA/SAL pharmacy managers were a separate fourth group. The criteria applied for the selection of the first three groups were, in order of importance, independence of the pharmacy manager, correspondence of *thought* and *action* and cluster membership of *thought* and *action* (compare **table 2.3.**). The groups were similar with respect to these criteria.

group	applied criteria	response support structure	correspondence clustermembership	final selection
continuation desired (16+59)	stichting VNA	10→	9→	<b>15</b>
	SAL Apotheken	6→	6→	
	independent	36→	32→	<b>16</b>
	supported	23		<b>16</b>
no continuation desired (94)	negative response	58→	8→	<b>16</b>
	no response	36→	8→	

**Table 2.3.** Selection of pharmacies from the survey.

The first criterion applied was independence of pharmacies. A total of 59 pharmacy managers of the random sample were interested in further participation and were put in the category ‘continuation desired’ (**figure 2.6., table 2.3.**). However, 23 pharmacy managers were related to a support structure and were therefore not selected. A total of 36 pharmacy managers of the random sample were used for further selection. A total of 94 pharmacy managers were *not* interested in further participation, of which 58 pharmacy managers responded negatively to the invitation, and 36 pharmacy managers did not respond to the invitation at all; this group was put in the category ‘no continuation desired’ (**figure 2.6., table 2.3.**). It was assumed that this group might have another score with respect to *thought* and *action*. It was decided that these pharmacy managers should again be invited in a telephone call. The group would comprise eight pharmacy managers with negative response and eight pharmacy managers with no response. Most managers reacted with surprise, but positively to this second invitation. Within this group, a total of 15 out of 94 pharmacy managers were related to a support structure and were therefore not selected. Consequently, a total of 79 pharmacy managers of the random sample were used for further selection.

The second criterion applied was correspondence of the results for *thought* and *action*. Two groups of 16 out of 36 ‘continuation desired’ pharmacy managers were to be selected by using this criterion. For example, the observed percentage in the random sample of the survey was 16% (28) with complete correspondence. Consequently,

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about 16% of the pharmacy managers in each group would have complete correspondence (3 respondents → 19%). The distribution of the ‘no continuation desired’ group was made in the same way as the ‘continuation desired’ group.

The third criterion applied was the statistical calculated ranking and cluster membership for *thought* and *action*. The selected pharmacies would involve a maximum of the observed seven clusters. In these four groups of 16 pharmacy managers finally selected, various combinations of interviews, observations and questionnaires were used.

Summarized, this means that we will apply both ‘hard’ and ‘soft’ methods within this study. The ‘hard’ approach relates to the investigation of pharmacy mixes in Dutch pharmacy practice. The ‘soft’ approach relates to the central theme of this thesis and ought to visualize problems in the organizational change to the customer mix. Now that we have illustrated some of the discussions in the methodological field, and illustrated some of our own decisions, we invite you to the theoretical background of this thesis, in which management science and pharmacy practice research are entwined, and which may be of interest before we ‘dive’ into the pharmaceutical field.

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## Chapter 3 Theoretical Background<sup>3</sup>

### 3.1. Introduction

It should be remembered that the main question of this thesis in *phase two* was: ‘What problems does a pharmacy manager experience if he/she ‘travels’ to the customer mix?’ We have a long way ahead of us before this organizational change can actually be described. Before we ‘dive’ into the pharmaceutical field, the main question will be further explored in the literature. It was mentioned earlier that the literature would be selected from the fields of management science and pharmacy practice research. We have also argued that, since a process of change was being studied, it might be helpful to define a point of departure and a possible destination. We need to know where we are now if we intend to ‘travel’ with an organization to a new position. In terms of point of departure and destination, specific managerial issues have been unravelled in the field of management science, and the expected managerial problems in the field work were described as well. It was presupposed that the process in which the manager transforms strategy into real-world action in order to change the organization was a matter of importance. Within this context, the issue of intention and realization, and the issue of aim formulation and evaluation were described. Let us introduce some questions which might be helpful for the content of the part of this chapter concerned with the managerial actor: ‘How can we study our point of departure and our ‘travel’ to the customer mix?’, and ‘What managerial problems can we expect in this process of change?’. Pharmacy practice research was used in order to describe the nature of the activities of the pharmacy manager. Again, the transformation process from strategy to real-world action was used here. However, this issue was placed within the specific context of community pharmacy practice. We expected previously that activities would relate to pharmaceutical issues, financial issues, and customer issues. In this thesis these issues were labelled as the product mix, the process mix and the customer mix, respectively. In this chapter, a more precise description of the nature and context of these mixes of activities will be given. It will be also argued that there is a general tendency to change in the direction of the customer mix. The context of this tendency will be described in further detail also. Regarding the content of the pharmaceutical part of this chapter some other questions might be helpful: ‘What is a pharmacy mix in this thesis?’, ‘What pharmacy mixes can be distinguished?’, and ‘Why is there a tendency to change to the customer mix in the community pharmacy sector?’. In this chapter we will try to answer these questions. The descriptions, both from management science and pharmacy practice research, should enable us to find some analytical tools which will facilitate our quest in the pharmaceutical field.

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<sup>3</sup> Parts of this chapter were published in: Mobach MP, Werf JJ van der, Tromp TFJ. APOM-project: a first study of pharmacy organization and management. *Pharm World Sci* 1998; 20(5): 219-224.

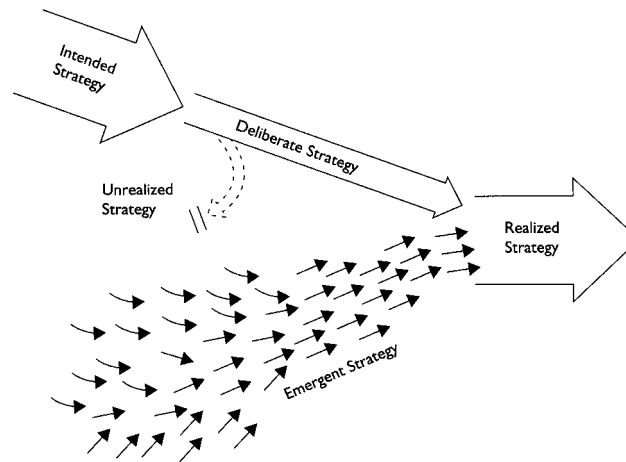
## 3.2. Organizational background

Some issues of management science were introduced in order to decide what we were going to study and how we were going to study. The presupposition was that strategy is transformed into real-world action in order to change the organization. This starting point was elaborated in practice in two phases: *phase one* related to the point of departure, and *phase two* related to the managerial problems of organizational change. In the first phase, the description of the point of departure, the issues relate to the present actions of Dutch community pharmacy managers. Within this context, some general problems were described with respect to intention and realization, later labelled as *thought* and *action* in this thesis. In the second phase, the managerial problems of organizational change, the issues relate to the actions of the individual pharmacy manager. Within this context, some problems with the formulation of a proper aim and evaluation in organizations were expected. Here we concentrated on the use of Soft Systems Methodology (SSM) and some related theories. We did expect that SSM would enable us to collect data and interpret the results of our fieldwork later.

### 3.2.1. Intention and realization

Within this first phase, we wanted to ‘catch’ some of the current actions of the Dutch community pharmacy manager. However, some problems could be expected. We refer to the work of Argyris and Mintzberg. Both authors warned us that we could expect differences in the way in which reality is experienced and the way in which this reality is created by day-to-day action. In this context, Argyris (1992) refers to the ‘espoused theory’ and the ‘theory in use’. Such theories, which Argyris sometimes refers to as theories of action, are regarded as the design of and selection from the repertory of actions available in a unique situation. Earlier, Argyris and Schön showed that a manager does not always act in correspondence with his espoused theory, defined as “... the theory of action to which he gives allegiance and which, upon request, he communicates to others” (1978: 11). The actual behaviour relates to another theory: the theory in use. They argued that “the theory-in-use may or may not be compatible with his espoused theory; furthermore, the individual may or may not be aware of the incompatibility of the two theories” (1978: 11).

Mintzberg's distinction between ‘intended strategy’ and ‘realized strategy’ (**figure 3.1.**) may also be mentioned in this context (1978, 1994). In connection with this issue of perceptions and actualities, he illustrated the difference between intention and realization. He argued that “some strategies get realized, some strategies do not get realized at all, perhaps because of unrealistic expectations or misjudgments about the environment, and some strategies were never intended but get realized” (1978: 936). Earlier, we introduced a distinction of Mintzberg (1994: 24-25) in which he labelled deliberate strategy as the strategy where intentions were fully realized, and emergent



**Figure 3.1.** Forms of strategy (Mintzberg 1994: 24).

strategy as a strategy where a realized plan was not expressed as intended. Unrealized strategy was intended, but evidently not realized at all. Other work of Mintzberg (1979) suggested that emerging strategies could be expected in rather small organizations (such as in Dutch community pharmacies). He argued that many small organizations have an entrepreneurial mode of strategy-making. This means that this strategy-making process tends to be highly intuitive and non-analytical. “It is not, therefore, surprising that the resulting strategy, seldom made explicit, reflects the chief executive’s implicit vision of the position of the organization in its environment. In fact, that strategy is more often than not a direct extrapolation of his personal beliefs, an extension of his own personality” (1979: 307). Mintzberg added that “big strategies can grow from little ideas (initiatives), and in strange places, not to mention at unexpected times, almost anyone in the organization can prove to be a strategist” (1994: 26). He also stated that “No consistency means no strategy, or at least unrealized strategy” (Quinn *et al.* 1988: 15), by which he mainly refers to consistency of behaviour in relation to patterns of activities, intentional or otherwise. However, he does not mention anything about the effectiveness of the realized strategy in this context. This shows that the concept of consistency is often still implicit and ambiguous.

In addition it might be helpful for our work here, to illustrate the dynamic context of the planning process. The manager does learn ‘along the way’ from intentions to realization. Sometimes, this learning involves the adaptation of earlier intentions, even if this means that some intentions were not realized at all. In this context we refer to the learning cycle of Soft Systems Methodology (SSM): “each time round the cycle the world experienced is a somewhat different place ...” (Checkland and Scholes,

1990: 3). We hope to have learned something from our past experience. In principle, this learning process is never-ending. So, in terms of SSM we would argue that it is not only wise to adapt your intentions, but it appears to be inevitable. We have to keep in mind that learning could mean performing activities, but as well could mean adding, changing or even striking intended activities. Additionally, with respect to time, we should note that not all intentions might have been realized. Intention is ahead of realization, as it were. The organization might be on its way to realizing what was intended. This more 'modern' way of thinking about intention and realization has been confirmed by others as well. Among them were Johnson and Scholes (1988: 115) in saying that the objectives of organization should not be regarded as an unchangeable set of expectations. The objectives should be viewed as open to amendment and will change as strategies develop. In addition, Mintzberg (1994: 130-131) opposed to the ideas of formal strategic planning: "our argument is rooted in the essential [but false] characteristic of all planning systems: formalization through decomposition. To formalize requires analysis, specifically the reduction of a process to a procedure, a series of steps, each concerning a well-defined category. Moreover the result of the process must itself be decomposed in the form of plans. ... Any joint effects that different proposals may have, any synergies that may naturally exist or might be encouraged among them, have to be ignored for the convenience of formal analysis (unless, as noted by Hayes *et al.* (1988) ..., all proposals are to be combined into one large one)." With these words Mintzberg explained that formal strategic planning discourages creative strategic thinking, and he said good bye to "the long tradition in the planning literature, that likes to decompose and determine the importance of things a priori, and the fact that every failure of implementation is, by definition, also a failure of formulation" (1994: 26).

What was postulated here is that differences between intention and realization are well-known within management science, and that many strategies will emerge 'along the way'. We may find our study to be more complicated if *inconsistency* between intention and realization is deemed to exist. Essentially, Mintzberg indicated that there are differences between managers' intentions and actions that are realized. We would expect obviously some time to pass from intention to realization. Between intention and realization may be some emergent strategies which we would like to 'catch'. The aspect of time appears to play a crucial role in the differences identified by Mintzberg. Checkland added that it will be inevitable that managers adapt their intentions; it is a continuous process which is in principle never-ending. From a research point of view this may mean that we should design our study in such a way that changes in time could be visualized. In the design which was presented in **chapter 2**, time was a major constituent. Furthermore, along with Argyris we could expect a manager not always to act in correspondence with what he/she communicates. So, some 'tricks' had to be found in order to check this correspondence or consistency of the pharmacy

manager. Earlier, we mentioned that we were in need of a point of departure if we wanted to sketch a process of change. In this thesis, our point of departure is to flesh-out the nature of activities in the Dutch community pharmacy practice. We were interested in providing a broad sketch of the field. Three issues influenced this decision. First, because we could make solid comparisons between theory and practice; second, because of the usability of the material in the debate in the field; third, because of the learning experience involved in performing such a survey. It was decided that in order to make a broad sketch of the pharmaceutical field, a survey would be constructed and performed in *phase one*. Therefore, a pilot study was made and some questionnaires were tested, since no validated methods were available with respect to this specific matter.

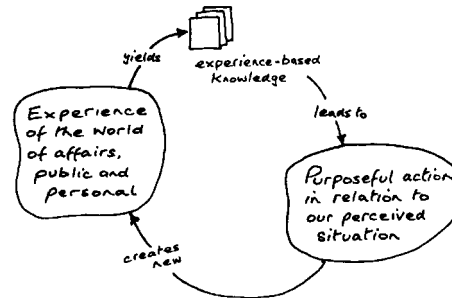
### 3.2.2. A preference for SSM

Having decided upon some relevant issues for *phase one*, the point of departure, we ought to say something about issues relevant for *phase two*, the process of change. We expect organizational change to be hard to ‘catch’ in a model. It should be remembered that a substantial part of the work of the pharmacy manager would involve emerging strategies and activities and could therefore be hard to ‘catch’. Furthermore, we had been warned that the strategy of the pharmacy manager would be implicit. In this case we might well have to deal with personal beliefs and/or the personality of the manager; complexity and subjectivity were at stake here. SSM is a methodology which could enable us to unravel ‘knots’ related to subjectivity and complexity. Within SSM, subjectivity was defined as the crucial characteristic of human affairs. Again, we stress that we were interested in the individual pharmacy manager and his/her managerial problems. And here we are: modelling improvements in the eyes of those who take the action. Subjectivity was a core issue in this part of the study. Moreover, SSM was most frequently applied to complex organizational problems; ‘messy’ problems. We argue that most organizational processes of change are complex, and therefore SSM could be suitable for our purpose. Let us take a closer look at SSM in relation to this study.

Within classical data collection, methods for observation and intervention are usually strictly separated. In SSM, methods for observation and intervention are intertwined. The basic shape of SSM is a cyclic learning system for researcher and respondent (**figure 3.2.**). In this learning cycle the actors define and debate the relation between reality and systems models. The outcome of the debate is used to take purposeful action and, in addition, is used as an input for the next learning cycle. In principle, the cycle is never ending. The debate, an intervention in the reality of respondents, is crucial in the use of SSM. Within SSM, subjectivity is defined as the crucial characteristic of human affairs, and should be taken seriously (Checkland and Scholes 1990). Furthermore, it is argued that problem situations for managers often consist

of no more than a feeling of unease, a feeling that something should be looked at, both from the point of view of whether it is the thing to do and in terms of how to do it. SSM is most frequently applied to complex organizational problems; ‘messy’ or ‘fuzzy’ problems. The main reason for selecting SSM as a methodology for collecting and analyzing data is the expected fuzziness of the problems in the organizational change to the customer mix. Earlier, we described how managers of

small organizations seldom make their strategy explicit. It is assumed that implicit activities are hard to ‘catch’ in a model, and become even more complicated when it is a matter of intention. In this situation we would model implicit intended activities. These activities would have to be extracted from the manager’s mind. It is to be expected that the pharmacy manager, not being used to making the intended activities explicit, would probably present a rather ‘fuzzy’ set of activities. One is reminded that SSM is a methodology which focuses on ‘fuzzy’ problems and which would enable us to make activities explicit. Consequently, SSM was applied in *phase two*. In addition, subjectivity of the problems-owners is one of the core issues in this methodology. In this thesis, intended activities or ideas of pharmacy managers were studied in relation with the organizational change to the customer mix. Furthermore, the methodology declines to accept the idea of ‘the problem’. It works with the notion of a situation in which various actors may perceive various aspects to be problematical. It tries to provide help in getting from a position of finding out about the situation to a position of taking action in the situation. Its emphasis is thus not on any external ‘reality’ but on people’s perceptions of reality, on their mental processes rather than on the objects of those processes. In this context, we were interested in the perceived problems of a pharmacy manager if he/she ‘travels’ to the customer mix.



**Figure 3.2.** The experience-action cycle (Checkland and Scholes 1990: 3).



Finally, the use of SSM was tested in a pilot study.<sup>4</sup> In using SSM, the pilot study showed some good results with respect to richness and structure of data. Consequently, the expected fuzziness and subjectivity of the problematic situations, the problem of dealing with intentions, and the good results of the pilot study resulted in a preference for SSM. Having decided to use SSM, we will now describe some of the significant ideas of the methodology.

### 3.2.3. Some main issues in SSM

Checkland and Haynes (1994) describe four significant ideas, which together shape SSM. One crucial step in the development of SSM was “the realization that models of human activity systems could be used to work out what information support was appropriate to purposeful activity” (Checkland and Haynes 1994: 193). This step will not be pursued here since we were not primarily interested in information support. Consequently, the ideas with respect to this thesis could be roughly represented with ‘purposeful action’, ‘Weltanschauung’, and ‘learning system’.

The first idea was the recognition that “all problematical human situations can be thought of as situations in which people are trying to define and take purposeful action” (Checkland and Haynes 1994: 192). In the work of Checkland and Scholes (1990) the opinion was given that “human beings cannot help attributing meaning to their experienced world; and they can then decide to do some things and not do others. They can take purposeful action in response to their experience of the world” (1990: 2). They described purposeful action as “deliberate, decided, willed action, whether by an individual or by a group” (1990: 2). Later, Checkland and Haynes (1994: 192) argued that “the idea of purposeful activity was therefore taken seriously as a systems concept [compare Ackoff and Emery 1972], and ways of building models of so-called human activity systems based on the idea of a transformation process. Such models consist of structured sets of activities linked logically together to make them capable of achieving a purpose, together with a monitoring and control

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<sup>4</sup> Some tests were made in a small pilot study with three pharmacy managers. Systems theory of control (De Leeuw and Volberda 1995), topic interviews (Hutjes and Van Buuren 1992) and SSM (Checkland and Scholes 1990) were used as data-collection methods. All three methods were compared. An application of the systems theory of control led to problems of understanding. The method is empirically empty and did not stimulate respondents to talk about intended activities. Goals of managers were implicit rather than explicit. Managers could not respond to these questions adequately. An application of a topic interview provided an embarrassment of richness in the data. The method is empirically oriented but did not stimulate respondents to talk about intended activities in a structured way. Structure was not present at all. It would have been hardly possible to compare these results over a substantial period of time. Application of SSM resulted in a richness of data and structure of the results. Although the method is also empirically empty it did stimulate respondents to talk about intended activities, and, in addition, in a structured way. The structure was provided because researcher and respondent were forced to follow the lines of SSM.

system, which ensures that adaptation is possible. Such abstract objects, which are holons (Koestler 1967), embody the ideas that constitute the concept 'system' - emergent properties; layered or hierarchical structure; processes of communication and control (Checkland 1981)." The term 'emergent properties' was later described as "the properties of a complex whole which refer to the whole and are meaningless in terms of the parts which make up the whole" (Checkland and Scholes 1990: 18-19). "For example, the vehicular potential of a bicycle is an emergent property of the combined parts of a bicycle when they are assembled in a particular way to make the structured whole" (1990: 19).

The second significant idea was that "a coherent model of this type could be built only if the worldview with respect to the transformation process embodied in the model were unequivocally stated. This stems from the fact that human observers are always capable of making many different interpretations of purposeful activity" (Checkland and Haynes 1994: 193). After an explicit process of finding out about a problematical situation, a number of models of purposeful activity systems, based on different worldviews, would be built. The 'Weltanschauung' is one of the core issues of the CATWOE; it is the worldview which makes the formulated transformation process T meaningful. Checkland and Scholes (1990) and Checkland and Holwell (1998) argued that in building models of 'human activity systems' it was necessary to declare the set of values, the outlook, the 'Weltanschauung' which makes a particular model meaningful, since the purposeful action which one observer perceives as 'freedom fighting' will be perceived as 'terrorism' by another observer with a different taken-as-given image of the world.

The third crucial idea in the development of SSM is that "SSM is itself a learning system, a process for acquiring knowledge about and taking action in a human situation thought of as problematical" (Checkland and Haynes 1994: 193). Checkland and Scholes (1990: 3) describe learning as "a cycle whose content will continually change: each time round the cycle the world experienced is a somewhat different place, and hence the cycle embodies fundamentally the possibility of learning [compare **figure 3.2.**]. If this happens then the purposeful action can be aimed at intended improvements, improvements, that is, in the eyes of those who take the action." They place knowledge acquisition in a cycle, since purposeful action derived from experience-based knowledge will itself result in new experience. Earlier, Checkland (1983) provided us with the notion that 'a solution', whether it optimizes or 'satisfices', is inappropriate in a methodology which orchestrates a process of learning which, as a process, is never-ending. So far, we have decided to work with SSM and have explained some of the basics of this methodology. However, it has not yet been explained how SSM was used in this study. We will now illustrate this 'how' question.

### 3.2.4. The process of SSM

Checkland (1975) defined a seven-stage model (figure 3.3.) separating the real world from systems thinking about the real world. In the real world, involvement of people in the problem situation is required. In systems thinking, involvement of people in the problem situation depends on the circumstances of the study (Checkland 1981). The seven stages of SSM can be used sequentially; the starting point is the 'Problem situation considered problematic' and the

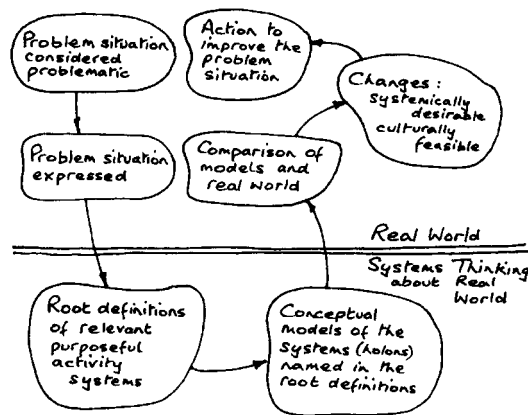


Figure 3.3. The conventional seven-stage model of SSM (Checkland and Scholes, 1990: 27).

end point is the 'Action to improve the problem situation'; both in the real world. The systems thinking of SSM helps us to tackle problematic situations in the real world. Some years later, Checkland and Scholes (1990: 27-28, 280-284) argued that the stages did not necessarily have to be worked at in a sequential order.

In addition, Checkland and Scholes enriched the 'seven-stage' model by a division between the 'stream of cultural analysis' and the 'logic-based stream of analysis' (figure 3.4.). They argued that the 'seven-stage' model seems rather bald, and in any case gives the impression too much that SSM is a 'seven-stage' process to be followed in sequence. The stream of cultural enquiry consists of three examinations of the problem situation (compare stage 1 and 2 of 'seven-stage' model). Firstly, the intervention itself is examined, since this will inevitably effect some change in the problem situation. Secondly, the social system is examined, and thirdly, the political system is examined. In logic-based thinking relevant systems are chosen, named, modelled (compare stage 3 and 4 of 'seven-stage' model) and compared with perceptions of the real world (compare stage 5 of 'seven-stage' model). From these differences between the models and the real world changes in actions can be inferred (compare stage 6 and 7 of 'seven-stage' model).

We recall that SSM could be regarded as a learning system. The richest use of SSM lies in the involvement of people in the problem situation in all stages of a study (Tsouvalis and Checkland 1996). The use of SSM is related to an elaborated contact with the respondents of a study. Examples were given by Checkland and Scholes (1990) for the National Health Service, the Civil Service, a Product-Marketing division, an Organizational Change Programme and so on. Most SSM-cases were

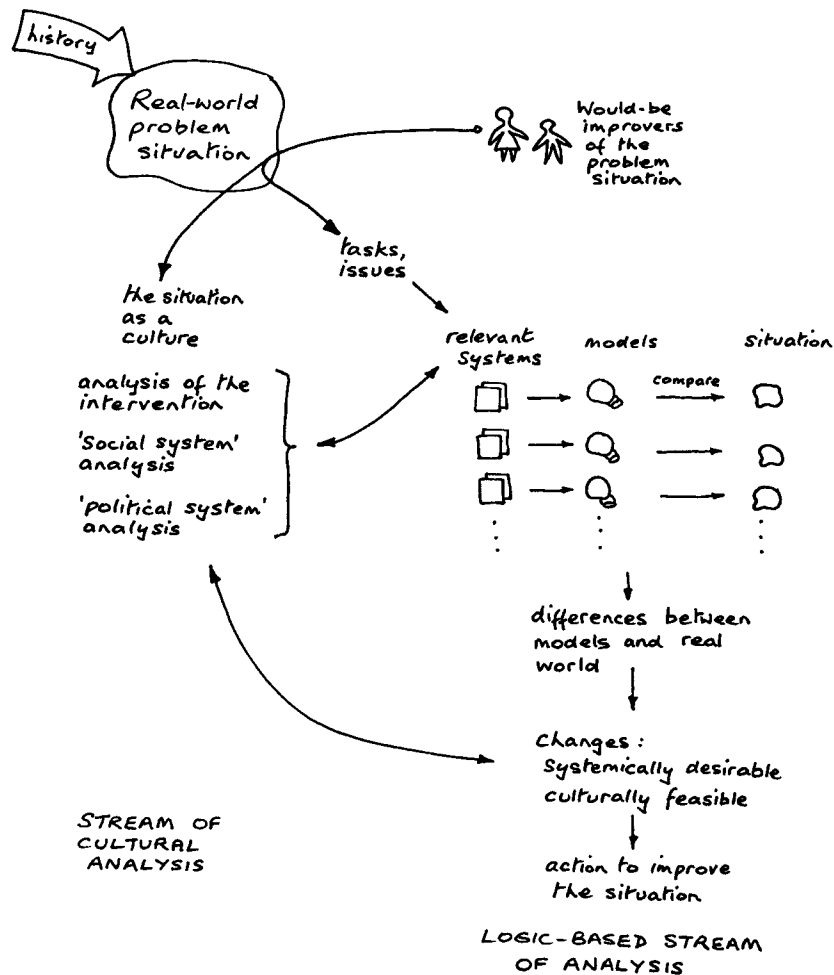


Figure 3.4. The process of SSM (Checkland and Scholes, 1990: 29).

performed within groups of problem owners. The methodology was presented as a way of coping with the variety of views about topics such as strategy and organizational change. A starting point for the researcher is a problem situation which has provoked concern. A general pattern in these cases was that in several workshops or meetings, root definitions were distilled. Participants were involved in the decision process in such a way that the outcome of SSM-cases was broadly accepted. Within this view, the outcome of SSM served two goals. Firstly, the outcome could be used to solve (part of) the problem situation of the problem owners. Secondly, the outcome could be used to describe the process of problem solution for the researcher. The researcher described the case with the use of rich picture, root definition, CATWOE,

a picture of a model, a description of activities, and a description of the process and the context of the study. However, at the end of their book Checkland and Scholes (1990) describe a distinction between two modes. Mode 1, intervention, is a formal stage-by-stage application of the methodology. It uses a framework of systems ideas embodied in SSM as expressed in the 'seven-stages' model or the 'logic-driven and cultural streams of enquiry' version. It uses these systems ideas in order to enquire into and improve some part of the real world. Mode 2, interaction, is an internal mental use of the methodology as a thinking mode. It takes SSM itself as its framework of ideas, takes as its methodology conscious reflection upon interactions with the flux of events and ideas, and takes as its focus of enquiry the process of learning one's way to purposeful improvement of problem situations. SSM is then used in order to make sense of an experience. In this thesis, we are not 'operating the stages' of SSM but are using it to provide a coherent way of describing the would-be-problem-solving involvement within the flux. Both modes are in fact 'ideal types' and most uses will be somewhere between the two. In fact, we argue that this thesis is closer to mode 2. Firstly, the framework of ideas has been mainly provided by SSM (mode 2). Other system ideas, for example the systems theory of control, were also used (mode 1: compare **chapter 4 and 6**). Secondly, SSM has been used in order to reflect upon the everyday flux of events and ideas, and to make sense of it (mode 2). However, parts of the seven-stage model were applied in a sequential way in order to collect data (mode 1: compare **chapter 6**). The area of application was mainly with respect to this thesis (mode 2). However, some results were applied in the real world (mode 1: compare **chapter 6**).

SSM would therefore help us to identify and acquire knowledge about problematical situations in which people with a certain worldview of the transformation process (for example, our organizational change to the customer mix), are trying to define and take purposeful action. So, with respect to our main question, we would expect SSM to help us identify the organizational problems experienced by the pharmacy manager in changing the pharmacy to the customer mix. However, we also had to accept that, within SSM little attention was paid to descriptions of what was problematic in terms of the modelling process (Checkland 1981, Checkland and Scholes 1990, Checkland and Holwell 1998), for example, the formulation of root definition and criteria in practice. Consequently, we also introduced the work of other authors in order to prepare us for this problem. Since SSM strongly relates to the work of Vickers (1965, 1983), Schön (1983), and Simon (1945), we will use some of their work and of other authors also, in order to find some useful descriptions. Let us therefore take a look at some specific problems we could expect in this organizational change.

### 3.2.5. Expected problems with organizational change

We claim that the survival kit of a manager in an organizational change consists of an aim and related criteria or evaluation. Since the pharmacy manager intends to change the organization, we need a destination or aim. Evaluation is then necessary in order to assess whether we are on the right track to our destination, where we are on this track, and whether the activities were worth the effort in the light of our destination. Later, the exact destination will be established by using pharmacy practice research. We did, however, argue that many pharmacy organizations were interested in changing to the customer mix. Nevertheless, we have not yet said anything about the specific difficulties we could expect. How hard is it to define a usable destination?

More than thirty years ago, Simon (1945) warned us that “the analysis of rational behaviour in terms of a means-ends hierarchy may lead to inaccurate conclusions unless certain cautions are observed. First, the ends to be attained by the choice of a particular behaviour are often incompletely or incorrectly stated through failure to consider the alternative ends that could be reached by selection of another behaviour. Second, in actual situations a complete separation of means from ends is usually impossible, for the alternative means are not usually valuationally neutral. It is from this difficulty that so many futile arguments arise as to whether ‘ends justify the means’. Third, the means-ends terminology tends to obscure the role of the time element in decision-making. If an end is some condition or state to be realized, then only one state may be realized at one time but many states over a period of time, and choice is influenced not only by particular ends but also by expectations of what ends may be realized at different times” (1945: 64-65). He also noted that “these objections do not mean that the language of ends and means is unusable; they simply mean that it must be employed with considerable care and sophistication” (1945: 66). However, De Leeuw warned us that “in general, control will relate to open systems. The environment will have influence” (1994: 69). Consequently, he noted that “it is not very easy to determine if the realization of goals is the partial or complete result of the control. It does not mean that the control did not function if the objective has not been realized, and, in addition, if the objective has been realized it is questionable if this was thanks to or in spite of the control” (1994: 72). In connection with this issue, he described the difference between realization of objectives and directed influence. He defined control as directed influence, and not realization of objectives by any means. “In practice, it happens that control is performed, but it remains unclear what the aim of the control is. That does no good to the effectiveness of the control” (1994: 72). He added that “a control objective is not constant, complete or measurable by definition. However, if possible a detailed and explicit objective is preferred” (1994: 70). Going in the right direction might be enough under certain circumstances.

Vickers (1965) acknowledged that he followed numerous points of the work of Simon (1945). However, he also added that there are some important differences of substance or emphasis. He stated that 1) he adopted a more explicit dynamic conceptual model of organization and its internal and external relations, 2) regulators set and reset courses or standards rather than objectives, 3) there was more emphasis on the necessary mutual inconsistency of the norms seeking realization in *every* deliberation and at *every* level of organization in his work, 4) he stressed the importance of the underlying appreciative *system* for judgements of facts and value, and 5) the setting of the appreciative system itself is changed by every exercise of appreciative judgement (1965: 21-22). Checkland and Holwell (1998: 46-47) analyzed the work of Vickers and Simon. They argued that Vickers takes a fundamentally different view of human action which they summarized under three points. The goal-seeking paradigm is inadequate to visualize the richness of life as we experience it, standards or criteria are not given from outside but are internally generated from the previous history of the system and the interaction with its environment, and relationship managing is preferred above goal seeking. In his earlier work, Checkland (1981) described how “Vickers reflected upon his experiences and sought to understand the familiar but mysterious processes by which policy is continuously decided, executed and changed, seeking to understand it ‘both as a mental activity and as a social process’” (1981: 261-264). Vickers would have argued that “the goal-seeking paradigm, while adequate to explain behaviour of rats in mazes, is totally inadequate to explain what goes on in the Cabinet, in board rooms, ..., and in our everyday life. There, the bulk of our activity is concerned with establishing and modifying relationships through time, rather than seeking an endless series of ‘goals’, each of which disappears on attainment. He added that the intrinsic confusion about means and ends arises from the fact that no end can ever be more than a means, if an end is equated with a goal. ‘To get the job or marry the girl is indifferently an end, a means, and a goal; it is an opportunity for a new relationship’. Vickers suggests replacing the goal-seeking and goal-seeking-with-feedback (cybernetic) models by one in which personal, institutional or cultural activity consists in maintaining desired relationships and eluding undesired ones” (1981: 261-264). Later, Vickers even added that “the obsession with goals or ends which are to be attained or not attained once for all, is fatal to any adequate conception of system, human or otherwise. It is not, of course a total illusion. Our habits of thought about success have been greatly confused by the concept of biological evolution, or rather by its cultural effect, coming when it did, in identifying survival with success. Animals seek to avoid death, although the survival of a species or even of a population is not necessarily served thereby. It may even be threatened, as many human populations are threatened in varying degrees by the increase in longevity. Success is a judgement made by human minds by reference to human criteria” (1983: 170-171).

With this theoretical information, we have learned that it will be rather hard for managers to define a usable aim. Now let us assume, for the moment, that managers would be able to overcome this problem. What we then need is some kind of criterion in order to exert control. The necessity of this criterion is threefold. Firstly, in an organizational process of change it would be convenient to know whether we are on the right track to our destination. Secondly, we would prefer to know where we are on the track during such a process of change. Thirdly, we might want to judge whether the activities were worth the effort in the light of our destination. Checkland and Scholes (1990) stated that these processes of communication and control are necessary in order to survive; activities should logically be judged on efficacy, effectiveness and efficiency. De Leeuw (1990) is of the opinion that an evaluation is a minimum requirement in order to exert effective control. We have therefore established that criteria are vital in the organizational change, but how hard is it to find and formulate these criteria and the related monitor instruments?

If we turn to Thompson, our discussion of destination and monitor may appear rather simple. Thompson (1967: 102) argued that “the purposive individual will try and exploit his opportunities (as he sees them) in the direction of his aspirations and that, within the limits of the constraints he believes to be operating, he will be guided in this endeavour by his beliefs about causation and by the standards or norms he believes are appropriate.” However, he has not provided us with information about the specific problems of studying these aspirations, or when the standards or norms are appropriate. For Thompson, the formulation of destination and criteria for monitoring this is apparently a rather simple matter. However, Vickers (1965: 37) noted that “human regulators have other troubles than engineers. For example, questions like: ‘How does the regulator select, derive and represent its information about the ‘state of the system’? How does it derive the standards by which this information is evaluated? How does it select and initiate a response?’ trouble the human regulator.” He added that “if the regulator completed a disparity signalling - ‘Something is the matter’ had set the problem - ‘What is the matter?’ and the answer - ‘*This* is the matter’ had set a new problem - ‘What to about it?’. A series of possible solutions to this problem were submitted to appreciation. Consequently, a solution was selected ‘*This* is what should be done’” (1965: 46). That this signalling process is, however, not always very clear was illustrated by Donald Schön. With respect to the interpretation of organizational troubles, Schön (1983) suggested that if “... the manager first gets signals that something is going wrong in his organization, he usually has no clear, consensual account of the trouble. Various members of the organization, who occupy different positions and have different interests, tell different and often conflicting stories. If the manager is to take action, he must make some



sense of the organizational ‘Rashomon’<sup>5</sup>; but by inquiring into the situation, he also influences it. Hence he faces a twofold problem: how to find out what (if anything) is wrong, and how to do so in a way that enhances rather than reduces his ability to fix what is wrong” (1983: 246). He added that “managers do reflect-in-action. Sometimes, when reflection is triggered by uncertainty, the manager says, in effect, ‘This is puzzling; how can I understand it?’ Sometimes, when a manager asks, ‘What can I make of this?’ And sometimes when a manager is surprised by the success of his own intuitive knowing, he asks himself, ‘What have I really been doing?’” (1983: 241). Schön also described some problems which managers could face if they reflect-in-action: “[there is] the problem of interpreting the external environment’s response to organizational action, the diagnosis of signs of trouble within an organization, the process by which an organization learns from its experience, and the effects of an organizational learning system ‘on the way’ in which organizational problems are set and solved” (1983: 243). To this he added that “managers do reflect-in-action, but they seldom reflect on their reflection-in-action. Hence this crucially important dimension of their art tends to remain private and inaccessible to others” (1983: 243).

In addition, Schön illustrated how action and reflection are merged in many cases and therefore cannot always be separated easily. Schön (1983) described an example to clarify ‘reflection-in-action’. He argued that “we sometimes think about what we are doing. Phrases like ‘thinking on your feet’, ‘keeping your wits about you’, and ‘learning by doing’ suggest not only that we can think about doing but that we can think about doing something while doing it. Some of the most interesting examples of this process occur in the midst of a performance” (1983: 54). “When good jazz musicians improvise together, they also manifest a ‘feel for’ their material and they make on-the-spot adjustments to the sounds they hear. Listening to one another and to themselves, they feel where the music is going and adjust their playing accordingly. They can do this, first of all, because their collective effort at musical invention makes use of a schema, a metric, melodic, and harmonic schema familiar to all participants, which gives a predictable order to the piece. In addition, each of the musicians has at the ready a repertoire of musical figures which he can deliver at appropriate moments. Improvisation consists in varying, combining, and recombining a set of figures within the schema which bounds and gives coherence to the

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<sup>5</sup> Although Schön (1983) did not give a definition of the term ‘Rashomon’, he provided a context for understanding the term. For example, “In this *Rashomon* of problem settings, each profession framed the problem according to its expertise, its ideology, and its interests” (1983: 193). We believe that the term originates from the film ‘Rashomon’ directed by Akira Kurosawa which was released in 1950. “This film tells the story of the bandit Tajomaru and his chance meeting in the woods with a samurai and his wife. Tajomaru and the samurai fight, apparently over the woman, and the samurai is killed. The catch is that the story is told from four different point of view. The problem is that none of the stories match up, they are all different” (<http://members.aol.com/RplcmtKilr/rashomon.html>).

performance. As the musicians feel the direction of the music that is developing out of their interwoven contributions, they make sense of it and adjust their performance to the new sense they have made. They are reflecting-in-action on the music they are collectively making on their individual contributions to it, thinking what they are doing and, in the process, evolving their way of doing it. Of course, we need not suppose that they reflect-in-action in the medium of words. More likely, they reflect through a 'feel for the music'. Much reflection-in-action hinges on the experience of surprise. When intuitive, spontaneous performance yields nothing more than the results expected for it, then we tend not to think about it. But when intuitive performance leads to surprises, pleasing and promising or unwanted, we may respond by reflecting-in-action. Like the jazz-musician we may reflect on the sense of music we have been making. In such processes, reflection tends to focus interactively on the outcomes of action, the action itself, and the intuitive knowing implicit in the action" (1983: 55-56).

Vickers (1983: 171-172) also described some basic difficulties with the definition and use of criteria. "One is the difficulty of comparing disparate variables. Is a cheap sewer preferable to a river you can safely bathe in? A second difficulty is defining success in uncertainty. Most future promises and threats are not predictable with absolute assurance; some are highly uncertain. But their importance in human calculations does not diminish in linear or other regular relation to their probability. An unacceptable threat does not necessarily become acceptable merely because it is improbable. Nor do human minds usually agree on this crucial issue of acceptability. Some of the most bitter controversies of our time do not relate to estimates of probability but on judgements of acceptability. A third difficulty in defining success is time. How far ahead should the policymaker look? Beyond some horizon, which varies with the issue, all estimates of future results become lost in a fog of uncertainty. At one extreme stands the mutualist, grumbling -'Posterity has done nothing good for me. Why should I bother about it?' At the other extreme stands the devotee of complementary obligations, overwhelmed by his indebtedness to the past and acutely conscious that he can pay that debt only to the future." Vickers also argued that "the concept of success is a complex one. It implies criteria by which success is to be judged; criteria which are cultural, sometimes almost wholly individual, as well as biological. Even the biological criteria are more complex than they look. Rain forests may be necessary to the biosphere as a home for man but a less than optimal environment for those men who live in them" (1983: 170). He also added that "cultural and personal criteria are far more complex and conflicting. In addition, the concept of purpose obscures the concept of success still farther, for first it assumes that purpose is worth pursuing and thus commits the evaluating mind either to some ultimate objective which is worth pursuing for its own sake, or to an infinite regress in which every goal is sought as a means to some even more remote 'end'.

It also commits the evaluating mind to the absurd assumption that ‘means’ are in themselves value-free, comparable only by their efficiency in attaining some desired end” (1983: 170). In this context, De Leeuw (1994: 70) argued that evaluation should be possible: “more than this is not necessary, and less is not possible.” Put in other words: “effective control is impossible if one cannot at least evaluate if the system is going in the right direction. Minimally, there should be a comparison possible: the situation improved compared to the preceding period” (1994: 70).

### 3.3. Pharmaceutical background

We argue that community pharmacy managers, as well as other managers, mostly have consensus of their primary role in society: their *purpose*, for example, the supply of medicine to the population. In most of the legislation passed within the last two decades, this basic task consisted of at least the control, storage and supply of medicines, as well as their preparation and their development and manufacture on a larger scale. In addition to the basic task, there has increasingly been a recognition or imposition of other tasks; in particular the provision of information and counselling with regard to medicines, counselling in preventive health care, the notification of suspected adverse reactions, and, on the research front, a role in the quest for new medical substances and forms of administration (WHO 1989), for example, medication surveillance. It should be noted that a definition of a purpose can change over time. An example is the development of the term pharmaceutical care.<sup>6</sup> At this stage, such a change over time does not surprise us, seen in the context of the experience-action-

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<sup>6</sup> The term pharmaceutical care was first defined by Mikeal *et al.* (1975) as ‘the care that a given patient requires and receives which assures safe and rational drug use’. Later, Brodie *et al.* (1980) suggested that ‘pharmaceutical care includes the determination of the drug needs for a given individual and the provision not only of the required drugs but also of the services necessary (before, during, or after treatment) to ensure optimally safe and effective therapy’. Hepler (1987) subsequently described pharmaceutical care as ‘a covenantal relationship between a patient and a pharmacist in which the pharmacist performs drug-use-control functions (with appropriate knowledge and skill) governed by awareness of and commitment to the patient’s interest’. Some years later Hepler and Strand (1990), who had become the two leading figures on this subject, defined pharmaceutical care as ‘the responsible provision of drug therapy in order to achieve definite outcomes that improve a patient’s quality of life’. Recently, Hepler (1996) made a very subtle modification in the end of this definition: ‘the responsible provision of drug therapy to achieve definite outcomes, which are [intended] to improve the quality of a patient’s life’. Finally, and very recently, Strand (Cipolle *et al.* 1998) defined pharmaceutical care as ‘a practice in which the practitioner takes responsibility for a patient’s drug-related needs and is held accountable for this commitment’. Within pharmacy practice research it has been suggested that Strand’s approach has become more humanistic and Hepler’s approach is more technical in nature (Van Mil 1999). These and other definitions were used by a Special Interest Group (SIG) for pharmaceutical care of the KNMP/WINAp in order to formulate a Dutch definition in April 1998: “pharmaceutical care is the care of the pharmacist and his staff for the individual patient in pharmaco-therapy to improve the quality of life for the patient” (Venema 1998e: 738). It should be noted that we have not intended covering all definitions of pharmaceutical care here. The point is that definitions, even of broadly defined tasks, for example, pharmaceutical care, may shift over time.

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cycle of Checkland and Scholes (1990).

At a more detailed level, a purpose can be translated into a *mission*. The mission of a pharmacy is the unique reason for its existence; that which sets pharmacies apart from all other organizations. Although the terms ‘purpose’ and ‘mission’ are often used interchangeably, to distinguish between them may help in the understanding of organizational goals (Stoner 1986). In developed countries, *good quality of the provision and use of medicine*, would be such a mission. Within the broad limits of its purpose, each organization chooses a mission that can be described in terms of products and markets, services and customers (Stoner 1986). Over the last fifty years, the Dutch pharmacy, for example, has redefined its mission, shifting the emphasis of its operations away from the production of medicine to the support of pharmacotherapy and the provision of information (KNMP 1991). Within this context, Van Mil and Tromp (1996: 67) argued that “pharmaco-therapy became increasingly important”, and that “these developments ran more or less parallel with developments in other developed countries.”

In addition, in management science, it is well known that missions can be translated into various *objectives* that an organization must reach (Stoner 1986); this can be done with the performance of *activities*.<sup>7</sup> For example, individual pharmacists can impose their own interpretation on the mission by stressing one or more objectives. The objectives may be described in terms of the productivity of the pharmacy, the quality of the information given to the customer, or a variety of other ways. The activities will have some kind of an expected contribution to the objectives, and on another layer, to the mission and the purpose.

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<sup>7</sup> This description is mainly used as an aid in sketching the pharmaceutical field analytically. It should be remembered that our critical remarks about means-and-ends (Vickers 1965) and the misconception that every failure of implementation is, by definition, also a failure of formulation (Mintzberg 1994) hold true.

Despite consensus of purpose and mission, pharmacy managers interpret good quality in different ways. Several studies have shown different opinions about the interpretation of good quality in pharmacy practice.<sup>8</sup> The nature of the observed actions varied, for example, from an emphasis on actions related to good quality of medicine, to good quality of revenue or to good quality of information. Within this context, an interesting statement was made by the Commission of the European Communities (1989) with respect to product quality. It was argued that, “quality assurance is a wide-ranging concept which covers all matters which individually or collectively influence the quality of a product. Of central importance is the sum total of the organized arrangements made with the object of ensuring that medicinal products are of the quality required for their intended use” (1989: 15). It is stressed here that a different nature of activities does not have to be problematic in terms of quality as a conception. Good quality can be achieved in various ways and with various activities. However, in terms of SSM, we do expect the intended good quality and the related activities to form a consistent whole; they should be linked.

So, based on this material we would expect a pharmacy manager to have explicit formulations of purpose, mission, and objectives. However, since pharmacies are rather small organizations, we have to add some specific information. Mintzberg

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<sup>8</sup> Over twenty years ago, differences in the interpretation of the term good quality were illustrated by a study made by the Wiarda Beckmann Stichting (1977); Huizinga (1962) defined the tasks of the pharmacist in terms of minimizing the number of customers preventing from exceeding the maximum dosage, and preventing from other pharmaceutical irregularities. Earlier, Huizinga (1957) argued that the pharmacist had tasks related to supervision, preparation of medicine, and patient counselling with respect to pharmaco-therapy. Cohen (1973) promoted the active role of the pharmacist should the patient have any questions about prescribed medicine. According to Honhoff (1973), the pharmacist has an informative role in relation to the general practitioner in order that a more effective medication may be reached. De Vries (1973) argued that pharmacists should be appointed by insurance companies or a foundation which monitors public health; and, in doing so, should assure the quality. The World Health Organization (WHO 1993a: 5) argued that “pharmacists have a key role to play in meeting the societal and individual needs within the philosophy of pharmaceutical care”. The Pharmaceutical Group of the European Union (PGEU 1994: 1) noted that the pharmacist should “promote excellence in practice for the benefit of those the profession serves” and presented a set of detailed guidelines for such a practice. These guidelines for Good Pharmacy Practice (GPP) consisted of a wide range of subjects: patient information, facilities, pharmacy personnel, supply and use of medicine, encouraging rational prescribing and correct use of medicine, self care, and health promotion and ill-health prevention. Later, and specifically for the Dutch situation, the KNMP (1996a) described pharmacy standards (NAN), with respect to “advice and information for the customer, medication surveillance, pharmaco-therapeutic consultation, the dispense of medicine and other health-related products, pharmacy preparations, health promotion and health prevention, research and development, personnel and organization, rooms and facilities, document administration, suppliers, inadequacies of quality, and testing” (1996a: 4-16). Recently, Van Mil and Tromp (1996: 67) argued that for the Dutch community pharmacist, “pharmaco-therapy became increasingly important at the expense of the more chemical aspects of the profession”. Similarly, Noyce (WHO 1997: 20) noted that “[in the UK] the focus of the practising pharmacist is moving towards the role of drug therapist and medicines manager. ... alongside the natural science curriculum, therapeutics and patient management have become equally important”.

(1973) noted that many small organizations have an entrepreneurial mode of strategy-making. This means that this strategy-making process tends to be highly intuitive and non-analytical. "It is not, therefore, surprising that the resulting strategy, seldom made explicit, reflects the chief executive's implicit vision of the position of the organization in its environment. In fact, that strategy is more often than not a direct extrapolation of his personal beliefs, an extension of his own personality" (Mintzberg 1979: 307). Pharmacy managers will therefore probably fail to explicitly formulate their purpose, mission, and objectives. We may introduce the earlier distinction of Mintzberg again. He argued that deliberate strategy concerns the intentions which have been fully realized, and emergent strategy is a realized plan which was not expressed as intended. Unrealized strategy is evidently not realized at all (1994: 24-25). In this situation, we would expect pharmacy managers to have an emergent strategy which was not planned a priori or explicitly formulated, rather than a deliberate strategy, in which the intended strategy has been completely realized (compare Mintzberg 1994: 24-25). Along with Mintzberg (1994) we use the words strategy, objectives and activities intertwined. He argued that in dealing with emergent strategy, activities and strategies merge. "Strategies refer to the important things, tactics to the mere details. But the very meaning of emergent strategy is that one can never be sure which will prove to be which. In other words, mere details can eventually prove to be strategic" (1994: 27). Since strategy, objectives, and activities are intertwined, we would expect the pharmacy manager to compose a 'mix' of activities which are consistent with purpose, mission, and objectives. This selection will lead to a certain control mix. Within the systems theory of control (De Leeuw 1990), the control mix was defined as the activities performed by an actor.<sup>9</sup> In this study it is assumed that certain sets of activities belong to a certain pharmacy mix

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<sup>9</sup> From the management point of view, the central issue of the systems theory of control (De Leeuw 1974, 1990, 1994, 1996) is the managerial actor. The systems theory of control has much to say about the way in which control should be exerted if effectiveness is the goal. We may see this particularly clearly in the five requirements for effective control: 1) The goal as evaluation mechanism 2) A model of the target system 3) Information about the environment and the state of the system 4) Sufficient control measures with which to control all kinds of disturbances 5) Sufficient data handling capacity. In this approach, effectiveness is deemed to exist if activities are carried out judiciously. The actor in the systems theory of control is considered to be a controlling organ (CO). The CO pursues system effectiveness and on that basis controls the target system (TS) and the environment (E). The activities performed by the actor may be described as a control mix. A control mix is a selected set of control measures. The systems theory of control distinguishes internal and external control and a total of six control measures: internal routine control, internal adaptive control, internal goals control, external routine control, external adaptive control, and external strategic control. Internal routine control refers to clever manipulation of the control variables at hand. The structure of the system, the environment and the goal are taken as constant and invariable. Internal adaptive control refers to changes in the structure. Internal goals control refers to changes in the goal. External routine control refers to the influence on the environment at routine level; the structure and goals of the environment remain intact. External adaptive control refers to the influence on the environment by influencing the structure of that environment. External strategic control refers to the influence on the environment by influencing the goals of that environment.

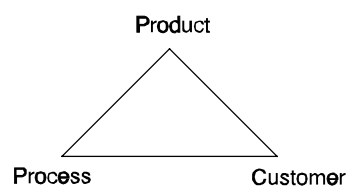
and a certain conception of quality. For example, it could be expected that the pharmacy manager in the product mix would stress a set of activities related to the category *product quality*. In addition, this pharmacy manager can more or less stress other sets of activities related to, for example, *profitability* or *customer satisfaction*. We have shown above that different interpretations of good quality are possible. Some possible interpretations of good quality will now be given.

### 3.3.1. Three pharmacy mixes

Although many descriptions of different types of pharmacists (OPG Group 1986, De Jong 1992, KNMP 1993a, Cancrinus-Matthijsse 1995, WHO 1997b) and different types of pharmacies (Bouman & Company 1990, De Jager 1991) have been made, as well as different interpretations of the term 'good quality'; this study does not seek to define pure types of pharmacy organization or to give one best way to organize good quality. It is presupposed that there is no best way to organize quality.

However, in the pharmaceutical literature we have found indications for the definition of three pharmacy mixes. The product mix, the process mix and the customer mix are theoretically postulated (**figure 3.5.**). In each mix different activities are stressed.

In the product mix, pharmaceutical activities are stressed. This has been regarded as the classical approach of the profession and deals with issues like the specific standards medicine should meet, the minimization of risks, and the minimization of error occurrence. In the process mix, financial activities are stressed. This has been regarded as the ethically problematical approach and describes to what extent the pharmacy is organized profitably and efficiently. In the customer mix, customer activities are stressed. This has been regarded as the future approach of the profession and deals with the way in which the wishes of the customers are met. We stress that this study seeks to find out *if the three pharmacy mixes, the product mix, the process mix and the customer mix, are consistent in terms of thought and action*. It should be stressed that, in principle it is possible to fail in a consistent manner. For example, the Dutch national team, which had a remarkably consistent performance, failed in the semi-finals during the World Cup in 1998. It was their intention to become world champion, and although their performance on the field was consistent with this aim, they did not succeed in attaining it, and failed as it were. This study describes the 'fit' of the organization strategy with its modelled activities and real-world actions selected by the pharmacy manager. For example, which set of activities would be



**Figure 3.5.** Three mixes of activities in pharmacy organization; product mix, process mix and customer mix.

likely to achieve maximum product quality, maximum profitability, or maximum customer satisfaction? At this stage, the pharmacy mixes are described in a pure form<sup>10</sup>; it is assumed for the moment, that they are internally consistent.

### 3.3.2. The product mix

In order to illustrate what is meant by the product mix, we will use a definition of 'pharmaceutical care': "the responsible provision of drug therapy to achieve definite outcomes, which are intended to improve the quality of a patient's life" (Hepler 1996: viii). The issue of drug therapy is definitely in the pharmaceutical domain and is a matter of importance within the product mix. The Dutch pharmacist is held responsible for a correct dispensing of medicine. In this pharmacy mix, the pharmacist will do his/her utmost to secure the quality of the drug therapy. In contrast with other countries, extemporaneous preparations are produced on a regular basis at the Dutch community pharmacy. Most activities of the manager in this mix will be directed at issues like pharmaco-therapy and patient compliance. Outcomes could be visualized with proxies describing compliance, knowledge of the patient, number of prescribed medicines, dosages etc. Moreover, the pharmacy organization is structured in such a way that it ensures a good and secure quality of the therapy in the broadest sense. That might as well involve a refusal to dispense the medicine, based on pharmacotherapeutic arguments, as we will see later in this section. This suggests that everything will be alright, as long as the patient takes the medicine correctly. Only then can the patient recover and his quality of life be improved. Consequently, the *product mix* deals with the specific standards the medicine should meet, the minimization of risks, and the minimization of error occurrence.

Firstly, the product mix deals with *the specific standards the medicine should meet*. Written manufacturing instructions conforming to European rules of Good Manufacturing Practice (GMP) have been issued in many European countries. These GMP guidelines, which can be regarded as industrial norms (Boer 1997), triggered the formulation of standards for manufacturing in pharmacies. Increased attention to quality assurance covers general supervision of the process of preparation as well as control of raw materials, packaging materials, premises, personnel, the manufacturing environment and the final product (WHO 1989). Some years later, in 1994, the Pharmaceutical Group of the European Union (PGEU) presented the guidelines for Good Pharmacy Practice (GPP). One of the guidelines for preparation and quality assurance of extemporaneous preparations described that a formulary should be

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<sup>10</sup> Beware that reality in community pharmacy practice will be somewhat different. It is to be expected that the activities of all three pharmacy mixes will be involved within community pharmacy practice, although to a different extent (compare, for example, Kruithof 1995, Cancrinus-Matthijssse 1995, Van der Werf 1996, Nyfer 1997).



established, having regard to quality, safety, and efficacy. However, some months after these guidelines were presented, a report of the Dutch Public Health Inspectorate for medicine (Inspectie van de Volksgezondheid voor de geneesmiddelen) argued that pharmacists were not taking the measures necessary for the documentation of the quality of extemporaneous preparations in order to make it verifiable: "In fact, it is not verifiable if simple in-process-checks are performed" (1994: 6). Moreover, inspections over the period 1992-1995 showed that at 75% of the pharmacies deviated from the norm with respect to extemporaneous preparations (IGZ 1997). Recently, the KNMP elaborated Dutch pharmacy standards (NAN) (KNMP 1996a), in guidelines for extemporaneous preparations at the community pharmacy (KNMP 1997a, KNMP 1997b). In these guidelines, the required quality of a community pharmacy producing extemporaneous preparations is described in detail, for example, requirements for rooms, quality of the design of the instructions for composition and preparation, non-standard preparation, individual preparation, aseptic operations and preparations, preparations with risk, quality system, and responsibilities (Boer 1997).

Secondly, the product mix deals with *the minimization of risks*. It is supposed here that, roughly, when the origin of risk is external, it either comes from the prescriber or the patient. In this mix, some activities involve checking for error or ambiguity on the part of the prescriber. This is in the interests of the patient, since, as several studies have shown, errors do occur ("Pharmacy," 1986, Nielsen 1984, Castro *et al.* 1987). Other activities relate to the behaviour of the patient. A great deal of attention is given to the provision of information (Blom 1996, De Gier 1997a, De Gier 1997b). However, Urquhart suggested recently that "probably compliance is more strongly related to the characteristics of the individual, than related to the clinical picture" (Bouvy 1997: 654). Although a pharmacist can influence the behaviour of the patient, there is no complete control over compliance. In contrast, we note that "in the United States patients with non-compliance can be imprisoned when endangering Public Health. For example, with patients who suffer from TB" (Bouvy 1997: 654). This is a situation which would be inconceivable in the Netherlands. In general, the pharmacist is expected to play an important role by providing information in order to improve the level of patient compliance. Many patients only have a vague notion as to when, how and why their prescribed medicines should be taken. Studies show widespread aberrations of varying degrees of seriousness (Latiolais *et al.* 1969, Blackwell 1972, Sackett *et al.* 1976, Pothier 1976, Parkin *et al.* 1976, Buurma *et al.* 1996, Svarstad *et al.* 1998). The increasing attention paid to patient compliance is a result of the expanding arsenal of medicines, the origin of prevention, and the origin of emancipated and critical patients, who seem to have more knowledge about the harmful side effects of medicine (Evans *et al.* 1983). With studies occurring more frequently becoming more sophisticated, more and more non-compliance is registered and exposed (Verbeek-Heida 1992). It is evident that between one quarter and one-

half of patients in the community fail to follow the instructions given by the prescriber. In analyzing the main reasons for emergency admission to hospital, studies attributed 10-15% of such cases to the incorrect use of medication (Hood *et al.* 1978, Bergman *et al.* 1981, Holmberg *et al.* 1983). A more recent study showed that only 25% of the patients using medicine for hypertension followed the instructions (Buurma *et al.* 1996). Similar results were found in a study of Svarstad *et al.* (1998) where “one-fourth of the patients had repeat nonadherence (took  $\geq 20\%$  more or less than prescribed); 50% had sporadic nonadherence (took  $\geq 1-19\%$  more or less than prescribed); and one-fourth had no nonadherence in the past week. Of those with nonadherence, all except one took less than prescribed” (1998: 12). Moreover, Urquhart suggested that “patients can be divided in six groups, all equal in size. One-sixths exactly follows the instructions of the physician. Another sixth of the patients is less precise, but will never experience problems through a forgotten tablet. Every next sixth is less compliant. The last sixth is non-compliant. Although they receive many expensive diagnostics and prescribed medicine, they do not use the medicine at all” (Bouvy 1997: 654).

Thirdly, the product mix deals with *the minimization of error occurrence*. It is supposed here that, roughly, when the origin of error is internal, it relates to the internal pharmacy organization. Recently, Manasse (WHO 1997b: 32) noted that “high rates of morbidity and mortality associated with medication misadventures are a reality, inappropriate and missing consultation with patients and prescribers on appropriate medication prescribing and utilization is rampant, and leadership for assuring improvements and quality enhancements in the medication use system in the United States is scarce.” How can a pharmacy manager prevent such problems? Looked at analytically, several measures can be taken to assure the safety of the dispensed medicine at various working stations and by using various organizational systems in pharmacy organization. A Dutch pharmacy has roughly five working stations: At working-station 1 (*receiving*) counter, the prescription is received. At working-station 2 *computer*, the data concerning the patient and the prescription are put into the computer. At working-station 3 *filling*, the prescribed medicine is collected/produced. At working-station 4 *check*, the filled/produced prescription is checked. At working-station 5 (*delivery*) counter, the medicine is handed over to the customer. The dispensing of the medicine can be organized in various ways by dividing the (set of) task(s) of the working stations over several persons (Mobach and Van der Werf 1993, Mobach 1994). The pharmacist can decide to lay stress on the activities of one or more working stations; in the product mix for example, the working station *check* could be stressed. The actual dispensing of medicine is checked as a matter of course in the Netherlands; everybody checks everybody. In principle, the pharmacy organization is designed so that no errors whatsoever are caused. However, errors do occur still. It is evident that in a community pharmacy, errors may

have fatal consequences. At a Dutch community pharmacy in Almere, for example, an assistant pharmacist trainee provided methadon HCl instead of Avicel. The medicine dispensed was lethal for the patient. A result of this is that there has been much discussion in the field on what could be learned from this fatal error (WINAp 1997). Attention was given to the role of the supervision, guidelines for extemporaneous preparations, and the steps involved in the production process. These issues consisted of the following instructions. The first step is “to weigh the exact quantity of the correct raw materials, [this] is crucial in the production of extemporaneous medicine; an in-process-check is indispensable. The identity of the raw materials can be determined with another person (double initials), with a combination of product numbers and a final check at the end of the process, or with barcode. The next step is to mix the raw materials. With the production of firm and half-firm substances, it is hard to determine the quality of the mix. Deviation from the content mostly indicates that the mix was performed poorly. The production ends with a check at the end of the process. With custom-made extemporaneous preparations a weight distribution is required also; these results must be compared with the requirements of the pharmacopoeia. A maximum deviation of 3% of the mean weight is allowed” (WINAp 1997: 1857-1858). As one can see, reliance on checks is a well-established tradition within the pharmaceutical field. If the available checks do not seem sufficient, new ones are introduced in the pharmacy organization. In the case of the pharmacy at Almere, a possible new check for the auxiliary materials was suggested by WINAp. Above, we mentioned that guidelines are useful for determining the specific standards the medicine should meet. These guidelines could also be useful in constructing an organization to minimize the risk of error occurrence. For example, the NAN guidelines for producing extemporaneous preparations at the Dutch community pharmacy are based on existing practice; new ideas and solutions to problems were added (Boer 1997, KNMP 1997b). Van de Vaart and Boer argued that cooperation among pharmacies is necessary in order to work on a higher quality level; increase in scale will improve the efficiency of the quality guarantees (Schoenmakers 1997). Computerization is another possibility for minimizing mistakes. In order to reduce problems with safety and compliance, alternative distribution systems have been tried during recent decades, such as the unit-dose distribution system (WHO 1989) or the Austrian machine ‘Pharmamat’, which automatically collects and transports the medicine from stock to the counter. Through this, parts of the dispensing process can be computerized. Moreover, the computerization can be used to ensure safe and adequate information, for example, with a Decision Support System for medication surveillance (BOS/MBJ) (De Gier *et al.* 1996a) and with an computerized system for documenting relevant data and supporting the processing of drug therapy, the Electronic Pharmaceutical Dossier (EPD) (De Gier 1996b).

The pharmacy manager of the product mix would design a pharmacy organization with an emphasis on *product and check*. With respect to the product, it should be common practice to have a formulary of some kind compiled within the pharmacy system of the country in order to standardize extemporaneous preparations; e.g. in close cooperation with experts working at faculties of pharmacy (WHO 1989). It should also be common practice that “the pharmacist verifies the legality, safety and appropriateness of the prescription order, checks the patient medication record before dispensing the prescription (when such records are kept in the pharmacy), ensures that the quantities of medication dispensed are accurate, and decides whether the medication should be handed to the patient, with appropriate counselling, by a pharmacist” (WHO 1990: 11). Similar standards can be found for Dutch pharmacists: these describe the organization of dispensing medicine, the Dutch pharmacy standards (NAN). The NAN are field standards and the Dutch pharmacist is stimulated to organize the work accordingly. “At the dispensing of medicine it will be checked if the correct medicine is provided with the correct information to the correct patient. A check is performed by the pharmacist, as a general practice at the day of dispensing. This involves the determination of the legitimacy of the prescription, the appropriateness of the medicine for the patient in terms of nature, strength, administration, dosage, and duration of use; and a check of the settlement of the medication surveillance signals” (KNMP 1996a: 9-10).

The Dutch quality system with respect to extemporaneous preparations comprises laboratories (Laboratorium Nederlandse Apothekers), standardized therapeutic relevant regulations (Formularium der Nederlandse Apothekers; FNA), production records (chargebereidingsvoorschriften), Regional Pharmacy Laboratories (RAL) coordinated by Central Consultative Body Regional Pharmacy Laboratories (CORAL), and a post-academic course of quality guarantee (Tromp 1990). With respect to the check, it seems sensible to know where the responsibility lies for ensuring the correctness of a prescription. In English law, to take an example, that issue was decided by a court of law in the so-called ‘Migril case’ from 1983 where, although a prescription dispensed was correct according to the doctor’s instructions, it was held judicially that the pharmacist should have questioned the dosage specified: this was, in fact, a cumulative overdose (“Pharmacy,” 1986). The patient developed gangrene in both feet and substantial damages were awarded against both the doctor and the pharmacist. Such examples form the clearest recognition by society that the pharmacist’s legal responsibility extends beyond the accuracy with which a prescription is dispensed and involves the nature of the prescription itself and the manner in which it is made available to the patient (“Pharmacy,” 1986). In 1991, a Dutch pharmacist refused dispensing a non-prescription medicine, ‘Clioquinol’, which can only be purchased at a pharmacy (Oosting 1992). The pharmacist argued that the complaint, based on the statements of the patient, appeared to be chronic and was rather complicated. The

patient should have seen a proper physician, for example, an ENT specialist or a dermatologist. Later, he added that his first task was to be a pharmacist, and only then an entrepreneur. However, the patient obtained the medicine at another pharmacy and complained about the behaviour of the first pharmacist. In this example, the first pharmacist was put in the right. In Dutch law, the pharmacist is not obliged to dispense a prescription medicine (Moss 1996a, 1996b). “The pharmacist being reasonable acting and competent is obliged to motivate the refusal. The basis for refusal is pharmaco-therapy. The opinion of the pharmacist should be verifiable” (1996a: 1135).

Pharmacy organization is structured in order to attain the *highest product quality and product safety*. In Dutch community pharmacies the computer is used today in medication surveillance; this is an ambitious system of prescription handling, in which product quality and product safety are closely guarded. The four most important files relate to the patient, the preparation, the medication history and the financial record. The system renders possible valuable checks of possible interactions, special dosage requirements, contra indications and even compliance (Winters 1986) et cetera. Recently, BOS/MBJ and EPD were introduced, in which respectively computerized support for medication surveillance (De Gier *et al.* 1996a), and computerized support for information about the patient (De Gier 1996b) are provided. The main objective of the product mix is to maximize safety and quality with the least risk. Although risks can become infinitesimally close to zero, the concept of ‘absolute safety’ (zero risk) implies perfect foresight and is therefore an ideal which is not attainable. Risk management is the making of decisions concerning risks and their subsequent implementation, and flows from risk estimation and risk evaluation (Mann 1988). The determination of ‘safety’ does not involve a measurement, but a judgement based on the acceptability of risk, usually taking into consideration not only the measured risk, or risks, but also the benefits and alternative risks at the very least (Tolo *et al.* 1991).

### 3.3.3. The process mix

Within the process mix, it is assumed that the community pharmacy, like any organization, has to make profit in order to survive. Consequently, within this mix we would expect that the activities of the pharmacy manager relate to money. Before giving a more detailed description of what these activities would involve, let us present an historic observation. At the end of the 19<sup>th</sup> century, many Dutch pharmacists would “sell medicine with a poor quality at low prices. They gave their customers the impression that they were cheaper than their colleagues; they taught their customers that sales were a main issue for the pharmacist, and that research and extemporaneous preparations were a side issue” (Kruithof 1995: 244). Fortunately, as we have mentioned in the discussion of the product mix, the quality of the product does not have to be poor nowadays. Moreover, the cost price and the reimbursement,

both determined by the authorities, are relatively stable now. It would appear that the community pharmacy sector has reached quieter times than in the past. However, nothing is further from the truth. The community pharmacy sector is on a roller coaster of change, especially with respect to money. Financial activities in the sector have become a major political issue and, logically, pharmacists have become involved in a public debate. The tone of this debate is mostly negative (KNMP 1997c). The authorities regularly express their discontent about the non-transparency of the income of the pharmacists (KNMP 1998). The authorities and insurers, and consequently also the media, contend that pharmacy managers concentrate on process activities and make too much money. In this mode of thought their income is not socially acceptable. However, among many explanations, a possible explanation can be threefold: pharmacy managers do need profit in order to enable survival, making profit by selling medicine to ill people is perceived to be not very ethical, and the authorities are in need of a reduction of public spending on health care. Within this thesis, we intend not participating in an ethical discussion, but will try and concentrate on the financial issues in the field.

Over the last years, the Dutch authorities have taken some measures to contain the financial cost of medicine. For example, maximum prices were introduced for medicine (Graatsma 1995), and measures were taken to cut down discounts and bonuses of pharmacists (Venema 1997a). Furthermore, the authorities stimulated the efficiency of the community pharmacy sector via the introduction of a market economy; the pharmacists are starting to lose their monopoly. This has resulted in various initiatives; for example, the mail order pharmacy (De Wolf *et al.* 1994, Venema 1995), Boots (Venema 1997b, Venema 1997c), and recently, ideas to introduce hospital pharmacies as an outlet in the primary health care and to organize the purchase of medicine via insurance companies (Schneider *et al.* 1998, Coalition Agreement 1998, Van Veen 1998a, Hagenzieker 1998, Allart 1998, Venema 1998a, "Apothekers," 1998, Venema 1998b, Van Rijen and Ottes 1998). It seems evident that we are in a politicized line of business. This is resulting in interesting macro-economic phenomena like the introduction of maximum prices for medicine in combination with stimuli for the market economy. Changes in the financial system appear to be common practice. However, within this dynamic context, the community pharmacy has to sustain itself economically; there has to be profit, which is subject matter in this mix. The activities of the pharmacy manager in the *process mix* relate to what extent the pharmacy is organized profitably and efficiently.

Firstly, the process mix relates to *the organization of the dispensing of the prescription*; this can be arranged in various ways. In the standards for Dutch pharmacists (NAN), there is a broad description which relates to the task and the function of the pharmacy team. "Tasks, competence, and responsibilities of the

pharmacist and the pharmacy personnel are clearly described and documented. At the pharmacy the work is organized in accordance with a well-documented working system which is authorized by the pharmacist” (KNMP 1996a: 12-13). No attention has been paid to the economic side of the dispensing. Interventions from the authorities, although indirectly, have sometimes related to the efficiency of the dispensing. For example, economies of scale were expected with the introduction of a mail order pharmacy. It should be noted that most Dutch community pharmacies are rather small organizations. In regard to this, Mobach and Van der Werf (1996: 1436) argued that “Small pharmacies should avoid extreme division of labour and the introduction of specialists. Mega pharmacies can, in view of the balance problem, and, in combination with smaller fluctuations in the input of prescriptions and the large number of prescription orders, function efficiently with such a division of labour.” They added that “as yet, few studies about the different forms of division of labour at Dutch pharmacies have been made” (1996: 1436).

Secondly, the process mix relates to *the extent to which the work at the pharmacy is organized efficiently and profitably*. We will start with an apparently rather outdated statement from the KNMP: “commercial activities in terms of aiming at increase of turnover are not desired. The pharmacist can contain the cost for the provision of medicine with cost-conscious activities and a commercial purchasing policy” (KNMP 1979: 51). However, it should be noted that in this regard, the issue of money is still vividly present in the sector. Moreover, efficiency and profit have gained more and more the attention of pharmacists and pharmacy organizations over the last few years. According to some recently published opinions by Dutch authorities, the introduction of competition, in the area of sales of medicine, will lead to cost containment. The core of most recent proposals is that the sale of medicine should not be exclusively for pharmacies. Other companies, supermarket chains, for example, should be enabled to appoint pharmacists (“Overheid,” 1994). In contrast, until January 1999 Dutch law described in the ‘Besluit Uitoefening Artsenij Bereidkunst’, made a pharmacist carrying out his business on the premises of a non-pharmacist illegal. This section of the law was rescinded on January 29<sup>th</sup> 1999. Mail-order companies and the Boots chain have already been given the possibility of selling medicine at retail, and it is now intended that hospital pharmacies also be given the option of selling medicine for primary care. Within this mode of thought, the supermarket system, for example, is supposed to be more efficient and this will lead to a cost reduction. Moreover, it is expected that the quality of the health-care system would not change; it will in fact get better. More parties in the market will reduce costs by 20 to 30 percent, according to the authorities (Goseling 1994). An example of a primarily financially-oriented pharmacy is the mail-order pharmacy which started in Holland some years ago. The mail-order pharmacy gives much thought to efficiency in their organization design. Pols (1994) gives two reasons for the improved efficiency of the mail-order pharmacy

in comparison with the community pharmacy. Firstly, the profit of the enterprise is connected with management. The management will be more efficient than at a normal pharmacy. At the community pharmacy, the pharmacist is working with a lot of different things at the same time: the assistant pharmacist may be called to answer the telephone, even though he/she is packing the medicine, for example. The work is much easier to structure in a mail-order pharmacy, so the work will be cheaper. Secondly, it is expected that large-scale purchase will result in savings. Similar expectations underlie the introduction of the mail order pharmacy, the Boots chain, and hospital pharmacies as an outlet in primary health care and the purchase of medicine via insurance companies. The pharmaceutical field is responding to these developments. In general, the pharmacists seek to cooperate. In other sectors, similar efforts for cooperation can be observed; cost reduction is one of the main reasons for cooperation (Van der Bijl 1998). An example of such cooperation is the establishment of so-called 'formulas' within the community pharmacy sector. Within these formulas, pharmacists are cooperating with respect to education, provision of information, purchase, presentation, company logo, interior design etc. (De Jong 1996, Sturkenboom and Van Ochten 1996). Other reactions within the pharmaceutical field are, for example, regional and local quality circles of the KNMP (Van de Vaart and De Smet 1995), and managed care (Tromp *et al.* 1996), and pharmaco-economic research to visualize the cost effectiveness of the present organization. In this latter context, Plumridge and Wojnar-Hortan (1998: 175-176) have argued that "evidence does exist that clinical pharmacy services have positive economic benefits, and it is this evidence that, at present, supports the assertion that pharmaceutical care has potential to increase the value of pharmaceuticals in society by minimising drug-related morbidity and mortality". A rather special development is the forward integration of the wholesaler OPG (Venema 1998c, Boiten 1998, Pols 1998). Over a period of time, OPG purchased about 30 pharmacies. OPG aims at a total of 50 pharmacies which are to be used as an experimental garden for efficiency. The purchase is a preparation for whenever the Boots chain, or other chain organizations, are able to penetrate more deeply into the pharmaceutical market.

The pharmacy manager of the process mix would design a pharmacy organization with an emphasis on *money*. "A pharmacy is a 'business' with a considerable turnover, high and necessary investments and no mean cost for personnel, housing, general management etc." (KNMP 1979: 51). In this case, pharmacies will pay attention to financial management. Carrol (1991) has argued that financial management focuses on making wise decisions about obtaining and using financial resources. Pharmacy managers face many financial decisions: for example, how much inventory to carry, whether to participate in third-party prescription plans, whether to buy a new computer, and so on. The principal goal of financial management is to increase the value of the organization. This goal is achieved by making the most



efficient use of financial resources. Pharmacies, for example, can make the most efficient use of cash invested in inventories by carrying the smallest amount of inventory necessary to meet consumer demand. Moreover, they can also obtain discounts in the sector. Discounts consist of a reduction in money or a supply in kind. Pharmacy managers can influence the revenue of the pharmacy substantially with discounts. At the moment, in the discussions about money within the community pharmacy, the issue of discounts is a volatile one. We would however expect pharmacists to pay some attention to the purchase of medicine. Smart purchase will save financial resources which can be useful for the survival of the pharmacy organization. Dutch pharmacists are effective purchasers (Venema 1998d). However, as was mentioned earlier, the authorities intend to organize the purchase of medicine via insurance companies. Hagenzieker, the present chairman of the KNMP, has admitted that excessive trade advantages are present, and should be invested into care. Moreover, he has argued that “regional purchase will lead to bureaucracy and extra overhead cost” (Venema 1998d: 895) and has proposed concentrating on transparency of the financial system of the pharmacy instead of introducing other channels of purchase.

Pharmacy organization is structured in order to attain *highest productivity*. Productivity is the relation of a quantifiable measure of outcome (measured in pieces, kilograms, et cetera) to a quantifiable measure of effort of production factors (measured in working hours, units of means of production, units of means of raw materials) (Wöhe 1974). The main objective is to maximize productivity at lowest cost. In this sense, evaluation might be helpful. Draugalis *et al.* (1989) defined two types of economic evaluation. The first method is efficacy or effectiveness evaluation, a method in which the consequences of the alternatives are examined. The second method is cost analysis, a method in which only costs are examined. To accomplish a full economic evaluation, both the costs (inputs) and consequences (outcomes) of the competing alternatives must be examined (Stoddard *et al.* 1984). Draugalis *et al.* have described four methods of analysis; Cost-Benefit Analysis (CBA), in which the primary concern is the most beneficial use of limited resources; Cost-Effectiveness Analysis (CEA), in which the primary concern is the least costly way to achieve an objective; Cost-Minimization Analysis (CMA), in which the primary concern is efficiency; and Cost-Utility Analysis (CUA), in which the primary concern is quality of life. With respect to the working organization of pharmacies, maximizing productivity could be attained by, for instance, redesigning a more efficient organization which could then achieve more prescriptions per assistant pharmacist in the same time. Cost reduction could also be attained by, for instance, redesigning a more efficient organization in order to achieve the same amount of work with fewer (qualified) personnel, or to achieve more work with the same quantity of (qualified) personnel, both in the same time.

#### 3.3.4. The customer mix

In order to illustrate what is meant by the customer mix, again, as we did with the product mix, we will use the same definition of 'pharmaceutical care': "the responsible provision of drug therapy to achieve definite outcomes, which are intended to improve the quality of a patient's life" (Hepler 1996: viii). We argued before that drug therapy is definitely in the pharmaceutical domain and is a matter of importance within the product mix. Here, we would like to focus on the quality of a patient's life. In the discussion of product mix, it was suggested that everything will be alright in terms of the quality of life as long as the patient takes the medicine correctly. However, in the customer mix, a different point of view is used, one that is all about customer satisfaction. An example: a patient with serious cancer argued that the quality of life would not improve with the administration of 'cytostatics'; life would only be extended. The patient refuses the medicine. In terms of the product mix, the pharmacist would not be content. The pharmacist would want the patient to take the medicine in order to complete the pharmaco-therapy. It should be remembered that, in the product mix, pharmaco-therapy is necessary to improve the quality of life of the patient. In the customer mix, the pharmacist would be content whenever the patient is content within reasonable limits. In the example, the wish of the patient would be respected, and the medicine would not be dispensed. However, in this situation, the pharmacist would feel responsible for the management of pain and the dignified death of the patient. In the customer mix it is assumed that customer satisfaction could improve the quality of life of the patient, even in the (for pharmacists extreme) case of non-compliance. Within this context, the work of Buurma *et al.* (1996) is also illustrative. Two definitions of 'information' were given: 'facilitating information' and 'intentional information'. "The goal of facilitating information is transfer of information or increase of knowledge; free of obligations for the customer. The goal of intentional information is behavioural and attitudinal change of the customer, which is evidently more obligatory" (1996: 219-220). Both goals relate to patient compliance. However, a different point of view has been presented in other studies (Yellin and Norwood 1974, Norwood 1975, Helling *et al.* 1979) where the positive effect of patient communication on customer satisfaction was confirmed. The activities in the customer mix were more or less directly related to these studies. Information then would clearly stimulate customer satisfaction. Again, recall that we are discussing the pharmacy mixes in a pure form. It seems evident that both patient compliance and customer satisfaction would be an important aim for any community pharmacy manager. Consequently, as could be expected, the *customer mix* deals with the way in which the wishes of the customers are met.

The customer mix relates to the positive demand on the pharmacist to *provide information and advice* for patients with their specific questions. It involves the provision of knowledge as well as participation, directly or indirectly, in the care of

patients. The new fields of work for pharmacists can be broadly defined as either 'patient-oriented' or 'society-oriented' (WHO 1989). In connection with this issue, the WHO noted that "good primary care systems also value the patient's contributions to care. They encourage the participation of individuals and of self-help groups organized around specific health issues ..." (WHO 1993b: 133). Moreover, "good primary health care professionals also act as advocates of the individual patient when in contact with the rest of the health service system. Rules and conventions of practice on referral among primary health care providers and between them and secondary care providers should always operate in the patient's interest rather than for administrative or provider convenience" (WHO 1993b: 133). In that same year the professional code and rules of conduct of the KNMP was issued. A general statement with respect to the customer was formulated in it: "the community pharmacist will serve the patient/customer to the best of his/her ability" (KNMP 1993b: 3). Later, the Dutch pharmacy standards (NAN) described the role of the customer explicitly in relation to the provision of advice and information: "the pharmacist puts the interest of the patient central and respects the patient's own responsibility" (KNMP 1996a: 4), and "the customer is treated in such a way that a correct understanding of the provided information as well as confidence in this information is secured" (KNMP 1996a: 5). Weltevreden (1998) argued that attitude of the personnel and customer treatment are serious constituents of professional advice. However, it is too still often a chance hit, she argued. The structure of advice at the pharmacy should be improved. From the annual report of the Commission into Complaints in Community Pharmacy, which started in 1997, it can be constated that of all categories, complaints about customer treatment were most frequently registered. It was argued that "most of the complaints originated from inadequacies with respect to treatment and communication. Generally, the customer can accept the fact that an error did occur if the error is admitted openly, information about the cause of the error is provided, apologies were offered, and a meaningful solution to the problem was found" (Klachten Commissie Openbare Apotheek 1998: 945).

It also should be remembered that parts of the pharmaceutical care process relate to the customer mix. Strand *et al.* (1992: 6) noted that "there now appears to be an obvious demand from society and from the pharmacy profession itself for a professional role that restores emphasis on the pharmacist's direct responsibility to the individual patient." In this regard, Van Mil (1994) described ten steps in which pharmaceutical care can be incorporated in the dispensing process. Three steps, step one, six and ten, are related to the customer mix. "Step one is, work on a good pharmacist-patient relation. Step six is, determine, together with the patient, the best solutions for eventual problems. Step ten is, regular registration and evaluation of the therapy plan with the patient" (1994: 493). Rupp and Kreling (1994: 57) argued that "pharmaceutical care literature does include studies of patient satisfaction with care

and/or caregivers.” They also noted that “few researchers have reported patient levels of satisfaction with pharmacists and their care ...” (1994: 57). We noted above that the studies of Yellin and Norwood (1974), and Norwood (1975) had found a very interesting link between patient communication and customer satisfaction. Their studies supported the hypothesis that increased patient communication regarding drug therapy can improve consumer attitudes toward the pharmacy. Later, the study of Helling *et al.* (1979: 328) showed that “patients receiving direct clinical pharmaceutical services in a family practice setting would demonstrate significantly more favourable attitudes towards the overall quality of their medical care than would patients not receiving clinical pharmaceutical services.”

The pharmacy manager of the customer mix would design a pharmacy organization with an emphasis on the *customer*. Smecka (1989) noted that systematic time and motion studies in Czechoslovakian pharmacies have led to quite clear concepts as to what a pharmacy should provide in terms of facilities if it is to meet the patient’s needs. These studies culminate in the concrete definition of a specific dispensing unit known as ‘dispensing module’. The module is mostly of a circular shape: starting from the arm, one can measure the reach of a man of average stature (82 cm) in both horizontal and vertical directions, the dimensions of which correspond to the distances within arm’s reach. In this module the pharmacist could dispense medicaments without taking a single step and without having to reach or bend down unnecessarily. Theoretically his work would be free of avoidable physical strain and the pharmacist would gain more time for his contact with the patient. This module was in fact put into operation as early as 1963. Similar installations have also appeared in the USA and later in the [former] Soviet Union in 1971 (Smecka 1989). In Sweden the idea of a circular shape was used in the development of the carrousel by Apoteket AB and Sintek; a round compact storage system for medicine with horizontally revolving shelves. The carrousel can be used for different purposes at the same time; two staff can serve customers directly from stock, while a third person replenishes it. In the Netherlands, the carrousel is used in the counter model which was designed by Farmac under the authority of SAL Apotheken and inspired by Swedish examples. The aim of the Dutch version of this model was to emit calmness, and, in doing so, improve the facilities for a private conversation with the customer. The counter model integrates tasks in dispensing medicine: from working stations on several locations with several persons, to working stations on one location with fewer persons. One person filled the prescription at the counter which is then checked by another person (Mobach and Van der Werf 1993).

Pharmacy organization is structured in order to attain the *highest service quality*. Service quality should be more than just dispensing medicine. The pharmacist is responsible for more than the delivery of a product to the ultimate consumer.

Hildebrandt (1992) argued that advice on medicines is regarded as a bonus free of charge: advice is normally given as an additive. The medicine expert, whether he wants to or not, tends to solve all problems of patients with medicine. In this regard he has good reason to feel competent. In the sense of modern management and marketing theories, the pharmacy could become a place for solving customer's health problems. In this view the pharmacy would be a place for the sale of medicine and equally, just as a place for the sale of advice. Within the customer mix, the main objective of this information would be to maximize customer satisfaction. De Jong (1998: 9) argued that "patient quality is what a patient expects. Consequently, a pharmacist is in need of a patient-oriented attitude: he has to measure the wishes and needs of the patients on a regular basis." Fornell (1991) describes a customer satisfaction index as the counterpart to productivity measures. Whereas productivity refers to quantity of output, a Customer Satisfaction Barometer (CSB) measures quality of output as experienced by the customer. Several methods of measuring the level of patient satisfaction are used in pharmacies in different countries. The most direct way is simply to "... ask them for their views on the subject. Another less direct way involves inferring attitudes from behaviour that is elicited essentially for other purposes, for example, by studying the pronouncements and writings of individuals and groups" (Wertheimer *et al.* 1981: 107). In Sweden, Apoteket AB was the first to monitor customer satisfaction on a national level with the CSB at pharmacies; the direct way of measuring patient satisfaction. This technique was supported by KNMP and stichting VNA in Holland, and used by Stichting Health Base (SHB) in the Netherlands since 1992. Later, so-called 'mystery guests' (assessors pretending to be real customers) were introduced in order to analyze customer satisfaction (Graatsma 1996).

We have established the pharmaceutical basis for this thesis, so far. We have distinguished three pharmacy mixes as relevant to our main question 'What problems does a pharmacy manager experience if he/she 'travels' to the customer mix?'; namely, the product mix, the process mix, and the customer mix. We have assumed that the pharmacy manager will perform pharmaceutical activities in the product mix, financial activities in the process mix, and customer activities in the customer mix. However, even after we have determined these three pharmacy mixes, we still do not know why the pharmacy manager would be interested in 'travelling' to the customer mix. In other words: 'Why is there a change to the customer mix in the community pharmacy sector?'

### **3.3.5. Change to the customer mix**

In most developed countries, pharmacy managers seek to structure their organization in accordance with the customer mix. Bakker (1989: 10) noted that "not so long ago, the pharmacist was obliged by legal rules to remove information for the user from

the packing of the medicine. Now, the policy is completely different: one wishes to inform the patient as good as possible. Consequently, numerous initiatives were taken by pharmacists in order to optimize the information process." Changes in health policy towards the community and self-care make it necessary that the pharmacist functions fully in the community and not only within the walls of his pharmacy (WHO 1989). Fornell (1991: 1) later argued that "in today's market, it is not sufficient to ensure high levels of productivity, the quality of what is produced is becoming increasingly important." Simply doing business productively and efficiently no longer suffices today to convince broad segments of society of the legitimacy and value of private corporate dealings. A growing part of our society wants to know not only how much a corporation earns, but also how these earnings are achieved (Tolo *et al.* 1991). Tromp noted recently that "until today pharmacists protected people and society against drug abuse and misuse, but from today pharmacists will support patients to use proper drugs in a proper way" (1998: 3).

In a Dutch study (KNMP 1991), it was shown that important target groups of pharmacy organization did not know what the additional value of the pharmacy was. The KNMP concluded that the pharmacy should be actively marketing these values, not in the sense of 'maximizing the sale of medicine', but marketing in the sense of anticipating the needs and wishes of the environment; environment-oriented thinking. Later, in a study initiated by KNMP (1993), it was found that pharmacists think that the additional value of the pharmacy is service (good and quick) and supply of information. In this context, patient-friendly activities consist of information and the delivery of medicine at home. In another study, an initiative of the KNMP and NIVEL (Sluijs *et al.* 1995: 7), it was argued that "attention for the treatment of customers is but only one aspect of the many modernizations which occur at the present pharmacy. Other themes do relate to the new tasks and functions of the pharmacy, and also do relate to an increasing orientation of the pharmacy, directed at the environment and customer-friendliness." Moreover, the KNMP (1996b: 1) argued that the patient is central, and "for the pharmacists the interest of the customer and his request for care is first." A more recent study showed that, information and counselling are dominant issues, and the patient is a central issue for Dutch community pharmacists (Skim Indis 1997). The Dutch Patients' Association (Frijlink 1997) argued that "the experienced quality by the patient varies per individual and per situation" (1997: 925). However, "a total picture of the perceived quality of customers about Dutch pharmacies is not yet available" (1997: 925). Very recently, the KNMP (1998: 13) assumed that, compared to past activities, pharmacists pay "more attention to the counselling of the patient and his use of medicine and take his perception of the environment into account."

In other countries, similar patterns can be observed. The Council of Europe (1994: 2) stressed that “pharmacists and pharmacy students must have the appropriate initial training and further training opportunities which enable them to fully contribute to patient care. These should ... also encompass relevant aspects of communication sciences and of sociology.” In the British health-care system, some years ago, changing market conditions exposed the dilemma between the pharmacist as an entrepreneur and the pharmacist as a care worker. The Nuffield commission (“Pharmacy,” 1986) stressed the need of a professional pharmacist in his role as a care worker. The Nuffield report showed an emphasis on the dispensing of prescriptions at minimal cost in some health-centre pharmacies. As a result, the service provided in these health-centre pharmacies was worse than elsewhere. The report showed that independency and credibility were endangered if pharmacies gave high priority to financial profit. The opposite situation is that, the pharmacist as a care worker can give independent advice, and is a reliable professional for general practitioners as well as for patients, despite all threats from the commercial environment. To guarantee the professional occupation of pharmacists, two measures were recommended. Firstly, the commission recommended the payment of ‘new’ categories of activities: the consultation with practitioners, the provision of information to the patient, the medication surveillance and so on. This measure was recommended since advice brings no financial return while the sale of medicine does. In this situation the pharmacist concentrates on maximizing the sale of medicines. This was regarded as an important barrier in changing pharmacies in accordance with other active participants in the health-care system, in order to attain high-quality service. Secondly, the commission recommended that the profession of pharmacists should be led by professional responsibility rather than by laws, regulations, and so on. In Great Britain, many pharmacies are owned by non-pharmacists, a similar pattern which can be expected in the Netherlands since the Dutch law was changed on January 29<sup>th</sup> 1999. Such pharmacists especially would have an independent professional responsibility (Leufkens 1987). Recently, the KNMP realized a ‘professional statute’ which should guarantee that the pharmacy manager, regardless of work conditions, is able to realize quality standards at the pharmacy; standards such as described in the Dutch pharmacy standards (NAN). Later, Noyce argued that in the UK “clearly, the focus of the practising pharmacist is moving towards the role of drug therapist and medicines manager. This does not mean that there is any less requirement for understanding the science and technology of drug action and delivery, but alongside the natural science curriculum, therapeutics and patient management have become equally important” (WHO 1997b: 20).

### 3.4. Towards the pharmaceutical field

We have argued above that the analytical basis of this study consisted of three pharmacy mixes of activities; the product mix, the process mix, and the customer mix. It was assumed that the pharmacy manager will stress a set of activities which is related to one of the three pharmacy mixes. In addition, it was assumed that the Dutch community pharmacy manager generally seeks to structure the organization in accordance with the customer mix. Moreover, the general difference between *thought* and *action* were described, as well as some expected general problems in organizational change. Now that we have determined our theoretical basis, we would invite you to take a step on the diving board and 'dive' with us into the pharmaceutical field. However, before we do that, beware of the fact that, so far, we have only described the three pharmacy mixes as pure types. We would expect the reality to be somewhat different. It is quite clear that the modern pharmacy manager must be able to juggle everything at the same time. He/she must let the pharmacy organization survive within a threat of possible competition, and therefore must pay attention to customer satisfaction and financial revenue without affecting the quality of the pharmaco-therapy. The pharmacy manager would select a combination of activities related to the three pure mixes described here. Moreover, the issues of money and care are entwined within the community pharmacy sector (Cancrinus-Matthijssse 1995, Van der Werf 1996). That could provide us with some specific problems, which are not present in other organizations, for example, the ones which are mainly profit-oriented. However, our interest is in the actions of the Dutch community pharmacy manager and specifically which actions were selected and emphasized in the real world. The questions applied were: 'What is the empirical use of the three mixes?', and 'What is the correspondence between *thought* and *action*?'. Consequently, the next three chapters consist of two main phases. *Phase one* relates to the investigation of pharmacy mixes in Dutch pharmacy practice (chapters 4 and 5). *Phase two* relates to the central theme of this thesis and ought to visualize problems in the organizational change to the customer mix. You are reminded that there is an ongoing dispute within the community pharmacy sector: which is all about care, money, and ethics. We have resolved *not* to participate in such an ethical discussion. Now that we have illustrated some issues from management science and some issues from pharmacy practice research, we invite you to take a 'dive' into the pharmaceutical field.



#### 4.1. Introduction

In the first part of *phase one*, this pilot study, a test of several methods was made in community pharmacy practice. Since there were no validated methods for collecting data on the issue of this thesis, we had to formulate and test some methods ourselves. Previously, in the modelled world of **chapter 3**, three pharmacy mixes were described analytically. It was also argued that *thought* related to the perceived importance of activities and *action* related to the actual use of activities. Since we will now start to step in the real world, we have decided to use the term ‘action’ rather than ‘activity’. Although actions relate to observations (for example, describing the importance and performance of actions of a pharmacy manager), we decided to use this terminology also in the design of questionnaires. Both *thought* and *action* are described in relation to the three pharmacy mixes mentioned before. A total of seven methods were tested. The main purpose of the pilot study is selection of methods. The pilot study seeks to produce two methods which can analyze both features best for a large sample. The large sample will be used in the second and next part of *phase one* of the study, which is described in **chapter 5**. In addition, in this pilot it was studied whether there was a correspondence between *thought* and *action* of pharmacy managers. This additional material is used at most to sketch the pharmacy mixes in practice. This pilot study seeks to find out which of the methods used can best be applied to identify correspondence of *thought* and *action* of pharmacy managers for a large sample. The results of the pilot study cannot be used to make generalizations valid for the population of Dutch community pharmacies; only 24 Dutch community pharmacies were studied. The next part of *phase one* will be made in exactly the same way. This next part will be studied with the methods which are selected here.

selected mix <i>thought</i>	product mix e.g. ranking: 1. product 2. process 3. customer		process mix e.g. ranking: 1. process 2. customer 3. product		customer mix e.g. ranking: 1. customer 2. product 3. process	
	corr	non-corr	corr	non-corr	corr	non-corr
<b>product-related (92)</b>	<b>90</b>	20	20	50	50	20
<b>process-related (111)</b>	50	<b>90</b>	<b>90</b>	<b>90</b>	20	40
<b>customer-related (100)</b>	20	50	50	20	<b>90</b>	50
<b>remaining (69)</b>	20	20	20	20	20	<b>60</b>
<b>missing</b>	192	192	192	192	192	202
<b>total possible score (372)</b>	<b>372</b>	<b>372</b>	<b>372</b>	<b>372</b>	<b>372</b>	<b>372</b>

**Table 4.1.** An example of a correspondence and *non*-correspondence of *thought* and *action*.

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<sup>11</sup> Parts of this chapter were published in: Mobach MP, Werf JJ van der, Tromp TFJ. APOM-project: a first study of pharmacy organization and management. *Pharm World Sci* 1998; 20(5): 219-224.

Within this current pilot study, correspondence and absence of correspondence of *thought* and *action* were studied. **Table 4.1.** shows some examples of an ideal correspondence (corr) and *non*-correspondence (*non*-corr) of *thought* and *action* of pharmacy managers. The columns show correspondence and *non*-correspondence of *thought* and *action*. Per pharmacy mix, an example of a ranking for *thought* is presented. The examples are: product mix (product-process-customer) in the second and third columns, process mix (process-customer-product) in the fourth and fifth columns, and customer mix (customer-product-process) in the sixth and seventh columns. In general, the rows show the maximum scores of pharmacy-mix-related actions. The categories are: product (92) in the second row, process (111) in the third row, customer (100) in the fourth row, remaining (69) in the fifth row, and, missing are presented in the sixth row. There is a total maximum of 372 possible actions in the sixth row. Ideally, the ranking of the selected pharmacy mix (*thought*) should correspond with the main actions of pharmacy organization (*action*). How was this analyzed? An example.

In a test interview the pharmacy manager was asked to prioritize issues relating to the product mix, the process mix, and the customer mix. The pharmacy manager ranked the product mix as the most important issue, the process mix as of second importance, and the customer mix as of final importance (compare second upper left cell in **table 4.1.**; *ranking* product-process-customer). This outcome relates to *thought*. In another test interview the pharmacy manager was asked for the actions of pharmacy organization relating to the product mix, the process mix, the customer mix and remaining actions. The main actions observed were product-related actions. Second best were process-related actions, and third best were customer-related actions (compare second column **table 4.1.**; actions 90-50-20-20-192). This outcome relates to *action*.

The second column in **table 4.1.** shows that the ranking for *thought* (product-process-customer) corresponds with the ranking for *action* (product[90]-process[50]-customer[20]). The ranking for *thought* product-process-customer is the same as the ranking for *action*. The pharmacy manager mainly concentrates on actions like the specific standards the medicine should meet, the minimization of risks, and the minimization of error occurrence etc. In this example *thought* and *action* of the pharmacy manager corresponded (corr). The third column of **table 4.1.** shows an example of *non*-correspondence (*non*-corr). The ranking product-process-customer in *thought* is not at all related to the ranking for *action* (product[20]-process[90]-customer[50]), being process-customer-product.

Another example. A pharmacy manager selects the ranking process-customer-product for *thought*. In the fourth column of **table 4.1.** the same ranking is observed for

*action* (product[20]-process[90]-customer[50]). In this example, *thought* and *action* of the pharmacy manager corresponded. The pharmacy manager mainly concentrates on actions such as the way in which the dispensing of the prescription is organized and to what extent it is organized profitably and efficiently etc. However, the fifth column of **table 4.1.** shows another example of *non*-correspondence. The ranking process-customer-product in *thought* is not completely related with the ranking for *action* (product[50]-process[90]-customer[20]), being process-product-customer. Although the first ranking for *thought* and *action* corresponds, namely product, neither other rankings corresponded. This situation is defined as *non*-correspondence. This study is in general looking for complete correspondence (in all three positions of the rankings) between *thought* and *action*.

#### 4.2. Design of the pilot study

The first questionnaire was formulated in December 1994. The final design of the questionnaire was completed in May 1995. During this period, comments were received from the supervisors, stichting VNA, SAL Apotheken, and field experts. Two categories of field experts were interviewed: pharmacy managers and experts working in the community pharmacists' sector. It was assumed that the feedback of the field experts would contribute substantially to the content of the questionnaire. Seven pharmacy managers and four field experts gave comments on the questionnaire. The pharmacy managers were selected randomly. The four field experts were active in the field of regulation (Inspectie Volksgezondheid), health-insurance (Zorgverzekeraars Nederland), patient interests (NP/CF) and software systems (PharmaPartners); all with respect to community pharmacy. The questionnaire was adapted in accordance with the comments. The adaption mainly related to the content of the questions. Per question the number of issues was completed, mostly added. In addition, the form of the questions was adapted. Within the pre-pilot phase of the study a five-point scale was tested (not important-very important) with seven pharmacy managers. The pharmacy managers regarded most of the issues as being very important. As a result hardly any difference between the scores of various subjects was observed in the outcome of the five-point scale. To avoid this problem a three-point ordinal scale was introduced; in order to force the pharmacy manager to make a priority per question.

After completion of the final design in May 1995, the questionnaire was applied to 24 community pharmacies from May through to August 1995. Twelve pharmacies were selected by stichting VNA and SAL Apotheken, and were connected with stichting VNA and SAL Apotheken (VNA/SAL pharmacies). Twelve additional pharmacies were randomly selected among pharmacies in the twelve Dutch provinces; one pharmacy out of each province (additional pharmacies). The relatively large number of 12 VNA/SAL pharmacies (case numbers 13-24) were selected

because of the interest of stichting VNA and SAL Apotheken in this study. The VNA/SAL pharmacies were encouraged by the top of the organization; nonresponse would hardly be expected. The additional pharmacies (case numbers 1-12) were selected to receive a more general picture of community pharmacies in the Netherlands.

At each pharmacy a questionnaire was used to get a *profile* of the pharmacy organization. In addition, at each pharmacy a combination of seven questionnaires was used with respect to *thought* and *action* of pharmacy managers (**table 4.2.**). The methods for *thought* consisted of the 123-method A, the 123-method B, the card method and the drawing method. The methods for *action* consisted of the method for the pharmacy manager, the pharmacy personnel (second pharmacist and assistant pharmacists) and the method for the researcher. The combination of the methods and the pharmacies was made randomly, with the precondition that 50% of the selected pharmacies were VNA/SAL pharmacies, and 50% of the selected pharmacies were additional pharmacies, for all individual methods. As a result, all four individual methods related to *thought* consisted of 6 VNA/SAL pharmacies and 6 additional pharmacies. For example, **table 4.2.** shows that 123-method A consisted of 6 VNA/SAL pharmacies (case 18, 23, 14, 16, 17 and 19) in the first column and 6 additional pharmacies (case 6, 9, 3, 11, 1 and 4) in the second column. In addition, all three methods relating to action consisted of 4 VNA/SAL pharmacies and 4 additional pharmacies. At twelve pharmacies the questionnaires with respect to *action* were sent after the questionnaire with respect to *action* were received by the researcher, vice versa for the remaining twelve pharmacies.

<i>action</i>	<i>thought</i>	123-method-A		123-method-B	
		cards	drawing	cards	drawing
<b>manager</b>		VNA/SAL (case 18, 23)	additional (case 6, 9)	additional (case 7, 10)	VNA/SAL (case 13, 22)
<b>manager &amp; staff</b>		VNA/SAL (case 14, 16)	additional (case 3, 11)	additional (case 2, 5)	VNA/SAL (case 15, 21)
<b>manager &amp; researcher</b>		VNA/SAL (case 17, 19)	additional (case 1, 4)	additional (case 8, 12)	VNA/SAL (case 20, 24)

**Table 4.2.** The combination of methods and pharmacies studied.

### 4.3. Methods

All statistical procedures were made in SPSS 6.01 for Windows from September through to December 1995. Roughly three statistical methods were used: frequency distribution, Friedman test and cluster analysis for *profile*, *thought* and *action* respectively. A total number of 21,464 items were used for the pilot study. The statistical methods used for *profile*, *thought* and *action* will be discussed below.

One method was used to study the *profile* of pharmacy organization at all 24 pharmacies. Several subjects were analyzed with respect to general features of the pharmacy manager and of the pharmacy organization. Features of the pharmacy manager were Seniority, Sex, (In)dependence and Division of Time. Features of the pharmacy organization were Organizational Form, Cooperation, Location, Part-time and Full-time Personnel, Full-Time Equivalence (FTE) Pharmacists, FTE Other Personnel, Flow of Prescriptions, Flow of Patients, Turnover and Net Profit. Within this method a nominal scale was used (**table 4.3.**).

method quality	profile	thought				action		
		123- method A	123- method B	card method	drawing method	pharmacy manager	pharmacy personnel	researcher
form	survey	survey	survey	survey	survey	survey	survey	interview
question	1 out of k <sup>12</sup>	rank 3 out of 3	rank 3 out of 3	rank 4 out of 10	draw 3 positions	p <sup>13</sup> out of k	p out of k	p out of k
scale	nominal	ordinal	ordinal	ordinal		nominal→ ratio	nominal→ ratio	nominal→ ratio

**Table 4.3.** Qualities of the applied methods in the pilot study.

Four methods were tested to study the *thought* of the pharmacy manager. All methods with respect to *thought* were made by the pharmacy manager. At each pharmacy a questionnaire was sent in which pharmacy managers prioritized actions (123-methods). Additionally, two short methods, in which pharmacy managers prioritized their actions (card method and drawing method) were used, twelve pharmacies per short method.

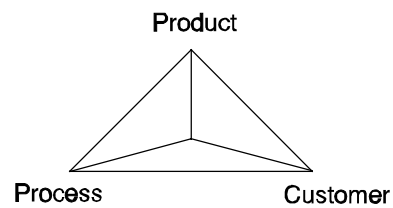
All questions of the 123-methods consisted of three sub-questions with respect to the three pharmacy mixes. The sub-questions were ranked on a scale from 1 to 3, representing *important -less important -even less important* issues. The 123-methods consisted of the subjects Information, Administration, Automation, External Contacts, Facilities, Analysis, Organization of Labour, Personnel, Competence, Organization

<sup>12</sup> k relates to the number of possible options.

<sup>13</sup> p relates to the number of selected options.

Standards and Productivity. Firstly, for twelve pharmacies the method consisted of 28 questions in which the relation of the question to the pharmacy mix was mentioned (123-method-A). Secondly, for twelve pharmacies the method consisted of 45 questions in which the relation of the question to the pharmacy mix was *not* mentioned (123-method-B). Within these methods, an ordinal scale was used (**table 4.3.**).

In addition, two short methods were used. The first short method consisted of two sets of 10 cards, each card describing a subject related to a specific pharmacy mix. Each set of cards was divided into three groups: *important*, *not important* and *rest*. Per set 3 or 4 cards were to be selected in the category *important*. Within this category the cards were ranked from 1 to 4, representing most to least important, respectively. Within this method an ordinal scale was used (**table 4.3.**). The second short method consisted of a drawing in the form of a triangle of the three pharmacy mixes. Three positions were ranked by marks in the drawing, representing an angular point, moving along the axe and a diagonal-line endpoint (**figure 4.1.**). The pharmacy manager located the pharmacy organization in the drawing.



**Figure 4.1.** The triangle representing three pharmacy mixes.

Three methods were tested to study the *action* of the pharmacy manager. All three methods consisted of the subjects Information, Administration, Automation, External Contacts, Facilities, Analysis, Organization of Labour, Personnel, Competence, Organization Standards and Productivity. The pharmacy manager of each pharmacy was sent a questionnaire. The method for the pharmacy manager was the main instrument to measure *action*. It was expected, however, that the problem of social desirability could be at stake. Social desirability means that the answers of respondents are also determined by what they think the researcher will value as a good answer (Swanborn 1987), or the other way around, that there are certain facts or events that respondents rather would not report accurately (Fowler 1984). In the context of this study this would mean that the pharmacy manager could have been able to select questions in accordance with correspondence. In order to avoid this problem, other methods for the pharmacy personnel and for the researcher were used as well. In this situation, if correspondence in *thought* and *action* was observed, it would still be possible to test the realism of this outcome with the outcome of two additional methods, namely, for the pharmacy personnel and for the researcher. But if correspondence and *non*-correspondence were measured with the instrument for the pharmacy manager, it was assumed that no further comparisons were required for the

purpose of the next part of *phase one*. At eight pharmacies only the questionnaires for the pharmacy manager were used. At eight pharmacies the personnel was also sent a questionnaire, and at eight pharmacies the researcher also interviewed the pharmacy manager (**table 4.2.**). All the questionnaires consisted of binary questions (true/false) related to the actions at the pharmacy organization. Within this method a nominal scale was used, and, in addition, the questions were rescaled via a count variable to ratio scale (**table 4.3.**).

#### 4.3.1. Profile method

With the questionnaire for *profile* a total number of 1.393 items was used in the statistical processing. The data were used for a frequency distribution. Issues related to the pharmacy manager (Seniority, Sex, (In)dependence and Division of Time) and issues related to the pharmacy organization (Organizational Form, Cooperation, Location, Part-time and Full-time Personnel, FTE Pharmacists, FTE Other Personnel, Flow of Prescriptions, Flow of Patients, Turnover and Net Profit) were in general used for a general picture of the participating pharmacies. In addition, the data were used to produce information per pharmacy.

#### 4.3.2. Thought methods

With the questionnaire for *thought* a total number of 2.904 items was used in the statistical processing. The data were mainly processed with a Friedman test. The Friedman test processing consisted of 123-method A, 123-method B and card method. The test was used to produce a mean ranking per pharmacy. The drawing method was not processed statistically, but will be presented as a pictogram.

*The data were measured with the use of an ordinal scale. We asked ourselves how the results of this ordinal scale could be calculated? Could a mean ranking per case be calculated? Within 123-method A and 123-method B all observations were ranked, 1 being important, 2 less important, and 3 even less important. Within the ordinal scale of the 123-methods the distance between 1, 2 and 3 has no meaning. However, amongst statistical experts a controversy exists with respect to treating ordinal scales as interval scales and, for example, calculating a mean. The field is divided into liberals and conservatives (Knapp 1990). The liberals argue that although they do not have a true interval scale, they regard the differences between categories A and B and C as equal. In the methods used in this current study the distance between priority 1 and priority 2 would then be 1. They argue that it makes little difference whether an ordinal scale is treated as an interval scale. For example, liberals could propose just a calculation of the mean. Conservatives would counter that researchers have demonstrated very strange results when using means, standard deviations, and Pearson's r's with ordinal scales. Within this current study the conservative view was applied, although we also calculated some ordinary means. A distribution-free test procedure was used; the Friedman test. If the observations can be ranked, the Friedman test is a very powerful analytic tool. It calculates a mean ranking and, additionally, calculates a p-value. The Friedman test can be applied to a comparison between more than two groups and related samples (Slotboom 1987). Sometimes, when sample sizes are very small, there is no alternative to some form of distribution-free test of significance (Rosenthal and Rosnow*

1991). According to Kolstoe (1973) the Friedman test was developed for use with correlated groups. The Friedman test requires that different observations of one individual (or matched group) must be capable of being ordered (ranked).

The ranking applied within the 123-methods per three sub-questions was dependent. For example, the number 1 could only be used once per three sub-questions. The outcome of the other two sub-questions depended on the outcome of the initial ranking (for example, value 1), then only the values 2 and 3 were still available. The Friedman test takes dependence between 1, 2 and 3 into account with the calculation of the mean ranking. However, then a problem arises. Within the Friedman test, independence between cases is required. For example, independency is assumed if different pharmacy managers were asked to rank three subjects. As a result, a mean ranking of one question for all different cases could be calculated within the Friedman test. However within this study, a mean ranking was required per case for every question. Within one case each question was answered by one pharmacy manager. Within the 123-method A and B only one pharmacy manager ranked several subjects. Could the Friedman test still be applied? Dependence between the various questions was present, since one person made the test. However, within this study independence within one case was assumed if the pattern in answers was the same for different sets of questions in one case. Independence of the various sets of questions of one pharmacy manager had to be proved. It was assumed that the questions presented were a sample out of a universe of  $N$  possible questions. Primarily, each single question was independent of all other questions. This means that any set of questions should produce merely the same pattern in answers and no learning effect in the test should be present. However within the 123-methods, many questions were answered by the same pharmacy manager. It was tested in a binomial-test procedure whether the pattern in the answers to the first 33% of the questions was merely the same as the pattern of the last 33% of questions. If the same pattern of answers was produced, absence of learning effect and independence of the questions was assumed.

The test of independence was made by computing the  $z$ -value for the normal approximation of the difference between two proportions.<sup>14</sup> The computed  $z_c$  was compared with the table of cumulative standardized normal distribution  $F(z)$  (Harnett & Murphy 1986) with a level of significance of  $\alpha=0.05$ . It was tested if  $H_0: \pi_1-\pi_2=0$  and  $H_a: \pi_1-\pi_2\neq 0$ . The population proportion of the scores of the pharmacy-mix-related scores of the first 33% ( $\pi_1$ ) were assumed to be equal to the scores of the last 33% ( $\pi_2$ ). If  $p\text{-value}>\alpha$  then  $H_0$  was accepted, if  $p\text{-value}<\alpha$  then  $H_0$  was rejected. If  $H_0$  was to be accepted, independence of the questions was assumed. These hypotheses were tested for all individual cases. For example, for both population proportions of 33% of the questions for case 1, a table was produced to determine the sample proportions. **Table 4.4.** represents the sample proportions of the first 33% of case 1 and **table 4.5.** represents the sample proportions of the last 33% of case 1 within 123-method A.

<sup>14</sup> Calculated  $z$ -value for testing  $\pi_1-\pi_2=0$ :

$$z = \frac{(p_1 - p_2) - (\pi_1 - \pi_2)}{\sqrt{\frac{p_1(1 - p_1)}{n_1} + \frac{p_2(1 - p_2)}{n_2}}}$$



<i>mix/ranking</i>	1	2	3
<i>product</i>	.53	.22	.25
<i>process</i>	.12	.42	.46
<i>customer</i>	.35	.36	.29

**Table 4.4.** Relation of mix and ranking question 1-15 from 123-method A in case 1.

<i>mix/ranking</i>	1	2	3
<i>product</i>	.41	.34	.25
<i>process</i>	.14	.31	.55
<i>customer</i>	.45	.35	.20

**Table 4.5.** Relation of mix and ranking question 31-45 from 123-method A in case 1.

With the binomial test the score .53 (cell upper left **table 4.4.**) was compared with the score .41 (cell upper left **table 4.5.**). The computed  $z$ -value was .83 and was compared with the table of cumulative standardized normal distribution  $F(z)$ . The according  $p$ -value was  $p = 0.7967$ . In this example the  $p$ -value  $(.7967) > \alpha (0.05)$ . In addition, within all other tests with respect to the other cases the  $p$ -value  $> \alpha$ .  $H_0$  was accepted, and independence of the questions was assumed. The pattern in the answers of the population proportion of the first 33% of the answers is not significantly different from the last 33% of the answers. Independence of the first and the last part of the questions seems acceptable. The Friedman test was applied.<sup>15</sup>

The card-method was processed in exactly the same way as the 123-methods. However, some new problems arose. The 10 cards were divided into the categories 'very important', 'not important' and 'remaining', with a minimum of 3 cards and a maximum of 4 cards per category. Within the category very important the cards were ranked (most to least important). Only the ranked cards were used in the statistical processing. All pharmacy managers ranked the maximum of 4 cards in the category very important. Two problems were identified. The first problem related to the cards not used (= categories not important and remaining). For example, all cards relating to the product mix were selected in the category not important. The four cards in the category very important would get the values 1-4 (most-least important), and we first intended to give the other cards the value 0. In the example, the minimum value of the not used cards was zero. This value would be the highest ranking in a Friedman test. Since the product-mix-related cards were not used in the category very important, the highest ranking was regarded as undesirable. A help variable was introduced to overcome this problem. All cards in the categories not important and remaining were given the value 5, instead of the value 0. However, theoretically, some of the ranking of the cards could cause a problem with equality. For example, very important=product(1)-customer(2)-customer(3)-product(4). The sum of the values for the pharmacy mixes are product mix  $15(1+4+5+5)$ , process mix  $20(5+5+5+5)$ , and customer  $15(2+3+5+5)$ . Were product mix and customer mix equally important? It was accepted as equal, although such rankings were not observed in the pilot study. However, in two cases, equality was present in another form. For example, no cards of the product mix and process mix were used, and resulted in a score of 20 for both mixes. This was accepted as equal also. The second problem related to the number of cards per pharmacy mix. A total of 10 cards were divided into 3 cards for the product mix, 3 cards for the process mix, and 4 cards for the customer mix. As a result, within

<sup>15</sup> Within this study a test was made with respect to the outcome of the ordinal scale in a Friedman test and was compared by calculating a mean of the values used in the Friedman test, and calculating the mean of other values. If the same data matrix was used, the result of calculating the mean was exactly in correspondence with the result of the Friedman test. In addition, the distance between 1, 2 and 3 does not have a meaning in an ordinal scale. This was tested to be true by calculating the mean for some other values. The values 1, 2 and 3 were transformed into 1, 1.25 and 1.5; 1, 1.5 and 2; 1, 3 and 5 and 1, 5 and 9 respectively. This resulted in exactly the same ranks for all cases. Consequently, the ranks of the Friedman test seemed to be quite stable.

*the Friedman test the range from the best possible score to the lowest possible score varied per mix. The product mix and the process mix ranged from 11(1+2+3+5) to 15(5+5+5). The customer mix ranged from 10(1+2+3+4) to 20 (5+5+5+5). This division of cards resulted in a more detailed scale for the customer mix (10-20) than the scale for the product mix and the process mix (11-15).*

*With the drawing method a pictogram was produced. All pharmacies were represented by three marks in the triangle of product mix, process mix, and customer mix. The angular starting point, moving along the axe and the diagonal-end point were used in visualizing the rankings.*

### 4.3.3. Action methods

With the questionnaire for *action*, a total number of 17.204 items was used in the statistical processing. The data were processed with cluster analysis. Selection and collection of data for social items can produce an embarrassment of riches; for example, cumulative scores per pharmacy manager and ratio scores per pharmacy. A method of producing clear comprehensible patterns without losing the contribution from each number is needed. Cluster analysis provides such a method of organizing data (Monti 1975). The methods for the pharmacy manager, the pharmacy personnel and the researcher were all processed with cluster analysis. Some descriptions of cluster analysis are presented.

*Cluster analysis is a multi-variate technique, in which each case may describe more variables. Such an analysis divides cases in several groups. The cases within one group should be very alike, and at least not be like cases in another group. The researcher needs to find clusters or groups of cases with common characteristics. In cluster analysis, the number of clusters, the cluster members and the common characteristics have to be determined. It is used in a search for a typology (Slotboom 1987). Kiewiet and Stegwee (1991) and Kiewiet (1996) describe cluster analysis as the dividing of a set of cases into several subsets with the use of similarity measurements. Tryon et al. (1970) describe cluster analysis more broadly, as the general logic, formulated as a procedure, by which we objectively group together entities on the basis of their similarities and differences.*

*Within this study, an agglomerative hierarchical cluster analysis was used. Within this cluster analysis, two cases are partitioned into one cluster. Consequently, these two cases cannot be partitioned in two different classes later in the calculation. Why a hierarchical cluster analysis? Hierarchical methods give  $n$  nested classifications from  $n$  clusters of one member each, to one cluster of  $n$  members. Nonhierarchical clustering methods are designed to cluster data units into a single classification of  $n$  clusters, where  $n$  either specified a priori or is determined as part of the clustering method (Anderberg 1973). Within this study the number of clusters was not specified a priori since the number of pharmacy mixes was not fixed a priori but ought to be a result of the clustering of pharmacy-mix-related actions. The number of clusters also is not the main focus of this study, and therefore not directly related to the research question. This study seeks to find clusters stressing the same actions. The number of clusters is of secondary importance. Another question is why there should be an agglomerative hierarchical approach. The agglomerative approach pulls together the entities which are most alike. Other hierarchical clustering methods focus on finding groups which are best separated from each other or most distinctive (Anderberg 1973). Neither separation or distinction is primarily related to the research*

question. In this study we intended to select similar cases with respect to pharmacy-mix-related actions. The agglomerative hierarchical cluster analysis was selected as the clustering technique for action.

Cluster analysis consists of several steps. Anderberg (1973) described nine steps: choice of data units, choice of variables, what to cluster, homogenizing variables, choice of similarity measures, the clustering criterion, algorithms and computer implementation, deciding the number of clusters, interpretation of the results. Romesburg (1984) described several steps, such as obtaining the data matrix, standardizing the data matrix, computing the resemblance matrix, executing the clustering method, rearranging the data and resemblance matrices, and computing the cophenetic correlation coefficient. Other authors described more or less similar steps. In this pilot study, five steps were selected: step 1 the choice of objects and variables; step 2 standardizing the data matrix; step 3 choice of similarity measures; step 4 choice of clustering method; step 5 deciding the number of clusters. All steps will be described below. Some results of the pharmacy manager will be presented in order to illustrate the choices made. The remaining questionnaires, for the pharmacy personnel and the researcher, were processed with the same format.

**Step 1** The choice of objects and variables

Cases of the pilot study were pharmacy managers. Variables were the count variables describing the number of actions related to product, process, customer and remaining.

**Step 2** Standardizing the data matrix

Per object the scores were calculated. Four categories of answers were used: 'yes', 'no', 'not applicable', and 'missing' in combination with the pharmacy-mix-related actions 'product', 'process', 'customer', 'remaining' and 'total'. Firstly, all scores of the four categories of answers were counted. For example, the overall score for case 1 on the answer 'yes' was 132 out of 372. Secondly, the scores of the four categories of answers were counted per pharmacy-mix-related action. For example, the product score for case 1 on the answer 'yes' was 33 out of 92. The sum total of the scores per category of answers and the sum total of the scores per category of answers per pharmacy mix were calculated separately, and compared. Both totals resulted in 372 questions. This outcome was used to verify this part of the processing. The results were translated from the nominal scale, via a count variable, to ratio scale. This translation was made in order to combine the results of the questions relating to a specific pharmacy mix. The different scores were used as the 'pharmacy-mix'-shape of a case. The shape showed the focus of the case with respect to the three pharmacy mixes. Consequently, the binary scale was not used in the statistical processing of action. The count variable for the cluster analysis was the number of scores 'yes' per pharmacy-mix-related action. Since the number of questions per pharmacy mix were unequal and some questions were 'not applicable' or 'missing', corrections were required. Two corrections were made relating to the maximum score per pharmacy-mix-related action.

The first correction related to the unequal outcome per pharmacy-mix-related action. For example, the uncorrected maximum scores of the pharmacy manager for the actions in product, process, customer, remaining and total were 92, 111, 100, 69 and 372 respectively. To overcome this problem the data matrix was standardized.

Romesburg (1984) argues that standardizing makes attributes contribute more equally to the similarities among objects. For example, if the range of values on the first attribute is much greater than the range of values of the second, then the first attribute will carry more weight in determining the similarities among objects. When this is undesirable in the context of your

research goal, you can compensate for the effect by standardization. Within these methods, all count variables were rearranged on a ratio scale from 0 to 1 to overcome the problem of different ranges of values. The second correction related to the answers 'not applicable' and 'missing'; the categories describe different phenomena. However, both categories were used as one category with respect to their effect on the possible maximum score in the statistical processing. The possible maximum score of the main result of the calculations, the count variable, was affected by these answers. For example, if the answers 'not applicable' and 'missing' were used more often in a certain case, the maximum possible score in that case was lower. Per case a correction was made. For example, a correction for the product mix of case 1 could be made. Normally, by calculating a ratio score of case 1, the product-mix score would be divided by the maximum possible product-mix score. However, in this study the maximum possible score was reduced to the number of questions in the categories 'not applicable' and 'missing'.

### **Step 3** Choice of similarity measures

A similarity measure is a mathematic formula, and represents how similar the pair of objects are (Romesburg 1984). This study deals with the emphasis of the actions of the pharmacy manager with respect to the three pharmacy mixes. Different similarity measures can express similarity among scores with respect to height, size or shape. The choice of a similarity measure relates to the validity of the study. How well does the measure applied serve the research goal? For example, the question 'What package of business actions is the main focus of the pharmacy manager?', relates to the shape of the ratio scores. Within this part of the study, two measures of validity were used. The primary validity deals with the question how well a cluster analysis achieves its research goal and generates interesting and useful conclusions. The secondary validity deals with certain features we would like the cluster analysis to have (Romesburg 1984). The primary validity will be discussed here. The secondary validity will later be discussed in conjunction with Step 4, the choice of the clustering methods.

The primary validity relates to the similarity measures which are sensitive to the height, size or shape of the scores of the individual pharmacy mixes.<sup>16</sup> Other similarity measures are sensitive to the shape of the scores. The difference in the use of these similarity measures is related to the term 'size displacement'. Romesburg (1984) argued that a size displacement occurs when the data profile of one case is, attribute for attribute, larger or smaller than that of another. Size displacement is a useful concept because we want to measure similarity based on the shapes of the profiles rather than size displacement between them. For example, if the cases are fossil

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<sup>16</sup> Squared euclidian distance  $[(X,Y) = \sum(X_i - Y_i)^2]$  and block  $[(X,Y) = \sum |X_i - Y_i|]$  were the applied similarity measures in the first try-out of the statistical processing. The clustering resulted in a strong positive relation between the **height** of the scores per pharmacy-mix-related ratio. A high score on the product-mix ratio was clustered with a high score on the process-mix ratio, customer-mix ratio and remaining ratio. The use of these similarity measures resulted in a very robust clustering with respect to secondary validity. However the primary validity was low. The cases were divided into a cluster of some (6) young pharmacy managers (low ratio scores), a big cluster (16) of middle-range scoring pharmacy managers (middle ratio scores), and a very small (2) top-segment (high ratio scores). This was no new fact to stichting VNA and SAL Apotheken. In fact, many of the actions of these organizations concentrate on the supporting of young pharmacy managers. No relation to the research question (the emphasis of the actions of the pharmacy manager with respect to the pharmacy mixes) was made. Consequently, the relevancy and utility of the clustering with the similarity measures squared euclidian and block were small.

bones and the attributes are measurements of the bones, we probably want to ignore size displacement between data profiles: after all, size displacements can arise incidentally because the animals were not all the same age when they died. If it is presumed that the fossil bones were found near an ancient village in the province of Friesland in the Netherlands, we have to be able to distinguish a mammoth from a forest elephant, since, the forest elephant lived 70.000 years earlier than the much bigger mammoth from the tundra (Bos 1995). This information may be of great importance to archaeologists. Whether the bones originated from a young mammoth or from a fully-developed mammoth is not relevant for the used classification; in this case the bones should be classified in the category mammoth. Similarly, the pharmacy manager should be classified in the category product mix, process mix or customer mix. Whether a difference between young pharmacy managers who are relatively new in the profession, or fully-developed pharmacy managers, who are experienced in the profession, is observed, is not of any major importance here. Ideally, the pharmacy manager should be classified in one of the three pharmacy mixes. Romesburg (1984) describes the Pearson correlation coefficient and the cosines coefficient as similarity measures which are sensitive to shape. Both measures are relatively indifferent to size displacement. Linear translations are usually ignored in the Pearson correlation coefficient.<sup>17</sup> The Pearson correlation coefficient was selected as a similarity measure in this study.<sup>18</sup>

#### **Step 4** Choice of clustering method

Hierarchical cluster analysis consists of several methods of clustering. A choice must be made among these various methods. The two measures of validity (Romesburg 1984), mentioned before in Step 3, were used for the choice of the clustering methods.

The primary validity, which deals with the question of how well a cluster analysis achieves its research goal and generates interesting and useful conclusions, consisted of a demonstration in the use of the most widely applied clustering methods (Romesburg 1984).

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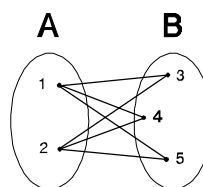
<sup>17</sup> Both additive translations, scores of pharmacy manager A = scores pharmacy manager B + 2, and proportional translations, scores of pharmacy manager A = scores pharmacy manager B x 2, are ignored in the Pearson correlation coefficient. The cosines coefficient ignores proportional translations only.

<sup>18</sup> The Pearson correlation describes the correlations between vectors of values.  $Z_{xi}$  is the standardized Z score value of X for the ith item, and N is the number of items (Norusis 1993);

$$\text{Similarity}(X,Y) = \frac{\sum_i Z_{xi} Z_{yi}}{N-1}$$

In addition, some of the clustering methods cannot be combined with certain similarity measures.<sup>19</sup> Within this current study one out of two clustering methods was selected. Both clustering methods were related to average linkage; 'average linkage between groups' and 'average linkage within groups'. Some describe average linkage method as the distance between groups or as the average of the distances between all pairs of individuals in the two groups (Everitt 1980). Sokal and Michener (1958) use the average linkage method as a measure of distance between an individual and a group of individuals, while Lance and Williams (1966) extend it to a measure of distance between groups. In this pilot study, the average linkage **between** groups method is described as the average of the distances between all pairs of individuals in all groups. In the average linkage **within** groups method, the distance between groups is described as the average of the distances between all pairs of individuals within each group.

The first method used is the average linkage between groups or UPGMA (unweighted pair-group method using arithmetic averages) and is a clustering method which defines the distance between two clusters as the average of the distances between all pairs of cases in which one member of the pair is from each cluster. For example, if the cases 1 and 2 of **figure 4.2.** form cluster A and cases 3, 4 and 5 form cluster B, the distance between clusters A and B is taken to be the average of the distances between the following pairs of cases: (1,3)(1,4)(1,5)(2,3)(2,4)(2,5). This differs from the other linkage methods in that it uses information about all pairs of distances, not just the nearest or the furthest. For this reason, it is usually preferred to SLINK and CLINK for cluster analysis (Norusis 1993).



**Figure 4.2.** Example of distance between cluster A and B with average linkage between groups.

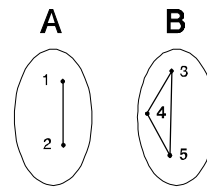
The second method used is a variant of UPGMA, the average linkage within groups. It is a clustering method in which a cluster is characterized by the average of all links within it (Anderberg 1973). This method combines clusters so that the average distance between all cases in the resulting cluster is as small as possible. Thus, the distance between two clusters is taken to be the average of the distances between all possible pairs of cases in the resulting cluster (Norusis 1993). For example, if cases 1 and 2 of **figure 4.3.** form cluster A and cases 3, 4 and 5 form cluster B, the distance between clusters A and B is taken to be the average of the distances between the following pairs of cases: (1,2)(3,4)(3,5)(4,5).

<sup>19</sup> Within the first try-out of the statistical processing, two of the most widely used clustering methods (Romesburg 1984) average linkage **between** groups and Ward were applied. The combination of these clustering methods with the similarity measures squared euclidian and block resulted in a strong positive relation between the height of the scores per pharmacy-mix-related ratio mentioned earlier. The primary validity was, however, low. As a result, and in accordance with the arguments mentioned in Step 3, the similarity measure Pearson correlation coefficient was selected as the appropriate measure of association. However, Pearson correlation is a resemblance coefficient. The Ward method cannot be used with any resemblance coefficient. The Ward method was replaced by another average linkage clustering method: **within** groups. The average-linkage clustering method can be used with resemblance coefficients, and it judges the similarity between pairs of clusters in a manner less extreme than either SLINK (single linkage) or CLINK (complete linkage) (Romesburg 1984).

The secondary validity, which deals with certain features we would like the clusters to have, consists of a demonstration of robustness and an agreement with expert intuition (Romesburg 1984). In addition, in this study the researcher has made a rough classification. Firstly, Williams (1967) described stability and robustness. In general, we could say that if adding information does not disturb the classification, the clustering is taken to be stable; if removing information does not produce major changes in the classification (for example, removing one or two objects or attributes from the original data matrix) the cluster is taken to be robust. In this study the robustness test was made in such a way that 50% of the attributes (pharmacy-mix-related ratios) was removed. Within seven tests, several combinations of the attributes were made.<sup>20</sup> The effect of attribute change to the clustering was compared. Secondly, Romesburg (1984) quoted several examples of where expert intuition can be used (Hodson et al. 1966, Sneath 1968, Gupta and Huefner 1972, Zajicek et al. 1977). In our project the management of stichting VNA and SAL Apotheken positioned all twelve of the VNA/SAL pharmacies in the pharmacy mix before the pilot study. Five pharmacies were located in the product mix, two pharmacies were located in the process mix, and five pharmacies were located in the customer mix. For example, the pharmacy manager of case 17 was a pharmacy manager in the process mix, according to the management of stichting VNA. Finally, a rough classification was made using a comparison of all pharmacy-mix-related ratio scores. The researcher classified all cases in four clusters. The shape of the scores determined the membership of a case in a cluster. The rough clusters were:

cluster 1 (process=product)>customer  
 cluster 2 (product=process)>customer  
 cluster 3 product>(customer≈process)  
 cluster 4 product>(process=customer)

The symbols applied are: > and < for larger and smaller than, ≥ and ≤ for larger and almost equal to and smaller and almost equal to, (mix1≈mix2) two mix scores being almost equal. The results of both clustering methods, average linkage between groups and average linkage within groups, were compared with the criteria of robustness, expert-intuition and rough clustering by the researcher. Within the method of average linkage between groups, 13 cases were replaced after the test for robustness. After the expert-intuition test, nine out of twelve VNA/SAL pharmacies were grouped in according clusters. After the rough-clustering test eighteen cases corresponded with the rough clusters. Within the method average linkage within groups, 12 cases were replaced after the test for robustness. After the expert-intuition test also nine out of twelve VNA/SAL pharmacies were grouped in according clusters. After the rough-clustering test, all cases corresponded with the rough clusters. Consequently, the method average linkage within groups was selected because of the criterion of robustness. The application of this method resulted in four clusters which were in accordance with the results of the rough clusters, seen above.



**Figure 4.3.** Example of distance between cluster A and B with average linkage within groups.

<sup>20</sup> The original clustering was made with the ratios of product, process, and customer. This result was compared with the clustering of the ratio scores of product-process, product-customer, product-remaining, process-customer, process-remaining, customer-remaining and product-process-customer-remaining.

**Step 5 Deciding the number of clusters**

Since the applied hierarchical clustering techniques ultimately reduce the data to a single cluster containing all the entities, the researcher may need to decide at which stage in the analysis he wishes to stop (Everitt 1980). Within this current study the decision about the number of clusters was related to the theoretical expectations of the pilot study. It was expected that three pharmacy mixes would appear. The outcome was not as expected. It was different in such a way that the clustering did not produce pure types as presented in **table 4.1.**, but four clusters with two pairs of clusters similar to that of the rough clusters. The rough clusters had two main features. Firstly, the product-related and process-related actions were nearly equal. Both mix actions were larger than the customer-related actions (cluster A). Secondly, the process-related and customer-related actions were nearly equal. Both mix actions were smaller than the product-related actions (cluster B). Each of these two main clusters were refined. Cluster A was subdivided in two clusters in which process-related actions were a little bit larger than product-related actions (1), vice versa (2). Cluster B was subdivided in two clusters in which customer-related actions were a little bit larger than process-related actions (3), vice versa (4).

Main cluster A	cluster 1 (process=product)>customer
	cluster 2 (product=process)>customer
Main cluster B	cluster 3 product>(customer=process)
	cluster 4 product>(process=customer)

The classification, with the clustering method average linkage within groups and the similarity measure Pearson correlation coefficient, produced clusters corresponding with the rough clusters mentioned before. The rough clustering was used as a criterion for the number of clusters. In addition, the distances in the dendrogram, representing the steps in hierarchical clustering method, were chosen as large as possible. Both criteria resulted in four clusters for the questionnaire for the pharmacy manager.

**4.4. Results**

Methods based on the choices mentioned earlier were applied to the data. The results of this pilot can thus now be presented. The results of the method for *profile* of pharmacy organization will be presented in 4.4.1. The results of the methods for *thought* of the pharmacy manager will be presented in 4.4.2. The results of the methods for *action* of the pharmacy organization will be presented in 4.4.3. The correspondence of the results for *thought* and *action* will be discussed briefly in 4.4.4.

**4.4.1. Profile results**

The *profile* of pharmacy organization of the selected group was described by the Seniority, Sex and Division of Time of the pharmacy manager, and, in addition, (In)dependence, Cooperation, Location, Part-time/Full-time Personnel, Flow of Prescriptions, Flow of Patients, Turnover and Net Result of the pharmacy organization.

The pharmacy managers were mostly male (71%) and some female (29%). Within the pilot group most of the pharmacy managers had a seniority between 6 and 15 years (62%). Some of the pharmacy managers had an experience of more than 15



years as pharmacy managers (17%), some between 2 and 6 years (13%), and some pharmacy managers were quite new in the field of pharmacy, having less than 2 years experience as pharmacy managers (8%). The time spent on tasks directly relating to the pharmacy organization was more than 40 hours for most of the pharmacy managers (79%) and 30-40 hours for the remaining pharmacy managers (21%). The time spent on tasks indirectly relating to the pharmacy organization was less than 10 hours for most of the pharmacy managers (71%) and 30-40 hours for the remaining pharmacy managers (29%).

Within the pilot group, most of the pharmacy organizations were managed by an independent pharmacy manager (67%). Some of the pharmacy managers were in employment (21%) and, in addition, a small number of pharmacy managers in employment were working towards being independent (12%). Compared with the independence of the pharmacy manager (67%) mentioned before, a smaller number of pharmacies were independent (46%). The remaining pharmacies were participating in a transfer formula (25%), a health-care centre (13%), ownership of several pharmacies (8%), and part of a cooperation of some kind (8%). Most of the pharmacies were not participating in a pharmacy concept (75%). The participating pharmacies were related to various so-called 'formulas' (groups of cooperating pharmacists); Meditheek (13%), Kringapotheek (4%) and Extra apotheek (8%). The location of most pharmacies was in the suburban area of a city (42%). Some of the pharmacies were located in the city centre (29%), and in rural areas (25%). Personnel consisted of both part-time and full-time staff. The part-time staff consisted mainly of 5-10 employees (59%); 3-5 employees (29%), 1-2 employees (8%) and 10 or more employees (4%), respectively. The full-time staff consisted mainly of 1-2 employees (33%) and 3-5 employees (33%); 5-10 employees (30%), and 10 or more employees (4%) respectively. Pharmacists and their personnel were both included in the results of Full-Time Equivalence (FTE). The FTE for pharmacists was mainly smaller than 1.5 FTE (79%); 1.5-3 employees (17%). The FTE for other pharmacy personnel was mainly 4-7 FTE (46%); 1-4 employees (33%), 7-9 employees (17%), and 9 or more employees (4%) respectively. The number of prescriptions over 1993 was mainly 50-70.000 prescriptions (29%); 70-90.000 prescriptions (25%), 50.000 prescriptions or less (17%) and 90.000 prescriptions or more (17%) respectively. The number of patients in the whole of 1994 was mainly 8-11.000 patients (54%); 8.000 patients or less (29%) and 11-14.000 prescriptions (17%) respectively. The turnover in the whole of 1993 was mainly 2.5-3.5 million Dutch guilders (38%); 2.5 million or less (25%), 3.5-4.5 million (25%) and 4.5 million or more (4%) respectively. The net profit over 1993 was mainly 250-400.000 Dutch guilders (38%); 100-250.000 (21%), 100.000 or less (17%) and 400.000 or more (17%) respectively.

#### 4.4.2. Thought results

The *thought* of the pharmacy manager was described with the results of the Friedman test by using the data of the 123-methods A and B and the card method. In addition, a pictogram described the results of the drawing method. For all combinations of *profile* and *thought* used, the time spent to fill in the questionnaire was indicated by the respondents. The method profile, combined with 123-method A and drawing method took an average of 29 minutes, the method profile combined with 123-method A and card method took an average of 35 minutes. The method profile combined with 123-method B and drawing method took an average of 51 minutes, the method profile combined with 123-method B and card method took an average of 43 minutes.

The **123-method A** consisted of 28 main questions in which the relation between the question and the pharmacy mix was described. All main questions consisted of three sub-questions relating to a specific pharmacy mix. In the Friedman test, a mean ranking was calculated with an according p-value. The results of this method, presented in **table 4.6.**, consisted of three categories of priorities. The first category related to the ranking customer-product-process (case 3, 16 and 17). The second category related to the ranking product-customer-process (case 6, 9, 11, 14, 18, 19 and 23). The third category related to the ranking product-process-customer (case 1). In the situation of the ranking being equal, for example, as observed in the ranking (1=2) 3, that specific case was allocated to the most frequent ranking within that method, ultimately.<sup>21</sup> In addition, a p-value was calculated. The level of significance, for example,  $\alpha=0.05$ , explains the probability that the given rankings, most likely, were not coincidental (Slotboom 1987). The calculated p-values of 123-method A were between .63 and 0.

ranking method	customer product process	customer process product	product customer process	product process customer	process product customer	process customer product
<b>123-method A</b>	case 3, 16, 17		case 6, 9, 11, 14, 18, 19, 23	case 1		
<b>123-method B</b>	case 2, 12, 13, 15, 21, 22		case 5, 7, 8, 10, 20, 24			
<b>card method</b>	case 5, 7, 8, 12, 16, 17, 19, 23	case 2, 14	case 10, 18			
<b>drawing method</b>	case 3, 4, 9, 13, 20, 21, 22		case 1, 6, 11, 24		case 15	

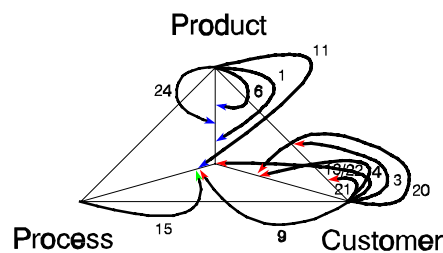
**Table 4.6.** Relation of ranking and *thought* methods.

<sup>21</sup> Within 123-method A, case 6 was allocated to the rank product-customer-process.

The **123-method B** consisted of 45 main questions in which the relation between the question and the pharmacy mix was *not* described. All main questions consisted of three sub-questions relating to a specific pharmacy mix. The results of this method, presented in **table 4.6.**, consisted of two categories of priorities. The first category related to the ranking customer-product-process (case 2, 12, 13, 15, 21 and 22). The second category related to the ranking product-customer-process (case 5, 7, 8, 10, 20 and 24). The calculated p-values of 123-method B were between .05 and 0.

The **card method** consisted of two sets with a total of 10 cards each. Every card related to a specific pharmacy mix. The results of this method, presented in **table 4.6.**, consisted of three categories of priorities. The first category related to the ranking customer-product-process (case 5, 7, 8, 12, 16, 17, 19 and 23). The second category related to the ranking product-customer-process (case 10 and 18). The third category related to the ranking customer-process-product (case 2 and 14). In addition, three cases were allocated.<sup>22</sup> The calculated p-values within the card method were between .22 and .13. The complete ranking of the card method was for 42% (5 cases) corresponding to the results of the 123-methods (**table 4.6.**).

The **drawing method** consisted of three questions related to three positions in the picture of the triangle. With the first question the pharmacy manager positioned the pharmacy in the angular points of the triangle. With the second question the pharmacy manager positioned the pharmacy alongside the axes of the triangle, or, if there was no movement, in the angular points. With the third question the pharmacy manager positioned the pharmacy alongside the diagonal lines, or, if there was no movement, in the angular points or alongside the axes. Within **figure 4.4.**



**Figure 4.4.** The results of the drawing-method priorities in dynamical perspective: the angular starting point, crossing the axis, the diagonal-line end point.

the starting point of the arrow relates to the first question, the crossing of the axes relates to the second question, and the endpoint of the arrow relates to the third question. **Figure 4.4.** shows three positions per pharmacy, and two positions for pharmacy 3 and 21 (after question 2 there was no movement according to the pharmacy manager). **Figure 4.4.** also shows that most of the pharmacies start in the

<sup>22</sup> Within the card method, case 8, 17 and 19 were allocated to the rank customer-product-process.

customer mix, move alongside the axe with the product mix and end by moving over in the direction of the process mix. The results of the drawing method are also described in **table 4.6**. Since the method is hardly comparable with the other methods, only the first ranking is presented. A comparison of the 'first-ranking only' showed that, within the drawing method, 67% of the cases (8 cases) corresponded with the outcome of the 123-methods. The results of the complete ranking of the drawing method, although hardly comparable, corresponded for only 8% (1 case) to the results of the 123-methods.

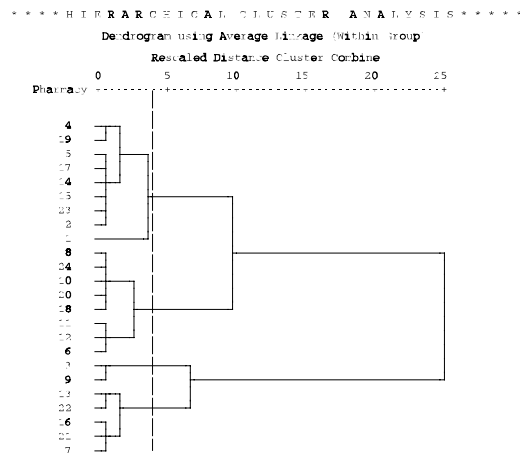
#### 4.4.3. Action results

The *action* of the pharmacy manager was described by using the results of the questionnaire for the functions pharmacy manager, pharmacy personnel (second pharmacist and assistant pharmacist) and researcher. For all questionnaires used for *action*, the time spent to fill in the questionnaire was also indicated by the respondents. The method for the pharmacy manager took an average of 47 minutes, the method for the second pharmacist took an average of 45 minutes, and the method for the assistant pharmacists took an average of 38 minutes. The time spent by the researcher took a mean of 96 minutes per interview. The results of all methods were produced using a cluster analysis. It should be remembered that we decided to use the similarity measure Pearson correlation coefficient and the method average linkage within groups in the cluster analysis. The results of cluster analysis were presented visually in a dendrogram which represents the steps in a hierarchical clustering solution. The dendrogram identifies the clusters being combined and the values of the coefficients at each step. In this method, the distances in the presented dendograms are rescaled to numbers between 0 and 25. The ratio of the distances between steps is preserved, but the scale displayed at the top of the figure does not correspond to actual distance values (Norusis 1993). The rough clusters, mentioned earlier, were used as a criterion for the number of clusters. In addition, the distances in the dendrogram were chosen to be as large as possible, and, are equal for the three methods.

With the questionnaire for the **pharmacy manager**, as mentioned earlier, the main results of the *rough clustering* were twofold. Firstly, the product-related and process-related actions were nearly equal. Both mix actions were larger than the customer-related actions. Secondly, the process-related and customer-related actions were nearly equal. Both mix actions were smaller than the product-related actions. Each of these two main clusters were refined. The first main cluster was subdivided into two clusters in which process-related actions were slightly larger than product-related actions (cluster 1) and vice versa (cluster 2). The second main cluster was also subdivided into two clusters in which customer-related actions were slightly larger than process-related actions (cluster 3) and vice versa (cluster 4).

The final result of the *empirical clustering* for the pharmacy manager was also four clusters (**figure 4.5.**) ranked thus: *cluster 1* (process≈product)>customer  
*cluster 2* (product≈process)>customer  
*cluster 3* product>(customer≈process)  
*cluster 4* product>(process≈customer)

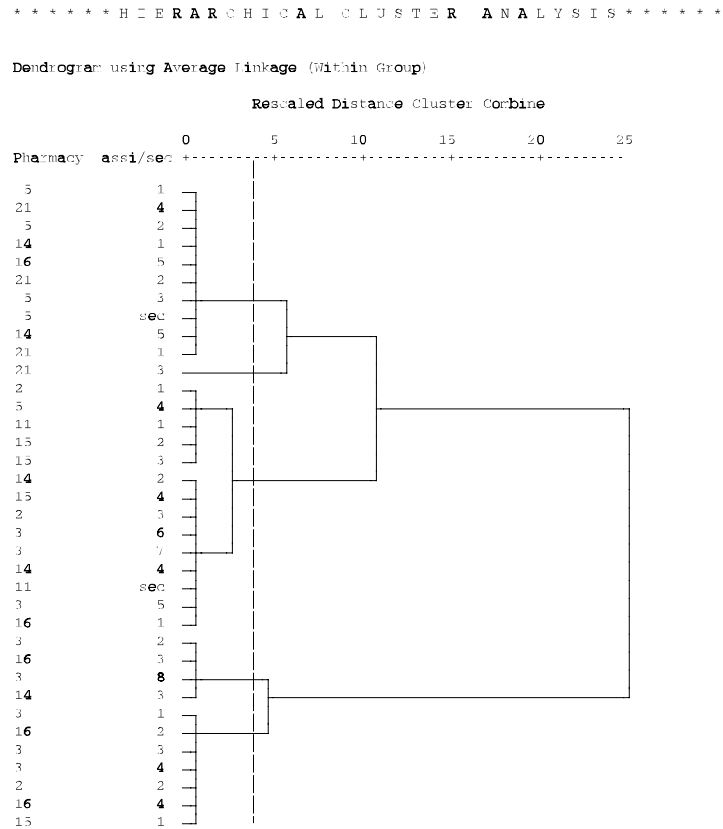
We also chose the distances in the dendrogram to be as large as possible. In this method the rescaled distance cluster combine was chosen to be just under 5. This is marked by a vertical dotted line in **figure 4.5.** resulting in four clusters.



**Figure 4.5.** The dendrogram representing four clusters from the questionnaire for the pharmacy manager.

With the questionnaire for the **pharmacy personnel** the results of the *rough clustering* were also mainly twofold. Firstly, product-related actions were larger than process-related and customer-related actions. Secondly, process-related actions were larger than product-related and customer-related actions. Each of these two main clusters were refined. The first main cluster was subdivided into a cluster in which product-related actions were larger than process-related actions which in turn were larger than customer-related actions; all to a different extent (cluster 1), and, in addition, was subdivided into a cluster in which product-related actions were larger than customer-related actions which in turn were larger than process-related actions (cluster 2); all to a different extent also. The second main cluster was subdivided into a cluster in which process-related actions were larger than product-related actions which in turn were larger than customer-related actions (cluster 3), and, was subdivided into a cluster in which process-related actions were larger than the

customer-related actions which in turn were larger than product-related actions (cluster 4), and, finally, was subdivided into a cluster in which process-related actions were slightly larger than the product-related actions, both actions being larger than the customer-related actions (cluster 5).



**Figure 4.6.** The dendrogram representing five clusters from the questionnaire for the pharmacy personnel.

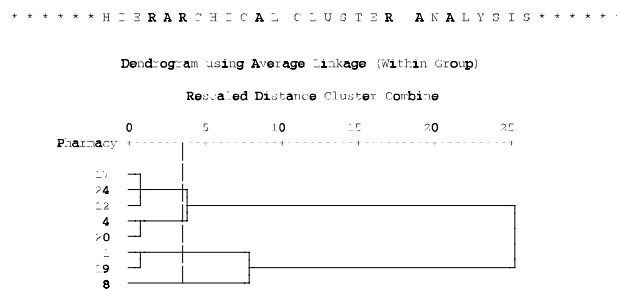
The final result of the *empirical clustering* for the pharmacy personnel was also five clusters (**figure 4.6.**) ranked thus: *cluster 1* product $\geq$ process $\geq$ customer  
*cluster 2* product $\geq$ customer $\geq$ process  
*cluster 3* process $>$ product $>$ customer  
*cluster 4* process $>$ customer $>$ product  
*cluster 5* (process $\approx$ product) $>$ customer

Three out of 36 cases were placed in a cluster which did not correspond to the rough clusters. Case 15.3 was positioned in cluster 5 with cluster analysis and in cluster 1 with the rough clustering. Case 3.8. and 14.3. were positioned in cluster 2 with cluster analysis and in cluster 1 with the rough clustering. In addition, the distances in the dendrogram were to be chosen exactly the same as in the clustering of the pharmacy manager; the rescaled distance cluster combine was chosen to be just under 5, and also marked by a vertical dotted line in **figure 4.6.** resulting in five clusters. The clusters of the pharmacy personnel were compared with the 'natural cluster'. A natural cluster would be observed whenever the pharmacy personnel of one pharmacy was in the same calculated cluster. However, the respondents of the same pharmacy were never observed in one calculated cluster. Also, the complete clustering of the pharmacy personnel corresponded for only 13% to the results of the pharmacy manager.

With the questionnaire for the **researcher**, the results of the *rough clustering* were also mainly twofold. Firstly, product-related actions were larger than process-related and customer-related actions (cluster 1). Secondly, process-related actions were larger than product-related and customer-related actions. Only the second main cluster was refined. The second main clustering was subdivided into three clusters in which process-related actions were slightly larger than product-related actions (cluster 2), product-related actions were slightly larger than customer-related actions (cluster 3), and, finally, process-related actions were larger than product-related actions which in turn were larger than customer-related actions (cluster 4).

The final result of the *empirical clustering* for the researcher was four clusters (**figure 4.7.**) ranked thus:

- cluster 1* (product≈process)>customer
- cluster 2* (process≈product)>customer
- cluster 3* process>(product≈customer)
- cluster 4* process>product>customer



**Figure 4.7.** The dendrogram representing four clusters from the questionnaire for the researcher.

In addition, the distances in the dendrogram were chosen to be exactly the same as in the clustering of the pharmacy manager and the pharmacy personnel; the rescaled distance cluster combine was chosen to be just under 5, and again marked by a vertical dotted line in **figure 4.7**. resulting in four clusters. The complete clustering for the researcher was for 63% corresponding to the results of the pharmacy manager.

A summary of the former results of the methods for *action*, as decided by the pharmacy manager, pharmacy personnel, and researcher is presented in **table 4.7**. The refined rankings were transformed into four categories in order to enable a comparison between the three methods. The results are summarized in four main rankings of clusters: product-process-customer, product-customer-process, process-product-customer and process-customer-product.

ranking method	<i>product process customer</i>	<i>product customer process</i>	<i>process product customer</i>	<i>process customer product</i>
pharmacy manager	case 6, 7, 8, 10, 11, 12, 13, 16, 18, 20, 21, 22, 24	case 3, 9	case 1, 2, 4, 5, 14, 15, 17, 19, 23	
pharmacy personnel	case 2.3, 3.5, 3.6, 3.7, 14.2, 14.4, 15.4, 16.1, sec.11	case 2.2, 3.1, 3.2, 3.3, 3.4, 3.8, 14.3, 15.1, 16.2, 16.3, 16.4	case 2.1, 5.1, 5.2, 5.3, 5.4, sec.5, 11.1, 14.1, 14.5, 15.2, 15.3, 16.5, 21.1, 21.2, 21.4	case 21.3
researcher	case 12, 17, 24		case 1, 4, 8, 19, 20	
<b>total cases</b>	<b>25 cases</b>	<b>13 cases</b>	<b>29 cases</b>	<b>1 case</b>

**Table 4.7.** Relation of ranking and *action* methods.

**Table 4.7.** shows that most cases were observed in the ranking process-product-customer (29 cases), followed immediately by the ranking product-process-customer (25 cases). One can see that all three methods produce both rankings. The third ranking was product-customer-process (13 cases) and was only observed in the method for the pharmacy manager and the pharmacy personnel. The fourth ranking was process-customer-product (1 case) and was only observed in the method for the pharmacy personnel.

#### 4.4.4. Correspondence of results

There is some variety in the results of the methods applied. How do *thought* and *action* correspond with respect to the methods applied? **Table 4.8.** shows the overall results of the four methods for *thought* and three methods for *action*. The results of



the drawing method were only included to compare the first ranking. It was argued above that the complete ranking of the drawing method was hardly comparable to the other methods.

The second column of **table 4.8.** product-process-customer, shows that the number of cases for *thought* (1 case) contrasted with the number of cases for *action* (25 cases). Within this ranking, this case 1 was only observed in *thought*. The third column, product-customer-process, shows that the number of cases for *thought* (15 cases) corresponded to the number of cases for *action* (13 cases). However, within this ranking, only two cases were observed in both *thought* and *action*, case number 9 and 14 within 123-method A; case 9 was also observed in the method for the pharmacy manager, and case 14.3. in the method for the pharmacy personnel. The first-ranking-only result of the drawing method shows four cases with ‘product’ in the first ranking, three of which (cases 6, 11 and 24) were in correspondence with *action*.

ranking method	product process customer	product customer process	process product customer	process customer product	customer product process	customer process product
123-method A	case 1	case 6, 9, 11, 14, 18, 19, 23			case 3, 16, 17	
123-method B		case 5, 7, 8, 10, 20, 24			case 2, 12, 13, 15, 21, 22	
card method		case 10, 18			case 5, 7, 8, 12, 16, 17, 19, 23	case 2, 14
drawing method	case 1, 6, 11, 24		case 15		case 3, 4, 9, 13, 20, 21, 22	
total completely ranked cases <i>thought</i>	1	15	0	0	17	2
pharmacy manager	case 6, 7, 8, 10, 11, 12, 13, 16, 18, 20, 21, 22, 24	case 3, 9	case 1, 2, 4, 5, 14, 15, 17, 19, 23			
pharmacy personnel	case 2.3, 3.5, 3.6, 3.7, 14.2, 14.4, 15.4, 16.1, sec.11	case 2.2, 3.1, 3.2, 3.3, 3.4, 3.8, 14.3, 15.1, 16.2, 16.3, 16.4	case 2.1, 5.1, 5.2, 5.3, 5.4, sec.5, 11.1, 14.1, 14.5, 15.2, 15.3, 16.5, 21.1, 21.2, 21.4	case 21.3		
researcher	case 12, 17, 24		case 1, 4, 8, 19, 20			
total cases <i>action</i>	25	13	29	1	0	0

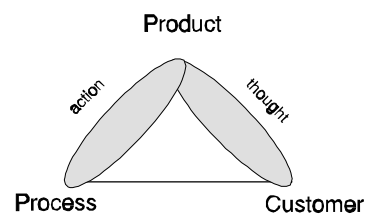
**Table 4.8.** Relation of main rankings in *thought* and *action* methods.

The fourth column, process-product-customer, shows that the number of cases for *thought* (0 cases) did not correspond at all with the number of cases for *action* (29

cases). Within this ranking, none of the cases were observed in both *thought* and *action*. The fifth column, process-customer-product, shows that the number of cases for *thought* (0 cases) did not correspond with the number of cases for *action* (1 case). Within this ranking, the case observed in *action* was not observed in *thought*. The first-ranking-only result of the drawing method shows one case with 'process' in the first ranking; this case (case 15) was in correspondence with *action*. The sixth column, customer-product-process, shows that the number of cases for *thought* (17 cases) did not correspond at all with the number of cases for *action* (0 cases). Within this ranking, none of the cases were observed in both *thought* and *action*. The seventh column, customer-process-product, shows that the number of cases for *thought* (2 cases) did not correspond at all with the number of cases for *action* (0 cases). Within this ranking, none of the cases were observed in both *thought* and *action*. The first-ranking-only result of the drawing method shows seven cases with 'customer' in the first ranking, none in correspondence with *action*.

In addition, VNA/SAL pharmacies (case numbers 13-24) were compared with the additional pharmacies (case numbers 1-12). Related to *thought* all VNA/SAL pharmacies were observed in two ranking categories within the 123-methods. Firstly, 6 cases with the ranking product-customer-process (cases 14, 18, 19, 23, 20 and 24) were observed. Secondly, 6 cases with the ranking customer-product-process (cases 16, 17, 13, 15, 21 and 22) were observed. The additional pharmacies were observed in three ranking categories within the 123-methods. Firstly, 1 case with the ranking product-process-customer (case 1) was observed. Secondly, 7 cases with the ranking product-customer-process (cases 6, 9, 11, 5, 7, 8 and 10) were observed. Thirdly, 3 cases with the ranking customer-product-process (cases 3, 2 and 12) were observed. One case was missing (case 4). *Non-correspondence* was observed for most cases (22). Correspondence of *thought* and *action* was observed for one of the VNA/SAL pharmacies (case 14) and for one of the additional pharmacies (case 9).

If all results are compared it can be concluded that the complete ranking (for example, product-process-customer) for *thought* and *action* corresponded in only two cases (cases 9 and 14). The ranking of the first two rankings (for example, product-process) for *thought* and *action* also corresponded in the same two cases. The use of only the first ranking (for example, product) for *thought* and *action* corresponded in 11 cases. This correspondence was observed in the ranking of 'product' in the cases 6-11, 14, 18, 20 and 24, and in the ranking of 'process' in case 15. The



**Figure 4.8.** The triangle representing the main result of correspondence between *thought* and *action*.

results of the first-ranking-only analysis showed that the main focus of *thought* was related to actions directed at customer and product. In the method for *action* the emphasis of the actions was mainly directed at product and process (**figure 4.8.**). In addition, results of VNA/SAL pharmacies were compared with the results of additional pharmacies. As far as the complete ranking is concerned within all methods, *non-correspondence* was observed for most cases (22). Complete correspondence of *thought* and *action* was observed for one of the VNA/SAL pharmacies (case 14) and for one of the additional pharmacies (case 9).

#### 4.5. Evaluation of methods

The results showed that the outcome of the different methods for *thought* varied. Firstly, the complete ranking of the card method corresponded for 50% with the results of the 123-methods. The results of the drawing method were, although very informative, in contradiction with the results of the 123-methods. The complete ranking of the drawing method, although hardly comparable, only corresponded by 8% to the results of the 123-methods. Secondly, another comparison showed that the p-values of the 123-method A were between .63 and 0; the p-values of the 123-method B were between .05 and 0; and the p-values of the card method were between .22 and .13. Within the drawing method, no p-value was calculated. Thirdly, within the 123-method A, the mode of the p-values was .01 (5 cases). Within the 123-method B, the mode was also .01 (8 cases), and within the card method the mode was .13 (7 cases). Fourthly, for 123-method A and the card method, equal rankings were observed. Within 123-method A, 8% was allocated and within the card method 25% was allocated (you are reminded that allocations were made to the most frequent ranking within that method). Fifthly, interpretation problems in the card method, with respect to the help variable and the different ranges of possible scores between product and process versus customer, did not arise in the other methods. Within 123-method B no cases were allocated, none of the mentioned interpretation problems was observed, and the best p-values (when compared to a frequently applied norm of  $\alpha=.05$ ) were observed. It was assumed for the moment that the 123-method B would be selected as the instrument for the large sample in the next part of *phase one*. However, after the test for reliability, this assumption would be changed in favour of 123-method A.

The results showed that the outcome of the different methods for *action* also varied. The complete clustering of the method for pharmacy personnel, using the results per respondent, corresponded only for 13% to the results of the pharmacy manager. However, the complete clustering for the researcher corresponded by 63% to the results of the method for the pharmacy manager. The clusters of the pharmacy personnel were compared with the 'natural clusters', meaning that the pharmacy personnel of one pharmacy was in the same natural cluster. The calculated clusters

did not correspond with the natural clusters for any pharmacy: the results of the questionnaire for the pharmacy personnel per pharmacy was spread over at least two clusters. This could cause problems with the interpretation of the results if this method was applied to the large sample. In addition, within the method for the pharmacy personnel some cases (8%) were placed in a cluster which did not correspond with the rough clusters. None of these problems of interpretation of data were observed within the method for pharmacy manager and the method for the researcher. In addition, all cases of the method for the pharmacy manager and for the researcher corresponded to the rough clusters. It should however be noted that some of these problems in the method for pharmacy personnel could be solved, for example, by calculating a mean for all respondents per pharmacy, instead of all individuals separately. If this were the case, correspondence between the results of the pharmacy personnel and the pharmacy manager would have improved to 50%. You are however reminded that, the method for the pharmacy personnel and the researcher were only introduced in order to avoid the problem of socially desirable answers; the pharmacy manager selecting questions in accordance with correspondence. In this situation, if correspondence between *thought* and *action* were observed, it would still be possible to test the plausibility of this outcome with the outcome of the two additional methods. Let us, therefore, analyze the correspondence between *thought* and *action* and determine if the method for the pharmacy personnel or the researcher should be used in the next part of *phase two*, the large sample.

In order to give a complete picture of the differences between *thought* and *action*, the results for both 123-methods were used in a comparison with the results of all methods for *action*. Firstly, if the results of the 123-methods are compared with the results of the pharmacy manager non-correspondence was observed for 92% of the pharmacies, correspondence for 4% of the pharmacies, and 4% was missing. Secondly, if the results of the 123-methods are compared with the results of the pharmacy personnel, non-correspondence was observed for 38% of the pharmacies, and 62% of the pharmacies were not comparable with the 123-methods since various rankings existed per pharmacy. Thirdly, if the results of the 123-methods were compared with the results of the researcher non-correspondence was observed for 100% of the pharmacies. If all results were compared, the 'complete' ranking (for example, product-process-customer) for *thought* and *action* corresponded for only two cases; the 'double' ranking (for example, product-process) for the first two rankings for *thought* and *action* also corresponded for the same two cases; and the 'single' ranking (for example, product) for the first ranking only for *thought* and *action* corresponded for 11 cases. The results of the 'single'-ranking analysis showed that the main focus of *thought* was related to actions directed at customer and product. In the method for *action*, the emphasis of the actions was mainly directed at product and process.

The method for the pharmacy manager was the main instrument for the measurement of *action*. It was anticipated that the pharmacy manager might select questions in accordance with correspondence. In order to avoid this problem, other methods for the pharmacy personnel and for the researcher, were introduced. But if *non-correspondence* were observed, it would be assumed that no further comparisons were required. If the results of the 123-method B are compared with, for example, the results of the pharmacy manager, *non-correspondence* was observed for 100% of the pharmacies. This means that the rankings of the 123-method B; for example for case 2, customer-product-process, did not correspond with the outcome of the method for the pharmacy manager. The method for the pharmacy manager resulted in a ranking of process-product-customer. *Non-correspondence* between the outcome of 123-method B and the method for the pharmacy manager was observed. In addition, no interpretation problems with respect to the 'natural clusters' existed. For the moment, the method for the pharmacy manager was selected. As a result, it was assumed *for this moment*, that the 123-method B could be selected to visualize *thought* and the method for the pharmacy manager was selected to visualize *action*. However, it will be shown below that following the analysis for reliability, the other method for *thought*, the 123-method A, was preferable.

*To make sure that the study, if repeated, would produce the same results, reliability was tested. A method is reliable if the number of accidental errors is minimized (Swanborn 1987). Would the test yield the same score for an individual if two or more measurements are made (Kolstoe 1973)? For example, measures of reliability relate to the internal consistency of a test (e.g. Cronbach's alpha); to splitting the test in two parts and comparing the correlation between the two parts (e.g. split-half); or to models in which extra information about the items is present, for example, in which the items are assumed to have the same means and variances for true (unobservable) scores (e.g. strictly parallel) (Norusis 1993). The split-half model has the disadvantage that the results depend on the allocation of items to the halves. Cronbach's alpha can be applied to all items and no extra information about the items need be present, which was necessary for the strictly-parallel model. Therefore Cronbach's alpha was selected as the reliability test.*

*The reliability of this study is expressed in Cronbach's alpha for the selected methods for thought and action of pharmacy managers. Cronbach's alpha is based on the internal consistency of the test. Within this method reliability is based on the average correlation of items within a test. Alpha can be viewed as the correlation between this scale and all possible scales that contain the same number of items, which could be constructed from a hypothetical universe of items that measure the characteristic of interest. For example, the set of selected questions for the product mix is a sample from a universe of many possible items. It is assumed that the items on a scale are positively correlated with each other, because they are measuring, to a certain extent, a common entity. Cronbach's alpha tells us how much correlation we expect between our scale of the product mix and all other possible scales measuring the product mix. Since alpha can be interpreted as a correlation coefficient, it ranges in value from 0 to 1 (Norusis 1993).*

*Firstly, the reliability test was made with respect to the previously selected method for **thought** of pharmacy managers; the 123-method B. All items which related to a certain pharmacy mix*

were tested jointly and separately. The result of this test was to be used to delete questions which reduced the value of Cronbach's alpha. However, the reliability test within thought showed a very surprising result. The result of Cronbach's alpha for all questions of the 123-method B was  $-1.78$ . This unexpected result did not range from 0 to 1. The overall alpha of the 123-method B was extremely low. Many low correlation values and negative correlation values were observed, indicating that the applied scale in this method was not very consistent. As a result, the expected correlation between the applied scale of all three pharmacy mixes in the 123-method B and all other possible scales measuring all three pharmacy mixes was extremely low. Consequently, it was questionable if all three pharmacy mixes could be viewed as one test. They do not seem to be related in any way. One of the main causes of this negative result could be due to the application of 'different scales' with respect to product, process and customer, all used in one test. The 'different scales' ought to be analyzed separately. Within 123-method B, all mix-related questions were analyzed separately. As a result the alpha for the product mix, the process mix and the customer mix was  $.85$ ,  $.35$  and  $.80$  respectively. The alpha value of the process mix of 123-method B was low, indicating that the applied scale was not very reliable. The alpha value of the product mix and the customer mix were quite good. We asked ourselves how we could improve the value of alpha? Consequently, deletion of negatively correlated questions could increase the value of alpha. There was however a problem with the deletion of questions. All three mix-related sub-questions were coupled within one block of main questions. For example, deletion of questions with respect to the 'low-correlating' process mix would involve the 'better-correlating' questions of the product mix and the customer mix also. If all negative correlations were deleted, only 12 out of 45 questions would remain in the questionnaire. The alpha would thus decrease to  $-4.73$  if the negative-correlating questions of the process mix were deleted. The decrease of alpha was mainly due to the deletion of the coupled 'better-correlating' questions of the product mix and the customer mix. As a result, the alpha for the process mix would increase to  $.56$ , at the expense of a decrease of the product mix and the customer mix to  $.77$  and  $.74$ , respectively. These results showed that the 123-method B did not seem to be a good alternative with respect to reliability.

Consequently, the 123-method A was introduced and analyzed again. All mix-related questions were analyzed separately. As a result the alpha for the product mix, the process mix and the customer mix was  $.91$ ,  $.96$  and  $.94$  respectively. The alpha value of the pharmacy mixes, measured separately, were high in 123-method A, indicating that the applied scale was reliable. If the negative correlations were deleted 24 out of 28 questions would remain in the questionnaire. The corrected alpha of all questions would be  $.98$ . After the correction, the alpha for the product mix, the process mix and the customer mix would be  $.93$ ,  $.97$  and  $.96$  respectively. Note that the values of the pharmacy mixes of 123-method A were large, indicating that the applied scale was more reliable after the correction.

Reliability of 123-method A was much better than reliability of 123-method B. But the results with respect to the applied Friedman test showed that the calculated p-value was lower within 123-method A, than within 123-method B. Moreover, cases with equal rankings were observed; two cases were allocated (to the most frequently observed ranking) within 123-method A, and no cases were allocated within 123-method B. However, the results of the corrected 123-methods were compared also. The Friedman test was made with the corrected 123-method A and 123-method B. As a result, the performance of the 123-method B declined, and the performance of the 123-method A improved.

The calculated p-value of the 123-method A was between  $.63$  and 0 within the uncorrected questionnaire, and improved to a range between  $.42$  and 0 when the questionnaire was corrected

with the results of the reliability test. In addition, within 123-method A  $p < .01$  was observed in 7 cases within the uncorrected questionnaire, and remained stable at a value of  $p < .01$  for 7 cases within the corrected questionnaire. Cases with equal rankings were observed within the 123-method A. Two cases were allocated (to the most frequently observed ranking) within 123-method A, within the uncorrected questionnaire, and remained stable with two allocated cases within the corrected questionnaire. The calculated  $p$ -value of the 123-method B was between .05 and 0 within the uncorrected questionnaire, and declined to a range between .78 and .01 after the questionnaire was corrected using the results of the reliability test. In addition, within 123-method B  $p < .01$  was observed in 10 cases within the uncorrected questionnaire, but was observed at 6 cases within the corrected questionnaire. Cases with equal rankings were not observed within the uncorrected 123-method B. However, within the corrected 123-method B, one case was allocated (to the most frequently observed ranking) within 123-method B. Finally, if the results of the 123-method A are compared to the results of the pharmacy manager, non-correspondence was observed for 92% (11) of the pharmacies involved. Correspondence of the results was observed for only one case (case 9). This means that the rankings of the 123-method A did not correspond in general to the outcome of the method for pharmacy manager. Non-correspondence between the outcome of 123-method A and the method for the pharmacy manager was observed. With these new results, the 123-method A and the 123-method B were compared. In general, the performance of the 123-method A improved, and the performance of the 123-method B declined. The corrected results showed that the range in the  $p$ -value was smaller within the 123-method A (.42-0) than within the 123-method B (.78-.01) for the corrected questionnaire. In addition, the  $p$ -value of  $p < .01$  was observed more frequently within 123-method A (7 cases) than within 123-method B (6 cases). In both 123-method A and 123-method B equal rankings were observed. Finally, the results for the pharmacy mixes product, process and customer showed a better performance with respect to Cronbach's alpha within 123-method A (.93, .97 and .96 respectively) than within 123-method B (.77, .56 and .74 respectively). The 123-method A was selected as the instrument to measure thought for the large sample in the next part of phase one.

Secondly, the reliability test was also made with respect to the method for **action** of pharmacy managers. All items relating to a certain pharmacy mix were tested together, separately, and in combination with the remaining questions. In this study, the values of the inter-item-correlation coefficients per question for each pharmacy mix were quite small with the corrected questionnaire. Norusis (1993) noted that large reliability coefficients can be produced, even when the average inter-item correlation is small, if the number of items on the scale is large enough. Within this study the total number of items was large. The result of Cronbach's alpha for the product mix, the process mix and the customer mix was .86, .75 and .86 respectively. The result of this test was used to delete and transpose questions for the purpose of statistical processing, which would raise the value of Cronbach's alpha. Five questions were transposed from the category 'remaining' to the product mix, and 25 product-related questions were deleted in this mix. Three questions were transposed from the category 'remaining' to the process mix, and 36 process-related questions were deleted in this mix. Four questions were transposed from the category 'remaining' to the customer mix, and 26 customer-related questions were deleted in this mix. As a result a total of 87 pharmacy-mix-related questions were deleted and 12 remaining questions were transposed for the complete questionnaire. In addition, other criteria were used in order to delete or replace the questions. Firstly, if the outcome was exactly the same for all cases (all answers 'yes' or all answers 'no') the result would be hardly usable. All outcome in these categories were redefined as remaining questions, since no relation to any of the pharmacy mixes was possible. Secondly, some combinations of questions, used to check the correctness of the outcome ('yes' here combined with 'no' there), were deleted. The expected result was not obtained. Only one pair of such questions was used in the statistical processing of pharmacy

manager, second pharmacist and assistant pharmacist. Thirdly, the questionnaires consisted of binary questions (true/false). With this method, a nominal scale was used, and, in addition, the questions were rescaled via a count variable to ratio scale. Three of the questions were deleted since it was not possible to translate these questions from a nominal scale, via a count variable, to a ratio scale. Fourthly, five questions were added following the suggestions of the pharmacy managers. The final result of Cronbach's alpha for the product mix, the process mix and the customer mix was .91, .88 and .91 respectively. Note that the values of the alpha for action were also large, indicating that the applied scale was quite reliable after the correction. The method for the pharmacy manager was selected as the instrument to measure action of the large sample in the next part of phase one.

All methods applied were evaluated. The 123-method A and the method for the pharmacy manager showed the best performance relatively. In addition, non-correspondence between the outcome of 123-method A and the method for the pharmacy manager was observed. An initial difference between *thought* and *action* was determined. The 123-method A was selected to measure *thought* and the method for the pharmacy manager was selected to measure *action*. Both methods will be used in the questionnaire for the large sample in the next part of *phase one*.

#### 4.6. Conclusion

The pilot study was made at 24 pharmacies in the Netherlands. The number of pharmacies included in this pilot was small. With this study it is not possible to generalize to the population of Dutch pharmacies. For that purpose, a large sample will be used in the next part of *phase one* of this thesis. It should be remembered that the main research question for this present chapter, mentioned in **chapter 2**, was: 'What methods can be best applied in a survey?'. The aim of this pilot study was to compare the results of several methods. Moreover, the pilot study sought to find out which of the used methods could be applied best to identify correspondence of *thought* and *action* of pharmacy managers. Additionally, it was examined whether the identified pharmacy mixes were internally consistent; a sketch of correspondence of *thought* and *action* of pharmacy managers was made.

First, we determined what methods could be best applied to identify *thought* of the pharmacy manager in the pharmacy mix for a large sample. The rankings of the drawing method (although hardly comparable), and the card method did not correspond with the 123-methods completely. After the correction of the questionnaire with the results of the reliability test, the calculated p-value was better in the 123-method-A, than the 123-method-B and the card method; in the drawing method no p-value was calculated. Moreover, the highest mode of the p-value was observed at the 123-method A. However, it should be noted that with a frequently applied norm of  $\alpha=.05$ , some of the calculated rankings would remain *insignificant*. Within 123-method A, 123-method B and the card method, equal rankings were observed; cases were allocated to the most frequently observed rankings. Within the drawing



method, no cases were allocated. The card method produced interpretation problems with respect to the help variable and different ranges of possible scores: which were not observed in the other methods. The 123-method A showed a good result with respect to reliability, in contrast with the 123-method B, which showed a low value of Cronbach's alpha. At the 123-method A, the best p-value, the highest mode of the p-value, in combination with a high score of reliability were observed. The 123-method A was selected for the large sample.

Second, we determined what methods could be best applied to identify *action* of the pharmacy manager in the pharmacy mix for a large sample. The results of the method for the pharmacy manager did not correspond completely with the results of the methods for pharmacy personnel and for the researcher. In addition, the calculated clusters of the pharmacy personnel did not correspond with the 'natural clusters'. A natural cluster would be observed whenever the pharmacy personnel of one pharmacy were in the same calculated cluster. However, the respondents of the same pharmacy were never observed in one calculated cluster. This could cause problems with the interpretation of the results if this method were to be applied to a large sample. In addition, in the method for the pharmacy personnel a majority of all cases were placed in a cluster which did not correspond with the rough clusters. All cases of the method for the pharmacy manager and for the researcher corresponded to the rough clusters. The method for the pharmacy manager was the main instrument for measuring *action*. Previously, it was expected that the problem of social desirability could be at stake; the pharmacy manager selecting questions in accordance with correspondence. Additional methods were selected for the pharmacy personnel and for the researcher in order to avoid this problem. But if *non*-correspondence was observed, it was assumed that no further comparisons were required for the large sample. Within this pilot study it was illustrated that with a sole measurement of the function of pharmacy manager *non*-correspondence was observed. In addition, there were no interpretation problems with respect to the 'natural clusters'. The method for the pharmacy manager was selected for the large sample.

We agreed to determine which combination of methods could be best applied to identify the correspondence between *thought* and *action* of the pharmacy manager in the pharmacy mix for a large sample. In keeping with the outcomes mentioned above, a combination of two methods was selected. *The method for **thought** will be the 123-method A, and the method for **action** will be the method for the pharmacy manager.*

Additionally, the correspondence of 24 pharmacy organizations to their own pharmacy mix was determined. The pilot showed that the combined use of the two

selected methods resulted in *non*-correspondence between *thought* and *action* of the pharmacy manager for most cases. The observed correspondence for the complete ranking was two (case 9 and 14) out of 24 pharmacies by using the 123-method A and the 123-method B for *thought* and the method for the pharmacy manager for *action*. If all results are compared it can be concluded that the ‘complete’ ranking (for example, product-process-customer) for *thought* and *action* corresponded in only two (product) cases; the ‘double’ ranking (for example, product-process) corresponded in the same two cases also; and the ‘single’ ranking (for example, product) corresponded in 11 cases, four of which originated from a comparison of 123-method A and the method for the pharmacy manager. In addition, results of VNA/SAL pharmacies were compared with the results of additional pharmacies. *Non*-correspondence was observed for 11 VNA/SAL pharmacies and 11 additional pharmacies. As a logical consequence, correspondence between *thought* and *action* was observed for one of the VNA/SAL pharmacies and for one of the additional pharmacies. The results of the ‘single’-ranking analysis showed that the main focus for *thought* was related to actions directed at customer and product. In the method for *action* the emphasis of the actions was mainly directed at product and process.

In summary, the 123-method A was selected to represent *thought*, and the method for the pharmacy manager was selected to represent *action*. Now that the methods for the point of departure have been determined, we might as well apply these methods to a large sample. In the next part of *phase one*, **chapter 5**, we will apply these methods to a random sample of the population of Dutch community pharmacy managers. The suggested random sample size is 300 community pharmacy managers. You are reminded that in *phase two*, **chapter 6**, the organizational change to the customer mix will be studied. In **chapter 2**, we also decided to study the role of the support structure of stichting VNA and SAL Apotheken in this organizational change. Consequently, some VNA/SAL pharmacies were selected and added to the large random sample.

### **5.1. Introduction**

In the second part of *phase one*, a survey, three data-collection methods were used. The methods were selected in **chapter 4**, the first part of *phase one*. In addition, the results of the pilot study were used to accentuate the analytical description of the three pharmacy mixes described in **chapter 3**. In this current part of *phase one*, a random sample was used to test and enrich the results of the pilot. For that purpose a survey was performed at 169 community pharmacies in the Netherlands. Since we are continuing to work through observations in the real world, we again have decided to use the term ‘action’ rather than ‘activity’ throughout this chapter. The results of the survey will also be used as input in the next phase, *phase two*, the organizational change to the customer mix. The survey consisted of *profile*, *thought* and *action*. *Profile* was used to describe the shape of the sample. *Thought* was used to describe the perceived importance of the pharmacy-mix actions. *Action* was used to describe the actual use of pharmacy-mix actions. In addition, the correspondence of the results between *thought* and *action* is described.

### **5.2. Design and implementation of the survey**

The patterns of applied actions are the subject matter in the second part of *phase one* of this thesis. Broadly speaking, the survey consisted of three main goals. Firstly, an empirical description of the pattern of applied actions needed to be made. What pharmacy mixes could be described? The data-collection method for *thought* of pharmacy managers was used to describe the perceived importance of actions relating to the three pharmacy mixes. The data-collection method for *action* of pharmacy managers was used to describe the use of actions. Secondly, we studied the consistency between the actions perceived as being important and the actions which were applied. What is the correspondence of the results between *thought* and *action*? Does a pharmacy manager who thinks he/she is in the customer mix actually stress actions relating to the customer? Thirdly, generalizability of the results to the population of Dutch community pharmacies was discussed. In addition, the results of the survey will be used as stimulus for the interviews in the next phase of the thesis, the ‘travel’ to the customer mix.

The design of the survey consisted of a study with a relatively large sample to provide broad information on the subject and by using this information to make a more detailed study of individual pharmacies. A total of 333 out of 1521 Dutch community pharmacy managers were invited to participate in the survey. The pharmacy manager was requested to fill in the questionnaires. A file of the Royal

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<sup>23</sup> Parts of this chapter were published in: Mobach MP, Werf JJ van der, Tromp TFJ. APOM-project: a survey of pharmacy organization and management. *Pharm World Sci* 1998; 20(6): 248-252.

Dutch Association for the Advancement of Pharmacy (KNMP) was used to select a random sample of 300 pharmacies. In order to prevent learning effects there was no overlap of the random sample and the selected pharmacies of the pilot. The random sample group of community pharmacies was labelled with case numbers 1-300 (**table 5.1.**). The remaining 33 community pharmacies were linked to stichting VNA and SAL Apotheken (VNA/SAL pharmacies).<sup>24</sup> The selected sample group of VNA/SAL pharmacies was labelled with case numbers 1001-1033 (**table 5.1.**).

<i>sequence of sending</i>	<i>case</i>
<b>action before profile &amp; thought</b>	case 1-164
<b>profile &amp; thought before action</b>	case 164-300, 1001-1033

**Table 5.1.** The sequence of sending to the selected pharmacy managers.

The questionnaire consisted of three studied items: *profile*, *thought* and *action*. The questionnaires for *profile* and *thought* were merged. The questionnaires for *profile/thought* versus *action* were sent separately. The separation was made to minimize mutual influence of the questionnaires for *thought* and *action*. The second part of the questionnaire was sent if the first part was received correctly. The sequence of sending involved sending the questionnaire for *action* before the combined questionnaire for *profile/thought* to the first half of all pharmacy managers; vice versa for the second half of all pharmacy managers (**table 5.1.**). The so-called ‘quarter group’ (a group which met and exchanged ideas quarterly) of stichting VNA was added to the second half of all pharmacy managers.

On Thursday the 2<sup>nd</sup> of May 1996, all questionnaires were sent to the selected pharmacy managers. An announcement and brief description of the APOM-project was made the same day in the *Pharmaceutisch Weekblad*. Two weeks later, all pharmacy managers not responding (74%) were requested telephonically to participate. Two months later, in July the remaining pharmacy managers who had promised to respond (34%) were called again with a similar request. Three months later, in August a final request to participation was made at the remaining pharmacy managers not responding (1%). On receipt of the response, errors were discovered

<sup>24</sup> VNA/SAL pharmacies were approached to ensure sufficient supply for the quasi-experiment in *phase two* of the APOM-project. Within the quasi-experiment VNA/SAL pharmacies form a separate experimental group. Eight VNA pharmacies of a quarter group were added after two months of the start. Improved suitability of this group for the quasi-experiment was the main argument for this delayed addition. However, three out of ten members of the quarter group did participate in the pilot study. These pharmacy managers filled in the questionnaires again.

in some of the questionnaires for *thought*. These questionnaires were sent back with a request to correct the errors. An extra explanation was added in this letter. Four weeks later an additional information paper was added to the remaining first issues of *thought*. Finally, 10% of the questionnaires for *thought* were returned to the pharmacy managers. Two pharmacy managers decided to reject correction and further participation; all remaining questionnaires were received correctly. Some pharmacy managers (14%) lost their questionnaire, but were still interested in participation after a telephone call. This group of pharmacy managers was sent another first questionnaire. Two other questionnaires were sent, but never arrived at the pharmacies. The questionnaires for *thought* and *action* were involved. Both pharmacy managers gave up further participation. On the 11<sup>th</sup> of September, well over four months after the first postings, the administrative part was closed. In the end, 169 pharmacy managers participated in the complete survey, and 14 pharmacy managers made partial responses; either to *thought* or to *action*. Moreover, 150 nonrespondents were observed. The data were fed into the computer during the administrative period by two student assistants who checked each other. The statistical processing started on the 16<sup>th</sup> of September.

### 5.3. Methods

All statistical procedures were made in SPSS 6.01 for Windows in September 1996. Roughly three statistical methods were used: frequency distribution, Friedman test and cluster analysis for *profile*, *thought* and *action* respectively. The statistical methods used for *profile*, *thought* and *action* will be discussed below; the qualities are presented in **table 5.2**.

method quality	profile	thought	action
form	survey	survey	survey
question	1 out of $k^{25}$	rank 3 out of 3	$p^{26}$ out of $k$
scale	nominal	ordinal	nominal→ratio

**Table 5.2.** The qualities of the applied methods in the survey.

<sup>25</sup>  $k$  relates to the number of possible options.

<sup>26</sup>  $p$  relates to the number of selected options.

### 5.3.1. Profile method

The data-collection method used to study the *profile* of pharmacy organization was a description of frequency distribution. As described in **chapter 4**, subjects were analyzed with respect to general features of the pharmacy manager and of the pharmacy organization. Features of the pharmacy manager were Seniority, Sex, (In)dependence and Division of Time. Features of the pharmacy organization were Organizational Form, Cooperation, Location, Part-time and Full-time Personnel, Full-Time Equivalence (FTE) Pharmacists, FTE Other Personnel, Flow of Prescriptions, Flow of Patients, Turnover and Net Profit. Within this method a nominal scale was used (**table 5.2.**).<sup>27</sup>

### 5.3.2. Thought method

In the data-collection method used to study *thought* of the pharmacy manager, 26 questions<sup>28</sup> comprised three sub-questions relating to the three pharmacy mixes. As with the pilot study the sub-questions were ranked on a scale from 1 to 3, representing *important -less important -even less important* issues. The method consisted of the same subjects as those in the pilot study: Information, Administration, Automation, External Contacts, Facilities, Analysis, Organization of Labour, Personnel, Competence, Organization Standards and Productivity. Within these methods an ordinal scale was used (**table 5.2.**). Within the ordinal scale, the distance between 1, 2 and 3 has no meaning. As was mentioned in **chapter 4**, a controversy exists with respect to treating ordinal scales as interval scales, for example, in calculating a mean ranking.

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<sup>27</sup> In addition, in **appendix 1** these features were used to get a general picture of the participating pharmacies. In addition, the sample features of the response were compared with the available population features of Dutch community pharmacies. Moreover, in **appendix 2**, some statistical calculations were made with the use of a hypergeometric distribution to check if the sample was a good representation of the population. If a deviation was detected for a certain variable, for example, female pharmacy managers were overrepresented in the sample, an additional MANOVA was made. In other words: 'Was it a problem to have an overrepresentation of female pharmacy managers in the sample?'. In the MANOVA the differences were analyzed. An item examined might be, for example, whether female pharmacy managers had other scores than male pharmacy managers with respect to *thought* and *action*.

<sup>28</sup> The pilot study showed that 4 out of 28 questions were not used because of their low score on Cronbach's alpha. However two of these questions, the only questions relating to the subject Information, were used in the survey despite of their low performance with respect to reliability. It was decided to leave the subjects intact. Consequently, 26 questions for *thought* were used in the survey.

Within this current study, both the conservative view and the liberal view were applied to calculate a ranking; a Friedman test was applied and some ordinary means were calculated.<sup>29</sup> In addition, reliability of the results was tested with a calculation of Cronbach's alpha. It was tested whether the study would produce the same results if it were repeated.

*Firstly, as in the pilot study the Friedman test was applied to calculate a mean ranking and an according p-value. The applied level of significance was  $\alpha=.05$ . The Friedman test takes dependence **within** each case between 1, 2 and 3 into account with the calculation of the mean ranking. However, **independence between** cases is required. As was mentioned in **chapter 4**, within this study a mean ranking was required **per case** for all questions; cases were used as questions. In the pilot study **independence between** questions was proved for all cases. In the survey no learning effect based on the results of the pilot was expected. In relation to these results **independence within** one case was presupposed in the survey. Secondly, as in the pilot study reliability was tested with Cronbach's alpha. The alpha was used to provide an impression of the correctness of the item selection for the pharmacy mixes. Cronbach's alpha is based on the internal consistency of the test. Since alpha can be interpreted as the correlation coefficient, it ranges in value from 0 to 1. The value expresses the reliability of item selection for product, process and customer. Thirdly, as with the methods used for **profile**, mentioned in 5.3.1., the hypergeometric distribution (Molenaar 1971) was used to estimate results for the population.*

### 5.3.3. Action method

In the data-collection method used to study **action** of the pharmacy manager, 209 out of 384 questions related to the three pharmacy mixes. The remaining 175 questions related to general issues. As in the pilot study, all questionnaires consisted of binary questions (true/false) related to actions at the pharmacy organization. The method consisted of identical subjects used in the pilot study: Information, Administration, Automation, External Contacts, Facilities, Analysis, Organization of Labour, Personnel, Competence, Organization Standards and Productivity. Within this method a nominal scale was used, and, in addition, the questions were rescaled via a count variable to the ratio scale (**table 5.2.**). The data were processed by a cluster analysis. As with the pilot study, an agglomerative hierarchical cluster analysis was used in the survey.

*Firstly, as with the pilot study the agglomerative hierarchical clustering was selected. In this cluster analysis, entities which are most alike are pulled together (Anderberg 1973). In this study cluster analysis was used as a tool to find similar cases with respect to pharmacy-mix-related*

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<sup>29</sup> As with the pilot study, a test was made with respect to the outcome of the ordinal scale in a Friedman test and was compared by calculating the mean of the values used in the Friedman test, and calculating the mean of other values. If the same data matrix was used the result of calculating the mean was exactly in correspondence with the result of the Friedman test. Furthermore, the distance between 1, 2 and 3 does not have a meaning in an ordinal scale. This was tested to be true by calculating the mean for some other values. The values 1, 2 and 3 were transformed into 1, 1.25 and 1.5; 1, 1.5 and 2; 1, 3 and 5 and 1, 5 and 9 respectively.

actions. The count variable for the cluster analysis was the number of scores 'yes' for the items selected for product, process, and customer. The form of the pharmacy-mix scores was of major importance in the clustering; the applied clustering method was average linkage within groups in combination with the similarity measure Pearson correlation. The decision about the number of clusters will be described in the results. Secondly, as with the pilot study reliability was tested with Cronbach's alpha. Similar to the methods for thought alpha was used to provide an impression of the correctness of the item selection. The reliability test was made with all questions relating to a certain pharmacy mix. Since alpha can be interpreted as the correlation coefficient, it ranges in value from 0 to 1. The value expresses the reliability of item selection for product, process and customer. Thirdly, the results of thought, action and a combination of thought and action were used to estimate results for the population. Similar to the methods used for profile, mentioned in section 5.3.1., the hypergeometric distribution (Molenaar 1971) was used to estimate results for the population.

#### 5.4. Results

The results presented relate to *profile*, *thought* and *action*. The results for profile describe frequency distributions and representativeness. The results for *thought* describe rankings of the perceived importance of actions per pharmacy mix. The results for *action* describe the applied actions per pharmacy mix. For both *thought* and *action* the results of a reliability analysis will be described. The results for *profile*, *thought* and *action* will be described below.

##### 5.4.1. Profile results

Profile results consist of a presentation of the response and the nonresponse. Moreover, a rough comparison between sample and population, and a statistical comparison between sample and population with the use of hypergeometric confidence bounds were made. The complete results of the random sample are described in **appendix 1**. All percentages described in the text were rounded up; the exact scores are presented in the appendix. If the population results were not within the confidence bounds a probable explanation was described and a MANOVA was made in **appendix 2**, in order to analyze possible differences between groups in greater detail.

The response consisted of the random sample and the selected sample of VNA/SAL pharmacies. The response of the random sample of 300 pharmacy managers was 47% (absolute: 142). Only one questionnaire was sent in by 4% (12) of the pharmacy managers. The response of the 33 VNA/SAL pharmacies was 82% (27). Only one questionnaire was sent in by 6% (2) of the pharmacy managers of stichting VNA and SAL Apotheken (VNA/SAL pharmacy managers). The response of all 333 pharmacy managers was 51% (169). Only one questionnaire was sent in by 4% (14) of all pharmacy managers.



In **appendix 1**, the results of the sample and the data from the population are presented. On the basis of these results it appears that there is a reasonable correspondence between sample and population. In some tables however, differences between sample and population were observed. Are these differences ‘alarming’? Based on the statistical comparison in **appendix 2**<sup>30</sup>, we could assume that, although a poor correspondence of sample and population was observed in some of the questions, the random sample was a relatively good representation of the population. The hypothesis of no difference in the means for the different groups for *thought* and *action* could be accepted. In addition, the differences observed between sample and population could be taken to have little importance on the pharmacy-mix scores. Consequently, the results for *thought* and *action* were generalized to all pharmacies in the Netherlands.

The nonresponse was 49% (146) for the random sample, 12% (4) for the VNA/SAL pharmacies, and 45% (150) for the total sample. All nonrespondents were called. A reason for failure to participate was requested and questions about the *profile* were asked. Roughly the categories that pharmacy managers named for refusing to participate in the survey consisted of ‘lack of time’, ‘no interest’, ‘absence’ and ‘other’. ‘Lack of time’ was 51% of all nonresponse. Other issues named in combination with lack of time were: holiday (11%), too many surveys (7%), problems with survey questions violating privacy (4%), no interest (4%). The categories lack of time and related issues were 77% of all nonresponse. Other categories named were ‘no interest’ (3%), ‘constant absence’ (5%), ‘other’ (15%). The reasons for nonresponse appeared to have little relation to the variables we were interested in, e.g. reasons like ‘I cannot participate because I am too busy with the implementation of customer actions’ were not observed. Consequently, it was assumed that the nonresponse did not influence the results for *thought* and *action*.

#### 5.4.2. Thought results

As with the pilot study, the results for *thought* consisted of the calculation of some mean rankings per pharmacy manager and a test for the reliability of the questionnaire. Within the method for *thought* the questions were answered by the same pharmacy manager. As was mentioned before, in accordance with the results of the pilot study *independence* within one case was presupposed in order to be able to use

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<sup>30</sup> To get a more exact answer for the possible noncorrespondence between sample and population, a statistical comparison was made using the hypergeometric distribution in **appendix 2**. If noncorrespondence was observed for a certain variable, for example, if too many female pharmacy managers were observed in the sample, an additional MANOVA was made. In the MANOVA we checked if the scores of this variable for *thought* and *action* varied from other variables. An item examined might be, for example, whether female pharmacy managers had other scores than male pharmacy managers with respect to *thought* and *action*. Most of the variables did not have significant other scores for *thought* and *action*.

the Friedman test. As a result, the Friedman test was applied, as in the pilot study. The results of the Friedman test for *thought* consisted of the random sample and the selected sample of VNA/SAL pharmacies. Both samples are presented separately. The three pharmacy mixes are described in the presentation of the results: the product mix for pharmaceutical actions, the process mix for financial-economic actions and the customer mix for customer actions. A total number of seven clusters of priorities of pharmacy mixes were found. For 13 out of 175 cases (7%), two of the three pharmacy mixes were equal. These cases were classified in the nearest cluster described in **table 5.3**. For 2 cases (2%), case 241 and case 254, all three pharmacy mixes were equal.

**Table 5.3.** shows that case 22 (second column, cell upper left) is classified in the cluster product-process-customer. Within this cluster the score for product-related actions was highest. The second highest scores were process-related actions and then customer-related actions. These results show that the pharmacy manager in case 22 perceived pharmaceutical actions (product) as being the most important, followed by financial-economic actions (process) and customer actions (customer). The results of the random sample for *thought* in **table 5.3**. show that most pharmacy managers perceived pharmaceutical or customer actions as being the most important actions. A total of 61% (13+76) perceived pharmaceutical actions as being the most important. A total of 36% (46+6) perceived customer actions as being the most important. Only 2% (1+2) of the pharmacy managers perceived process actions as being the most important issues. A total of 84% (76+46) of the observations had a combination of product and customer actions in the first two positions of their rankings.

group	ranking	case (random sample n=146)	case (selected sample n=29)
1.	<i>product-process-customer</i>	case 22, 28, 49, 62, 64, 74, 104, 192, 204, 259, 265, 283, 299 <b>13</b>	case 1012 <b>1</b>
2.	<i>product-customer-process</i>	case 3, 5, 7, 8, 11, 21, 30, 36, 41, 48, 50, 52, 54, 57, 60, 61, 68, 71, 73, 78, 79, 80, 82, 87, 91, 96, 99, 105, 106, 118, 122, 125, 126, 129, 138, 139, 143, 159, 160, 162, 163, 164, 166, 167, 171, 173, 176, 177, 184, 185, 187, 189, 190, 194, 196, 197, 201, 207, 210, 214, 215, 218, 221, 224, 226, 230, 231, 239, 242, 256, 260, 273, 278, 280, 282, 294 <b>76</b>	case 1003, 1005, 1009, 1017, 1030, 1031 <b>6</b>
3.	<i>process-product-customer</i>	case 90 <b>1</b>	case 1014, 1026 <b>2</b>
4.	<i>process-customer-product</i>	case 157, 276 <b>2</b>	case 1019 <b>1</b>
5.	<i>customer-product-process</i>	case 1, 9, 19, 33, 43, 44, 45, 51, 69, 76, 77, 97, 101, 109, 111, 115, 116, 130, 133, 147, 148, 165, 179, 186, 188, 191, 205, 213, 223, 228, 234, 236, 246, 249, 251, 263, 271, 272, 275, 284, 287, 290, 291, 293, 295, 296 <b>46</b>	case 1001, 1002, 1004, 1006, 1007, 1010, 1015, 1016, 1022, 1024, 1029, 1032, 1033 <b>13</b>
6.	<i>customer-process-product</i>	case 27, 55, 89, 123, 220, 297 <b>6</b>	case 1008, 1021, 1023, 1025, 1027, 1028 <b>6</b>
7.	<i>product=process=customer</i>	case 241, 254 <b>2</b>	
	<b>total cases thought</b>	<b>146</b>	<b>29</b>

**Table 5.3.** Rankings of pharmacy mixes for the method for *thought* in the random sample and the selected sample.

The stability of the rankings produced by the Friedman test in **table 5.3.** was tested in this thesis by a comparison of the calculated p-values and a qualitative perspective.

*The Friedman test calculates a p-value for all individual questionnaires. The applied level of significance was  $\alpha=.05$ . Nearly half of the questionnaires had a value of  $p<.05$  (49% of all questionnaires), some of which having a value of  $p<.01$  (38%). However, for 51% of all questionnaires the value was  $p\geq.05$ . The Friedman test did not produce a significant ranking for these questionnaires. What were the reasons for this relatively low significance? Could the results still be trusted? To answer these questions the function of the significance within the Friedman test may be discussed. The Friedman test calculates a mean ranking. Within this thesis, a ranking of three scores was produced. The calculated p-value is related to the differences between scores in the rankings. The larger the difference between the scores of these rankings, the lower the p-value. In addition, small differences produce a high p-value. An extreme example. Two pharmacy managers (case 241 and 254) had three identical scores. The corresponding p-value was 1.*

*However, does this mean that the results, equal importance of the three pharmacy mixes, cannot be trusted?*

*Firstly, equality in perceived importance, and therefore a high p-value, does not necessarily lead to results that have to be questioned. In the extreme example mentioned before, three identical scores were observed and the calculated p-value was 1. However, the interview of extreme case 254 (**chapter 6**) showed that the results, although showing equal scores for all pharmacy mixes, were recognized and accepted by the pharmacy manager. Equal scores could be meaningful. Pharmacy managers may, in fact, perceive pharmacy mixes of equal importance. We noticed this earlier in the presentation of the results of the pre-pilot. The Friedman test does not provide a significant ranking of these situations. All of the questionnaires with a p-value  $\geq .05$  had two or three scores which were very similar or equal. The higher the p-value the smaller the differences between the rankings of the Friedman test. In addition, stronger differences between the pharmacy-mix scores in combination with lower p-values were observed.*

*Secondly, the three pharmacy mixes of this thesis were closely related. It could be expected that pharmacy managers would perceive the mixes to be of equal importance. The additional written comment of pharmacy managers given in the survey showed that 15 pharmacy managers experienced problems in making choices between the actions of the three pharmacy mixes in the method for thought. However, the interviews of the quasi-experiment (**chapter 6**) showed some remarkable results relating to the comment. In the quasi-experiment, 5 out of the 15 pharmacy managers, describing comment in the survey, were interviewed. All 5 pharmacy managers who described problems in making choices recognized and accepted the produced mean ranking for thought. The interviews in the quasi-experiment also showed that 81% (26) of the participating pharmacy managers agreed with the mean ranking. Another 16% (5) of the pharmacy managers agreed with the result, but described difficulties in making choices between the actions for thought. Only 3% (1) of the pharmacy managers disagreed and expected the process mix to be in the third position of the ranking, instead of the second position.*

*Thirdly, a sensitivity analysis was made. What were the effects of losing the insignificant results (51%)? We performed a MANOVA based on the group membership in **table 5.3**. This analysis showed that cases with insignificant scores did not differ significantly from cases with significant scores; in terms of **table 5.3**. It should be noted that a MANOVA of the 'rough data' or calculated means, which would normally be preferable, would not be of any help. Such an analysis would only confirm what we already knew: the insignificant results were different from the significant results in such a way that the insignificant results had similar or equal scores, which were not observed with the significant ones. Consequently, we argued that the significant rankings (49%) did not have different results to the insignificant results (51%) in terms of **group membership of table 5.3**.*

*Finally, it was determined that although 51% of calculated rankings was not significant within the Friedman test, the results were accepted as the rankings for thought. Reasons described were: the interviews in phase two showed that equality in rankings was experienced as being meaningful by the pharmacy manager, problems of pharmacy managers with the questionnaire described in the comment of survey, and no difference in outcome of **table 5.3**, when a sensitivity analysis was performed. In addition, the rankings were stable in using alternative values for 1,*

2, and 3.<sup>31</sup>

It can be concluded that the pharmacy mixes were closely related and that sometimes pharmacy managers experienced problems with equal importance of pharmacy mixes *during* the survey. However, most pharmacy managers agreed with the ranking of pharmacy mixes in an interview *after* the survey. In addition, a high p-value does not necessarily lead to results that have to be questioned. The results of the interviews showed that pharmacy mixes can be perceived as being of equal importance. All of the questionnaires with a p-value  $\geq .05$  had two or three similar scores, or even equal scores. Finally, other values applied to calculate a mean ranking resulted in exactly the same rankings for all cases. Despite some high p-values, all results of the Friedman test were used to produce rankings for *thought*.

In addition, a rough sketch of generalizability was made. The number of cases per ranked group in the population was estimated with hypergeometric confidence bounds by using a level of confidence of 95% (Molenaar 1971). The estimation was based on the observed number of cases per cluster in the *random* sample (compare **appendix 2**).

Firstly, the number of pharmacies in the observed ranking product-process-customer (with 13 cases in the sample) was estimated for the population. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 76 (5%) and 205 (14%) pharmacies (**group 1, figure 5.1**). Secondly, the number of pharmacies in the observed ranking product-customer-process (with 76 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 673 (44%) and 911 (60%) pharmacies in group 2. Thirdly, the number of pharmacies in the observed ranking process-product-customer (with 1 case in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 0 (0%) and 30 (2%) pharmacies in group 3. Fourthly, the number of pharmacies in the observed ranking process-customer-product (with 2 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be

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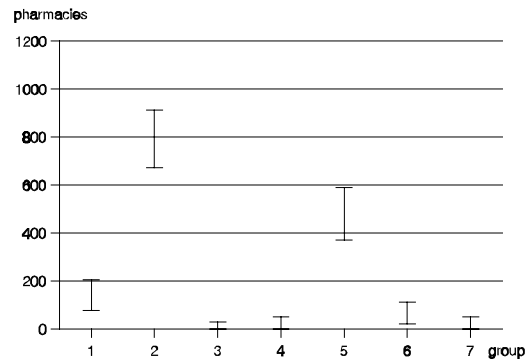
<sup>31</sup> As was done in the pilot study, a test was made with respect to the outcome of the ordinal scale in a Friedman test and was compared by calculating the mean of the values used in the Friedman test, and calculating the mean of other values. If the same data matrix was used, the result of calculating the mean was exactly in correspondence with the result of the Friedman test. In addition, the distance between 1, 2 and 3 does not have a meaning in an ordinal scale. This was tested to be true by calculating the mean for some other values. The values 1, 2 and 3 were transformed into 1, 1.25 and 1.5; 1, 1.5 and 2; 1, 3 and 5 and 1, 5 and 9 respectively. This resulted in exactly the same ranking for all cases. Consequently, the ranking of the Friedman test was accepted to be quite stable.

between 0 (0%) and 51 (1%) pharmacies in group 4. Fifthly, the number of pharmacies in the observed ranking customer-product-process (with 46 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 370 (24%) and 589 (39%) pharmacies in group 5. Sixthly, the number of pharmacies in the observed ranking customer-process-product (with 6 cases in the sample) was estimated.

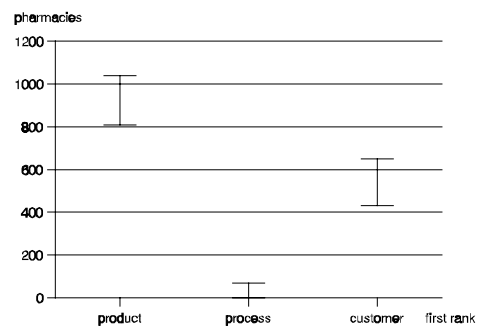
The number of pharmacies in the population of Dutch pharmacies was estimated to be between 22 (2%) and 112 (7%) pharmacies in group 6. Seventhly, the number of pharmacies in the observed ranking product=process=customer (with 2 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 1 (0%) and 51 (3%) pharmacies in group 7.

The results of the random sample for *thought* in **table 5.3.** showed that most pharmacy managers perceived pharmaceutical or customer actions as being the most important. The number of pharmacies with a first ranking for the product mix in the population of Dutch pharmacies was estimated to be between 808 (53%) and 1037 (68%) pharmacies (**first ranking: product, figure 5.2.**). The number of pharmacies with a first ranking for the customer

mix was estimated to be between 432 (28%) and 651 (43%) pharmacies (first ranking: customer). The estimation of the number of pharmacies with a first ranking for the process mix was between 0 (0%) and 71 (5%) pharmacies (first ranking: process). The number of pharmacies with product or customer in the first two



**Figure 5.1.** The estimated confidence bounds per group for *thought* in the population.



**Figure 5.2.** The estimated confidence bounds for the first rank per mix for *thought* in the population.

rankings was estimated to be between 1182 (78%) and 1351 (89%) pharmacies.

Finally, to make sure that the study, when repeated, would produce the same results, reliability was tested with Cronbach's alpha as in the pilot study. The test was applied to *thought* of pharmacy managers.

*The reliability test of Cronbach's alpha is based on the internal consistency of the test. In this method the reliability is based on the average correlation of items within a test. Since alpha can be interpreted as a correlation coefficient, it ranges in value from 0 to 1. All items relating to a certain pharmacy mix were tested separately. As a result, the alpha for the product mix, the process mix and the customer mix were .78, .79 and .72 respectively. The alpha value of the process mix was highest, indicating that the applied scale was used in the most consistent way, and, was therefore relatively reliable.*

The presented results showed that the method applied for *thought* seemed to be reasonable with respect to reliability.

#### **5.4.3. Action results**

As with the pilot study, the results for *action* consisted of a calculation of some ratio variables per pharmacy manager and a test for reliability. Cluster analysis was used as a tool to find similar cases in this study. The ratios calculated related to the categories product mix, process mix, customer mix, remaining questions and all questions. The agglomerative hierarchical clustering method was applied to three pharmacy-mix-related ratios: product, process, and customer. The similarity measure applied was the Pearson correlation coefficient in combination with the clustering method average linkage *within* groups. The results of the agglomerative hierarchical clustering for *action* consisted of the random sample and the selected sample of VNA/SAL pharmacies. Again, as with *thought*, both samples are presented separately. The three pharmacy mixes are described in the presentation of the results: the product mix for pharmaceutical actions, the process mix for financial-economic actions and the customer mix for customer actions. Decisions relating to the cluster analysis are described below.

*The result of the agglomerative hierarchical clustering was a total number of sixteen basic clusters of actions of pharmacy mixes (table 5.4.). This first step in the clustering was compared with the actual ratio scores which were used for the clustering. The results showed that each basic cluster related to the ranking of scores on the pharmacy-mix-related questions. In a cluster with product-process-customer, product questions scored highest, then process questions and finally customer questions. For example, case 19 (third column, second cell) in table 5.4. was classified in the cluster product>process>customer. Within this cluster the pharmacy-mix-related ratio score of product-related actions was highest. The second highest score was process-related actions and then customer-related actions. These results show that the pharmacy manager of case 19 performed pharmaceutical actions mostly (product ratio score of .77 meaning that 77% of all product questions were answered with 'yes'), followed by financial-economic actions (process*

ratio score of .67) and customer actions (customer ratio score of .51). Comparison of the clustering and the ratio scores showed that 7 cases were in the 'wrong' cluster. However, the clustering made by the cluster analysis was used as a starting point in the quest for an explanation. It was presupposed that no clusters should be added to the 16 basic clusters calculated by the agglomerative hierarchical cluster analysis, presented in **table 5.4**. An explanation for the 'wrong' positions was found.

The 7 individual cases (**bold and underlined in table 5.4**) were analyzed again. A total of 5 cases were positioned in another cluster with similar scores to two of the pharmacy mixes. Since the applied cluster analysis clusters cases based on the form of the score, some of the differences were minimal. Cluster analysis clustered both clusters together, based on the similarities between the scores of two variables. For example, cases 76, 1014 and 1032 were positioned in basic cluster 3, in which the product scores and the process scores were similar. However, for these cases the scores for process were highest. Cluster 9 seemed to be a good alternative for these cases, having exactly the right shape of (process $\approx$ product) $>$ customer. Cases 76, 1014 and 1032 were moved to cluster 9. In addition, cases 48 and 122 were positioned in basic cluster 5 in which the product scores and the process scores were similar. Cluster 2 seemed to be a good alternative for these cases, having the right shape of product $>$ process $\geq$ customer, where the process score was higher than the customer score. Cases 48 and 122 were moved to cluster 2. Finally, cases 79 and 115 were positioned in basic cluster 10 in which the product scores and the customer scores were similar, although no cluster seemed to be a good alternative for these cases, having the right shape of process $>$ (customer $\approx$ product), in which the customer score was slightly higher than the product score. It was presupposed that no basic clusters should be added: cases 79 and 115 consequently remained in cluster 10. As a result of the clustering, 5 out of 7 cases were corrected. A total of 3% (5) of all clustered cases were moved. Therefore, 2 cases remained in their original position since no alternative cluster could be found.



basic cluster <sup>32</sup>	ranking <sup>33</sup>	case (random sample n=150)	case (selected sample n=27)
1.	<i>product&gt;process&gt;customer</i>	case 19, 21, 27, 64, 68, 77, 90, 95, 97, 106, 125, 129, 138, 157, 166, 171, 173, 205, 220, 224, 242, 249, 259, 282, 287, 290, 293, 299	case 1016, 1019, 1025, 1028
2.	<i>product&gt;process≥customer</i>	case 33, 52, 73, 82, 101, 102, 118, 123, 160, 162, 177, 185, 201, 215, 296	case 1005, 1015, 1023, 1030
3.	<i>(product=process)&gt;customer</i>	case 1, 7, 28, 43, 49, 67, 71, <b>76</b> , 78, 105, 107, 126, 194, 214, 221, 226, 271	case 1001, <b>1014</b> , 1022, <b>1032</b>
4.	<i>product&gt;customer&gt;process</i>	case 8, 51, 61, 69, 99, 116, 143, 165, 167, 189, 196, 218, 223, 228, 246, 260, 291	
5.	<i>product&gt;customer≥process</i>	case 30, <b>48</b> , 62, 80, 91, 104, <b>122</b> , 130, 164, 184, 187, 191, 263, 265, 278, 295	case 1002
6.	<i>(product=customer)&gt;process</i>	case 57, 96, 176	
7.	<i>(customer=product)&gt;process</i>	case 45, 74, 163	
8.	<i>process&gt;product&gt;customer</i>	case 11, 22, 44, 54, 55, 109, 111, 148, 159, 192, 230, 234, 236, 254, 273, 275, 280, 284	case 1003, 1004, 1008, 1010, 1024, 1029
9.	<i>(process=product)&gt;customer</i>	case 5, 42, 53, 60, 89, 110, 114, 133, 147, 210, 239, 256, 283	case 1007, 1021, 1026, 1033
10.	<i>process&gt;(product=customer)</i>	case 3, 41, <b>79</b> , <b>115</b> , 179, 188, 241, 294	case 1006, 1027
11.	<i>process=product=customer</i>	case 87, 213, 297	case 1012
12.	<i>customer≥(product=process)</i>	case 9, 36, 50, 207	
13.	<i>customer&gt;(product=process)</i>	case 139, 231	
14.	<i>customer&gt;(process=product)</i>	case 251	
15.	<i>customer=process=product</i>	case 186	case 1031
16.	<i>customer&gt;process&gt;product</i>	case 276	
<b>total cases action</b>		<b>150 cases</b>	<b>27 cases</b>

**Table 5.4.** Basic clustering of pharmacy mix ratio scores for *action* in the random sample and the selected sample.

<sup>32</sup> The separate clusters are the first clusters produced with the agglomerative hierarchical clustering using the cluster method average linkage within groups and using the similarity measure Pearson correlation.

<sup>33</sup> In general, the first pharmacy mix mentioned had the highest score. The applied symbols are: > and < for larger and smaller than, ≥ and ≤ for larger and almost equal to and smaller and almost equal to, (mix1=mix2) two mix scores being almost equal.

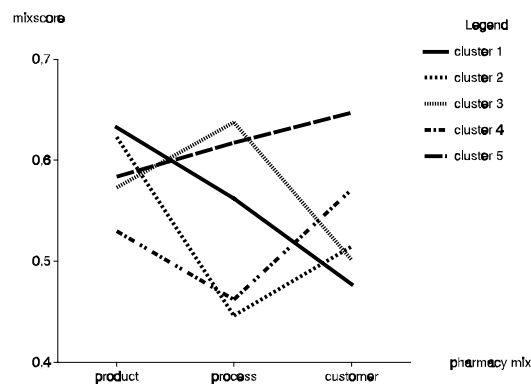
The next step was to refine the corrected clustering of the sixteen basic clusters into five clusters. **Table 5.5.** shows the five clusters: product-process-customer (cluster 1-3), product-customer-process (cluster 4-7), process-product-customer (cluster 8-11), customer-product-process (cluster 12-14), and customer-process-product (cluster 15-16). These five clusters clearly described the rankings in the pharmacy-mix-related scores.

Based on the results of the cluster analysis and the basic clustering of **table 5.4.** a refined clustering was produced. **Table 5.5.** below, shows the refined clustering of pharmacy mix ratio scores for *action* in the random sample and the selected sample.

cluster	ranking	case (random sample n=150)	case (selected sample n=27)
1.	product-process-customer	case 1, 7, 19, 21, 27, 28, 33, 43, 48, 49, 52, 64, 67, 68, 71, 73, 77, 78, 82, 90, 95, 97, 101, 102, 105, 106, 107, 118, 122, 123, 125, 126, 129, 138, 157, 160, 162, 166, 171, 173, 177, 185, 194, 201, 205, 214, 215, 220, 221, 224, 226, 242, 249, 259, 271, 282, 287, 290, 293, 296, 299	case 1001, 1005, 1015, 1016, 1019, 1022, 1023, 1025, 1028, 1030
			10
2.	product-customer-process	case 8, 30, 51, 57, 61, 62, 69, 80, 91, 96, 99, 104, 116, 130, 143, 164, 165, 167, 176, 184, 187, 189, 191, 196, 218, 223, 228, 246, 260, 263, 265, 278, 291, 295	case 1002
		34	1
3.	process-product-customer	case 3, 5, 11, 22, 41, 42, 44, 53, 54, 55, 60, 76, 79, 87, 89, 109, 110, 111, 114, 115, 133, 147, 148, 159, 179, 188, 192, 210, 213, 230, 234, 236, 239, 241, 254, 256, 273, 275, 280, 283, 284, 294, 297	case 1003, 1004, 1006, 1007, 1008, 1010, 1012, 1014, 1021, 1024, 1026, 1027, 1029, 1032, 1033
		43	15
4.	customer-product-process	case 9, 36, 45, 50, 74, 139, 163, 207, 231	
		9	
5.	customer-process-product	case 186, 251, 276	case 1031
		3	1
	cases action	150 cases	27 cases

**Table 5.5.** Refined clustering of pharmacy-mix ratio scores for *action* in the random sample and the selected sample.

The form of the scores on the three mixes was essential for the clustering (**figure 5.3.**). The results of the random sample for *action* in **table 5.5.** showed that most pharmacy managers had the highest score for product or process actions. A total of 63% (61+34) showed that most pharmacy managers had the highest score for product actions in clusters 1 and 2. A total of 29% (43) showed that most pharmacy managers had the highest score for process actions in cluster 3.

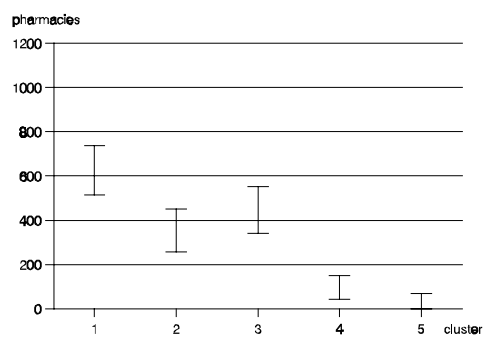


**Figure 5.3.** The mean score per pharmacy-mix ratio per cluster.

A total of 8% (9+3) showed that most pharmacy managers had the highest score for customer actions in clusters 4 and 5. In the first two scores in clusters 1 and 3, most scores (69%) were a combination of product and process actions.

In addition, a rough sketch of generalizability was made. The number of cases per cluster in the population was estimated with hypergeometric confidence bounds by using a level of confidence of 95% (Molenaar 1971), similar to the method for *thought*. The estimation was based on the observed number of cases per cluster in the *random* sample.

Firstly, the number of pharmacies in the observed ranking product-process-customer (with 61 cases in the sample) was estimated for the population. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 513 (34%) and 736 (48%) pharmacies (**cluster 1, figure 5.4.**). Secondly, the number of pharmacies in the observed ranking product-customer-process (with 34 cases in the sample) was estimated. The

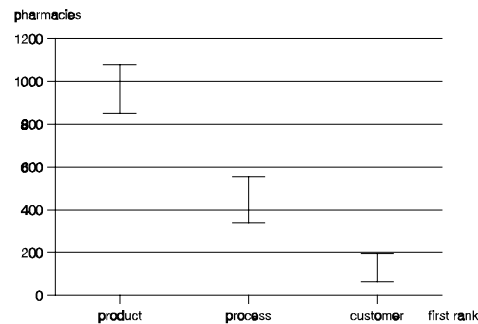


**Figure 5.4.** The estimated confidence bounds per cluster for *action* in the population.

number of pharmacies in the population of Dutch pharmacies was estimated to be between 258 (17%) and 452 (30%) pharmacies in cluster 2. Thirdly, the number of pharmacies in the observed ranking process-product-customer (with 43 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 340 (22%) and 553 (36%) pharmacies in cluster 3. Fourthly, the number of pharmacies in the observed ranking customer-product-process (with 9 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 43 (3%) and 149 (10%) pharmacies in cluster 4. Fifthly, the number of pharmacies in the observed ranking customer-process-product (with 3 cases in the sample) was estimated. The number of pharmacies in the population of Dutch pharmacies was estimated to be between 1 (0%) and 69 (5%) pharmacies in cluster 5.

The results of the random sample for *action* in **table 5.5.** showed that most pharmacy managers performed pharmaceutical or process actions. The number of pharmacies in the total population of Dutch pharmacies with a first ranking for the product mix

was estimated to be between 849 (56%) and 1077 (71%) pharmacies (**first ranking: product, figure 5.5**). The number of pharmacies with a first ranking for the process mix was estimated to be between 340 (22%) and 553 (36%) pharmacies (first ranking: process). The number of pharmacies with a first ranking for the customer mix was estimated to be between 63 (4%) and 195 (13%) pharmacies (first ranking: customer). The number of pharmacies with product or process in the first two rankings was estimated to be between 950 (63%) and 1163 (77%) pharmacies.



**Figure 5.5.** The estimated confidence bounds for the first rank per mix for *action* in the population.

Finally, reliability was tested with Cronbach's alpha similar to the pilot study. The test was applied to *action* of pharmacy managers.

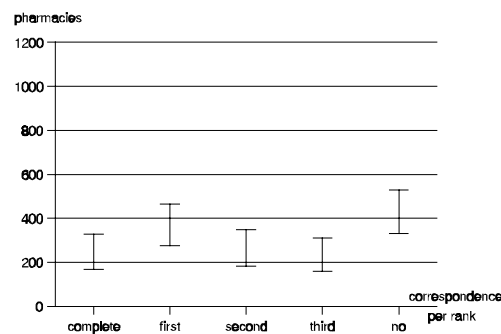
*The reliability test of Cronbach's alpha can be interpreted as a correlation coefficient; it ranges in value from 0 to 1. All items which related to a certain pharmacy mix were tested separately. The pilot study showed that large reliability coefficients could be produced (even when the average inter-item correlation was small) if the number of items on the scale is large enough. In this study the total number of items was large. As a result the alpha for the product mix, the process mix, the customer mix and the remaining questions was .83, .90, .88 and .92 respectively. The alpha value of the remaining questions was highest, indicating that the applied scale was used in the most consistent way, and, therefore relatively reliable.*

The presented results showed that the applied method for **action** seemed to be good with respect to reliability.

#### 5.4.4. Correspondence of the results

In what way do the results of *thought* and *action* correspond? The number of pharmacies in the total population of Dutch pharmacies with complete correspondence between *thought* and *action* was estimated to be between 167 (11%) and 329 (22%) pharmacies (**ranking correspondence: complete, figure 5.6**). The number of pharmacies with a correspondence in the first ranking was estimated to be between 275 (18%) and 464 (31%) pharmacies (ranking correspondence: first). The number of pharmacies with a correspondence in the second ranking was estimated to be between 184 (12%) and 349 (23%) pharmacies (ranking correspondence: second).

The number of pharmacies with a correspondence in the third ranking was estimated to be between 158 (10%) and 312 (21%) pharmacies (ranking correspondence: third). The number of pharmacies with *no* correspondence in any ranking was estimated to be between 331 (22%) and 529 (35%) pharmacies (ranking correspondence: none). In addition, the results of *thought* and *action* showed some remarkable differences. The correspondence of the complete ranking (for example case 28 in the ranking product-process-customer, second column **table 5.6.**) for *thought* and *action* was 16% (28) of the pharmacy managers. The correspondence in the first ranking of the pharmacy mix (for example product for case 62, second column **table 5.6.**) was 24% (40) of the pharmacy managers. The correspondence in the second ranking of the pharmacy mix (for example product for case 44, sixth column for *thought* and fourth column for *action* in **table 5.6.**) was 17% (29). The correspondence in the third ranking of the pharmacy mix (for example customer for case 22, second column for *thought* and fourth column for *action* in **table 5.6.**) was 15% (25) of the pharmacy managers. It should be noted that in **table 5.6.**, 6 cases (cases 190, 197, 204, 272, 1009 and 1017) with results for *action* only, and 8 cases (cases 42, 53, 67, 95, 102, 107, 110 and 114) with results for *thought* only, were not included. An analysis of correspondence was not possible with the result of one method. As a result, a total of 169 cases were used in the analysis for correspondence.



**Figure 5.6.** The estimated confidence bounds of correspondence between *thought* and *action* in the population.

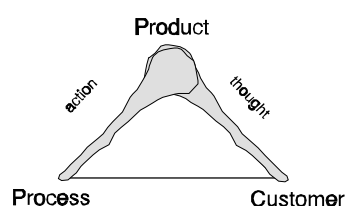
ranking method	product process customer	product customer process	process product customer	process customer product	customer product process	customer process product	product= process= customer	
thought	case 22, 28, 49, 62, 64, 74, 104, 192, 259, 265, 283, 299, 1012	case 3, 5, 7, 8, 11, 21, 30, 36, 41, 48, 50, 52, 54, 57, 60, 61, 68, 71, 73, 78, 79, 80, 82, 87, 91, 96, 99, 105, 106, 118, 122, 125, 126, 129, 138, 139, 143, 159, 160, 162, 163, 164, 166, 167, 171, 173, 176, 177, 184, 185, 187, 189, 194, 196, 201, 207, 210, 214, 215, 218, 221, 224, 226, 230, 231, 239, 242, 256, 260, 273, 278, 280, 282, 294, 1003, 1005, 1030, 1031	case 90, 1014, 1026	case 157, 276, 1019	case 1, 9, 19, 33, 43, 44, 45, 51, 69, 76, 77, 97, 101, 109, 111, 115, 116, 130, 133, 147, 148, 165, 179, 186, 188, 191, 205, 213, 223, 228, 234, 236, 246, 249, 251, 263, 271, 275, 284, 287, 290, 291, 293, 295, 296, 1001, 1002, 1004, 1006, 1007, 1010, 1015, 1016, 1022, 1024, 1029, 1032, 1033	case 27, 55, 89, 123, 220, 297, 1008, 1021, 1023, 1025, 1027, 1028	case 241, 254	
169		13	78	3	3	58	12	2
action	case 1, 7, 19, 21, 27, 28, 33, 43, 48, 49, 52, 64, 68, 71, 73, 77, 78, 82, 90, 97, 101, 105, 106, 118, 122, 123, 125, 126, 129, 138, 157, 160, 162, 166, 171, 173, 177, 185, 194, 201, 205, 214, 215, 220, 221, 224, 226, 242, 249, 259, 271, 282, 287, 290, 293, 296, 299, 1001, 1005, 1015, 1016, 1019, 1022, 1023, 1025, 1028, 1030	case 8, 30, 51, 57, 61, 62, 69, 80, 91, 96, 99, 104, 116, 130, 143, 164, 165, 167, 176, 184, 187, 189, 191, 196, 218, 223, 228, 246, 260, 263, 265, 278, 291, 295, 1002	case 3, 5, 11, 22, 41, 44, 54, 55, 60, 76, 79, 87, 89, 109, 111, 115, 133, 147, 148, 159, 179, 188, 192, 210, 213, 230, 234, 236, 239, 241, 254, 256, 273, 275, 280, 283, 284, 294, 297, 1003, 1004, 1006, 1007, 1008, 1010, 1012, 1014, 1021, 1024, 1026, 1027, 1029, 1032, 1033		case 9, 36, 45, 50, 74, 139, 163, 207, 231	case 186, 251, 276, 1031		
169	67	35	54	0	9	4	0	

**Table 5.6.** Table of correspondence for *thought* and *action*.

Some pharmacy managers were completely consistent. **Table 5.6.** shows complete correspondence if a case number is presented for *thought* and *action* in the same column; for example, case 64 in the second column, and case 8 in the third column. Out of 28 completely consistent pharmacy managers, 86% (24) have product in the first ranking. A combination of product and customer was observed for 75% (21) of all pharmacy managers with consistent positions. Pharmacy managers with consistency for the first mix (40) have product in the first ranking for 95% (38) of all first-ranking-only consistencies. A combination of product and customer was observed for 93% (37) of all pharmacy managers with first-ranking-only consistency. Pharmacy managers with consistency for the second pharmacy mix (29) and third pharmacy mix (25), and, with a completely *inconsistent* position (47), have customer in the first ranking for 65% (66) of all (partially) *inconsistent* positions. A

combination of customer and product was observed for 77% (78) of all pharmacy managers with first-ranking-only consistency. Moreover, it should be noted that none of the cases were observed in the ranking process-customer-product and in the ranking product=process=customer for *action*, as presented both in **table 5.6.** and **table 5.7.**

A first-ranking-only analysis shows that product and customer actions were perceived as the most important in the method for *thought*. However, most performed actions were observed at product and process in the method for *action* (**figure 5.7.**). In addition, in the method for *thought* pharmaceutical tasks were perceived as being the most important (**table 5.7.**). The results of the method for *action* showed that pharmaceutical tasks were performed most frequently. Most pharmacy managers who were managing consistently, did this mainly in the product mix. Out of 28 consistently managing pharmacy managers, 24 managers had product in the first ranking. Most pharmacy managers who were managing *inconsistently*, did this mainly in the customer mix. Out of 47 pharmacy managers who were managing completely *inconsistent*, 24 had customer in the first ranking.



**Figure 5.7.** The triangle with the main result of the correspondence between *thought* and *action*.

ranking method	product process customer	product customer process	process product customer	process customer product	customer product process	customer process product	product= process= customer	total
thought	14 cases	82 cases	3 cases	3 cases	59 cases	12 cases	2 cases	175 cases
action	71 cases	35 cases	58 cases		9 cases	4 cases		177 cases

**Table 5.7.** Table with frequencies for *thought* and *action*.

## 5.5. Conclusion

The results presented have provided us with a solid point of departure for *phase two*, the organizational change to the customer mix. It should also be noted that these results provide us with new material about the pharmaceutical field. The results might also enable us to reflect on the field in the context of the discussions of **chapter 3**. However, before doing so, some of the results will be summarized.

The response, presented in **section 5.4.1.**, was reasonable for the random sample: 47% (142). The response for the selected sample of VNA/SAL pharmacies was good with 82% (27). The response for the random sample and the selected sample was reasonable: 51% (169 out of 333 invited pharmacies).

The results of *profile*, in the random sample presented in **section 5.4.1.**, showed a good correspondence to the distribution of the population. On the basis of the questions applied in the random sample it was concluded that the random sample is a good representation of the population of Dutch community pharmacy managers.

The results for *thought*, presented in **table 5.7.**, showed that most pharmacy managers perceived product and customer actions as being the most important. For 47% (82 out of 175 cases) of the pharmacy managers, the ranking product-customer-process was observed. For 34% (59) of the pharmacy managers, the ranking customer-product-process was observed. For the remaining 19% (34) another ranking was observed. Of these other rankings, 15% (26) gave product or customer a first ranking. It was concluded that most pharmacy managers (55%) selected the product mix as being the most important pharmacy mix. The next largest percentage of pharmacy managers (41%) perceived customer as being the most important pharmacy mix. Only 4% of the pharmacy managers perceived the process mix as being the most important pharmacy mix. The results for *thought* showed that product and customer were perceived as being the most important actions.

The results for *action*, also presented in **table 5.7.**, showed that most pharmacy managers performed product and process actions. For 40% (71 out of 177 cases) of the pharmacy managers the ranking product-process-customer was observed. For 33% (58) of the pharmacy managers, the ranking process-product-customer was observed. For 20% (35) of the pharmacy managers, the ranking product-customer-process was observed. For the remaining 7% (13) another ranking was observed; most of which performed customer actions. It was concluded that most pharmacy managers (60%) performed actions in relation to the product mix. The next largest percentage of pharmacy managers (33%) performed actions mainly in relation to the process mix. Only 7% of the pharmacy managers performed actions in relation to the customer mix. The results for *action* showed that most actions performed related to product and process.

The complete ranking of *thought* and *action*, presented in **table 5.6.**, corresponded for 16% (28 out of 169 cases) of the pharmacy managers. Correspondence of the first ranking only was observed for 24% (40) of the pharmacy managers. For the remaining 60% (101) the results did *not* correspond partially (54) or did *not* correspond at all (47). As a result, *thought* and *action* of most pharmacy managers did not correspond. Most pharmacy managers managing consistently (28), managed in the product mix (24). Most pharmacy managers managing *inconsistently* (47), managed in the customer mix (24). We asked ourselves, however, whether it was possible that answers relating to the product mix were more reliable than answers relating to the customer mix. But since the differences between Cronbach's alpha



were minimal (for product and customer .78 for .72 for *thought* and .83 and .88 for *action* respectively), we accepted the answers for both the product mix and the customer mix as being reliable.

Considering the issues from management science introduced in **chapter 3**, it is clear that we did not have to be surprised with these results. Differences between intention and realization, or *thought* and *action*, were expected. Mintzberg (1978, 1988) described the difference between ‘intended strategy’ and ‘realized strategy’. Another study (Argyris 1992) showed that people sometimes do not act in correspondence with their espoused theory. The actual behaviour is another theory, the theory-in-use. The theory-in-use does not always correspond with the espoused theory. In this study, *non-correspondence of thought and action* has been observed. We feel that it is acceptable to assume that the intended and realized strategies, as well as the espoused theory and the theory-in-use have been visualized. However, one could argue that the results have been influenced by social desirability. Above, in **chapter 4**, we noted that social desirability means that the answers of respondents may also be determined by what they think the researcher will value as a good answer (Swanborn 1987), or the other way around, that there are certain facts or events that respondents would rather not report accurately (Fowler 1984). What could social desirability mean within the broad context of community pharmacy practice in the Netherlands? Above in our model of the sector, in **chapter 3**, we mentioned that the community pharmacy sector contends that pharmacy managers change from the product mix and concentrate more on (positive) customer actions. Negative publicity in the media however, and statements from the authorities, contend that pharmacy managers concentrate on (negative) process actions. Within this argumentation a ‘good’ and social desirable answer would be the customer mix and a ‘bad’ answer would be the process mix. Some measures were taken to avoid the problem of social desirability in the survey. Firstly, a privacy regulation was sent with the survey to secure confidentiality and anonymity. Secondly, careful attention was given to minimize a sense of judgement; consistency was the main issue studied. A leaflet was added to the survey in order to describe the background of the study and explain why all three pharmacy mixes were legitimate positions to ‘produce’ good quality. Did pharmacy managers, in spite of this effort to avoid social desirability, prefer the customer mix and avoid the process mix in the survey?

The results of *thought* showed that 71 pharmacy managers had the ‘positive’ customer mix in the first ranking, and 6 pharmacy managers had the ‘negative’ process mix in the first ranking. A link to the pharmacy mix was explicitly described per question in the relatively short questionnaire (26 questions); it was thus possible for respondents to have a sense of judgement. However, with the covering letter we indicated that *thought* and *action* would be sent separately and that differences in

outcome between the two would be of main interest in this study. It was assumed that pharmacy managers would realize that answers for *thought*, thus socially desirably answers as well, would be proved in *action*. Therefore, we expected there to be fewer incentives to give socially desirably answers. In addition, as was mentioned before, the interviews in the next phase, *phase two*, showed that 81% (26) of the participating pharmacy managers agreed with the mean ranking. Some other 16% (5) of the pharmacy managers agreed with the result, but described difficulties in making choices between the pharmacy mixes. Only 3% (1) of the pharmacy managers disagreed and expected the process mix to be in third position in the ranking, instead of in second position. Finally, if the customer mix were perceived as being positive, most pharmacy managers would be expected to be in the customer mix. The results show that in spite of this 57% (96) of the pharmacy managers were observed in the product mix.

The results of *action* showed that 13 pharmacy managers had the 'positive' customer mix in the first ranking, and 58 pharmacy managers had the 'negative' process mix in the first ranking. The link to the pharmacy mix was not described per question but hidden in the long questionnaire (386 questions); a sense of judgement was hardly possible. However, if the questions relating to the process mix had been discovered and negatively valued, we would expect the number of pharmacy managers with a first ranking for the process mix to be lower. Consequently, in this case the number of pharmacy managers with a first ranking for the customer mix would be higher.

The results of *thought* and *action* showed that there was *non*-correspondence was observed. Social desirability was not expected to be present in the overall result since the result would be very negative if the pharmacy mixes were linked to the discussion of the 'good' customer answers and 'bad' process answers. In connection with **chapter 3** (Mintzberg 1978, 1988, Argyris and Schön 1978, Argyris 1992), it seemed plausible that the results of *thought* had visualized the intention of the pharmacy manager. The pharmacy manager has not, or not yet, 'arrived' in the *action* of the customer mix, the realization, which was also mentioned in **chapter 3**.

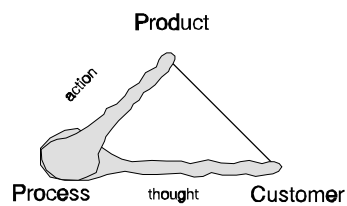
However, a question arises in relation to the issue of intention and realization. Why would we have started on this study if the result, *non*-correspondence between *thought* and *action* of pharmacy managers, could be expected? Our explanations lead us to *phase two* of this study and the special features of pharmacy organization compared to other organizations. The 'travel' to the customer mix is the subject matter of the next phase of the study. It was argued above that in such a 'travel' information about the current location and the destination would be convenient. Following this line of thought, results of both *thought* and *action* are welcome in order to make intentions and actions explicit before 'travelling' to the customer mix.

In **chapter 3**, the destination (the customer mix) was described analytically. However, where is the pharmacy manager at the moment? Information about importance (*thought*) and performance (*action*) of actions is required. Within this context, the results of *thought* are not sufficient. It is a starting point for a ‘travel’ to the customer mix. Additionally, the results of *action* showed in what position the pharmacy manager is at this moment.

Moreover, within management science, the domain of this study is special. In this thesis, the applied organizational model was used to find answers to questions within the specific setting of Dutch community pharmacy practice. Differences between *thought* and *action* are predictable within management science and business, but are special when applied to the Dutch community pharmacy sector. Moreover, in connection with **chapter 3**, we would expect similar issues to be present in other

countries. The described customer and process actions are closely related in management science and business. However, within this study, a contrast between customer and process actions was observed. That is special and was studied here. The Dutch pharmacy manager works in a politicized line of business. The relation between customer and process is problematic (Van der Werf 1996). In management science and business, customer actions are usually expected to lead to an improved financial position. In a supermarket, for example, customer actions are perceived as being important in order to achieve profit and to realize continuity of the organization. In this situation, one would expect major importance to be given to financial actions in conjunction with customer actions, as shown in **figure 5.8**. However, the results of this study showed other perceptions of importance. Customer and process were not related in perceived importance. A relation between product and customer was found. The professional quality of the pharmacy manager was perceived as being the most important issue here, and not profit. Questions such as: ‘Why is professional quality of major importance?’ and ‘Why is there a missing link between customer and process?’, may however arise.

The study showed that most consistent positions were found within the product mix. A possible explanation for the importance of the product mix is that the pharmaceutical actions in both *thought* and *action* are related to the product-oriented tradition of the profession. The product mix has a particular connection to the field in which pharmacy managers are well-educated and trained. It is their main purpose. The historic conception of pharmaceutical tasks of the community pharmacist is still of



**Figure 5.8.** An example of a triangle for a supermarket manager in the correspondence between *thought* and *action*.

great importance in education, work and mind of pharmacy managers. In addition, customers, physicians and authorities also demand the highest professional quality. Pharmaceutical expertise is a condition for actions in process and customer. Consequently, organizational change to the customer mix (considered in the next phase of the study) is expected to be a difficult matter since the product mix is still the pivot of pharmacy organization.

It was described how there is a missing link between customer and process and that this is a distinctive characteristic compared to other organizations. A possible explanation is that making profit by selling medicine to ill people is perceived to be not very ethical. Consequently, the public debate about financial issues and pharmacies is usually negatively coloured. It seems logical that pharmacy managers should secure their market share by stressing the customer mix and avoiding related financial issues. Given negative associations with financial actions, the customer mix seems to be a better second option than process mix. In our model in **chapter 3**, and considering the negative publicity in the media and statements of the authorities which we mentioned above, it has been suggested that pharmacy managers concentrate on (negative) process activities. In contrast, the community pharmacy sector suggests that pharmacy managers concentrate on (positive) customer activities.

This study showed a nuance of both positions. It is remarkable that most *inconsistent* positions were found within the process mix and the customer mix. If pharmacy managers are making more money than is socially acceptable, as was suggested in **chapter 3**, then it does appear that these managers do it rather *inconsistently*. Similarly, the actions of the customer mix were also poorly organized in terms of consistency. These results showed that pharmacy managers are not strongly organized with respect to process and customer. Consequently, there seems to be little evidence for the statements of both the authorities and the community pharmacy sector (mentioned above and in **chapter 3**). However, pharmacy managers seemed to operate well on the more classical work at the pharmacy; *thought* and *action* of the product mix were most consistent. We have to be careful in *phase two* on this point. In this phase it is intended to study a change to the customer mix. With these current results, the point of departure of the pharmacy manager appears to be rather *inconsistent*. The 'travel' to the customer mix could be rather 'messy' for many pharmacy managers; specifically the ones that are *inconsistent* in *thought* and *action* with respect to the process mix and the customer mix. This is a warning to be kept in mind for *phase two*.

The missing link between customer and process shows that the pharmacy organization has distinctive features when compared to other organizations. The traditional conception of the work in the community pharmacy is still vividly present. It can be

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concluded that *thought* and *action* of product-related actions are consistently managed in community pharmacy practice. With respect to process-related and customer-related actions *inconsistency* in terms of *thought* and *action* was observed. In a smaller group of pharmacies (n=63), the ‘travel’ of pharmacy managers to the customer mix was studied. This quasi-experiment of *phase two* of this thesis is described in the next **chapter 6**. The difficulty in ‘travelling’ to the customer mix was stressed by the importance of the traditional pharmaceutical tasks, and the specificity of the observed *inconsistency*. Within this quasi-experiment, four groups of 16 pharmacy managers received different stimuli. In *phase two* of the study a longitudinal approach was applied. Nevertheless, we had to be careful: the organization of the customer mix within the Dutch community pharmacy sector is a difficult matter. Problems in ‘making’ pharmacy managers more customer oriented were described at the time when we started *phase two* (Graatsma 1996). It is expected that the strong consistency in the product mix and the *inconsistency* in the customer mix would handicap the ‘travel’ to the customer mix.



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## Chapter 6 Managing Organizational Change<sup>34</sup>

### 6.1. Introduction

By this stage, we have determined the point of departure, which was described in **chapter 4** and **chapter 5**: *phase one* of the thesis. With this point of departure in mind, we can start to follow the ‘travel’ of the pharmacy manager to the customer mix. It should be remembered that the central theme in this part of the study, this current *phase two*, was to answer the main questions of this thesis. The main questions were: ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer mix?’ and ‘What is the role of the support structure in the organizational change to the customer mix?’. Before we start to discuss these questions in further detail, let us take a closer look at the work which has been accomplished so far. At the beginning of this thesis it was assumed that it would be convenient to know where we are now if we intend to ‘travel’ with an organization to a new position. Consequently, a theoretical study was done in order to describe the point of departure and the destination of pharmacy organization. As a result, in **chapter 3**, we modelled three pharmacy mixes: the product mix, the process mix and the customer mix. However, this was an analytical description. What were the pharmacy mixes in practice? It was shown in a pre-pilot study that the pharmacy managers perceived all three mixes as being very important. A distinction therefore was made between *thought* and *action*. The methods for *thought* related to what mixes of actions were perceived as being the most important by the pharmacy manager, and the methods for *action* related to what mixes of actions were actually performed by the pharmacy manager. In **chapter 4**, some methods were tested in a pilot study in order to be able to analyze the existence of the three pharmacy mixes in the community pharmacy sector in the Netherlands. Two main methods were selected and applied in a survey, which was described in **chapter 5**. The results of the survey were used to refine the analytical and empirical description of the three pharmacy mixes. Consequently, seven clusters of pharmacy mixes for *thought* and five clusters for *action* were found. This analysis showed that most pharmacy managers in the Netherlands stress the importance of product and customer actions, but actually perform product and process actions.

Since we now have defined a point of departure in the ‘travel’ to the customer mix for *thought* and *action*, we can introduce the main questions again: ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer mix?’ and ‘What is the role of the support structure in the organizational change to the customer mix?’. A longitudinal comparative approach was used because we were interested in

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<sup>34</sup> Parts of this chapter will be published in: Mobach MP, Werf JJ van der, Tromp TFJ. APOM-project: managing organizational change to the customer. *Pharm World Sci*, accepted April 1999; Mobach MP, Werf JJ van der, Tromp TFJ. SSM scrutinized in community pharmacy practice. *Syst. Res. Behav. Sci.*, submitted May 1999.

a change over time, since most organizational changes take some time. A period of one-and-a-half year was selected in order to determine problems in the organizational change. Soft Systems Methodology (SSM) was applied as a main framework to collect and analyze data from 31 pharmacy managers. Furthermore, observations and questionnaires were used in various combinations with these pharmacy managers and 32 additional pharmacy managers, who were all participating in the first survey. In contrast with **chapters 4 and 5**, in this chapter the term 'activity' will be used most. We refer to the modelled world, where, in the context of this chapter, activities relate to the modelled customer activities by the pharmacy manager. In some cases control action of the pharmacy manager was described in response to the implementation of the modelled activities. This chapter contains an explanation of the methods applied in 6.2. and the results in 6.3. Finally, in 6.4. the conclusion is presented.

## **6.2. Methods**

By using SSM in interviews, organizational change to the customer mix and related problems and solutions were described for 15 pharmacy managers of stichting VNA and SAL Apotheken (VNA/SAL pharmacy managers) and 16 independent pharmacy managers. For VNA/SAL pharmacy managers, the role of the support structure in the organizational change was described through a mix of qualitative and quantitative methods: interviews, questionnaires, observations, and surveys.

### **6.2.1. Activity-realization methods**

The interviews were conducted at time  $t_1$  (October 1996) and  $t_3$  (September 1997) with pharmacy managers. In the interviews, customer activities and monitor activities were modelled at  $t_1$ . These models were later evaluated at  $t_3$ : problems and solutions of the implementation process were described for 15 pharmacies of stichting VNA and SAL Apotheken (VNA/SAL pharmacies) and 16 independent pharmacies. SSM was used as a methodology to structure the interviews. Shortly after the interviews at  $t_1$  and  $t_3$ , all interview texts were offered to the pharmacy managers for correction.

The interviews at  $t_1$  contained seven steps. The seven steps comprised a discussion of the results of the survey, a list of intended or planned main customer activities for a period of a year, a root definition, a CATWOE, an activity model, a detailed description of the required customer sub-activities, a description of criteria for effectiveness, efficiency and efficacy, and a detailed description of the required



monitor activities.<sup>35</sup> The discussion of the results of the survey was reported in writing by the researcher, all other items were written by the pharmacy manager. Specific terms from SSM were translated and some help was provided in making an activity model.

The first step consisted of a discussion of the results of the survey with the pharmacy manager. The following questions were asked: ‘What do you think of the results?’ and ‘Do you agree with the results?’. It provided a link between the quantitative survey results and qualitative interviews.

*For example, the results of the 1996 survey for case 239 showed that the pharmacy manager was in the cluster with product-customer-process for thought, and in the cluster process-product-customer for action. Product actions were perceived as being the most important issue, however, process actions were actually performed. She agreed with the results for thought; she would like to stress product actions and customer actions. The pharmacy manager argued that process actions are important for action because she bought the pharmacy one-and-a-half year ago. Therefore she is experiencing time pressure and financial actions are considerably important. In another example, the results of the 1996 survey for case 1015 showed that the pharmacy manager was in the cluster with customer-product-process for thought, and in the cluster product-customer-process for action. Customer actions were perceived as being the most important issue, however, product actions were actually performed. This pharmacy manager also agreed with the results for thought. He would like to stress customer actions and product actions. However, the results of the survey for action showed a more positive result than he expected. His perception was that he expected to perform more process actions than product and customer actions; he was dissatisfied with this situation and would like to perform more customer actions and product actions, for example, processing accounts, following up debtors, discussing purchasing policy with colleagues etc. In his perception, process actions, in contrast with the results of the survey, were the main thing for action.*

In the second step, the pharmacy manager described a list of intended or planned major customer-oriented activities for the coming year. Perceptions of pharmacy managers with respect to the content of customer-oriented activities were collected.

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<sup>35</sup> Above in **chapter 3**, we described that a root definition of SSM is: “a system to do X by Y in order to achieve Z” (Checkland and Scholes 1990: 36). “The CATWOE relates to Customers, the victims or beneficiaries of T; Actors, those who would do T; Transformation process, the conversion of input to output; Weltanschauung, the worldview which makes T meaningful in context; Owners, those who could stop T; and Environmental constraints, elements outside the system which it takes as given” (1990: 35). An activity model is “a representation of a set of activities linked together to make a purposeful whole” (Checkland and Holwell 1998: 15). “With the question ‘is T meeting the longer term aim?’ the criterion for effectiveness is monitored. With the question ‘does the means work?’ the criterion for efficacy is monitored. With the criterion for efficiency it is monitored whether the transformation is being carried out with a minimum use of resources; ‘the amount of output divided by the amount of resources used’” (Checkland and Scholes 1990: 39). Consequently, within this model we are in need of monitor activities in order to check if the criteria were met and to be able to judge when control action is necessary.

Activities related to the Y<sup>36</sup> were collected using SSM; what means were needed in order to be more customer-oriented? Two questions were used. Firstly, the pharmacy manager was asked: ‘What customer activities do you plan for the coming year?’. These might include, for example, organize consultation, introduce KNMP self-care standards, produce brochure for foreigners, produce pharmacy brochure, and organize direct mail (**table 6.1.**). Secondly, the pharmacy manager was asked: ‘What categories can be distinguished to categorize customer-activities?’. These might be, for example, the categories oral information and written information (**table 6.1.**).

Functional area	Intended activities 1996
oral information	-organize consultation
	-introduce KNMP self-care standards
written information	-produce brochure for foreigners
	-produce pharmacy brochure
	-organize direct mail

**Table 6.1.** A description of the intended customer activities (Y).

In the third step, a root definition was produced based on the intended activities described. The structure and meaning of a root definition in SSM was explained in the interview. The definition of Checkland and Scholes (1990: 36) was used to clarify the structure of the root definition: ‘a system to do X by Y in order to achieve Z’. Two questions were asked about the intended activities (Y). Firstly, the pharmacy manager was asked ‘What do you actually do (X) with these means Y?’. Secondly, the pharmacy manager was asked ‘What is the related long term aim (Z)?’

*For example, the root definition could be an information-shop improvement system (X) directed at oral and written information (Y) in order to hold onto customers (Z). In another example we might see that, although Z is equal to the former root definition, the root definition may have another X and Y. Such a root definition would be: a customer-care-improvement system (X) directed at service level, research and medication support (Y) in order to hold onto customers (Z).*

<sup>36</sup> In SSM the Y relates to the root definition. Checkland and Scholes defined the structure of the root definition as: “a system to do X by Y in order to achieve Z” (1990: 36). Within this definition Y relates to the means in order to achieve Z.

In the fourth step, a CATWOE was described based on the root definition. Normally, the root definition is formulated by considering the elements of CATWOE. Within this study, the CATWOE was used to enrich the root definition. Checkland and Scholes (1990: 35-36) argued that a root definition formulated with attention to the elements of the CATWOE will be rich enough to be modellable. The CATWOE relates to Customers, Actors, Transformation process, Weltanschauung, Owners, and Environmental constraints. The ‘customers’ are the victims or beneficiaries of T. The ‘actors’ are those who would do T. The ‘transformation process’ is the conversion of input into output. Within this study, T related to X of the root definition; for example, an information shop transformed into an improved information shop, or customer care transformed into improved customer care (compare the former root definitions in the example). The ‘Weltanschauung’ is the worldview which makes this T meaningful in context. The ‘owner(s)’ are those who could stop T. In this study, the owner is the person who can stop T, and, in addition, formulates Z. The ‘environmental constraints’ are the elements outside the system which it takes as given. In this study, E was a precondition related to T. For example, in order to transform an information shop into an improved information shop it was necessary to have the ‘permission’ of the general practitioners (GPs), the motivation of the personnel, and a need for information by the patient. If these preconditions were not fulfilled, implementation of the transformation process was questionable. An example of the CATWOE in relation to the first root definition mentioned before would be:

<i>C</i>	<i>Customers</i>	<i>patients, GPs, environment of the patients</i>
<i>A</i>	<i>Actors</i>	<i>assistant pharmacists, pharmacy manager, patients’ associations, specialists of consultation</i>
<i>T</i>	<i>Transformation process</i>	<i>information shop→ improved information shop</i>
<i>W</i>	<i>Weltanschauung</i>	<i>it is possible to hold onto customers by increasing their knowledge</i>
<i>O</i>	<i>Owner(s)</i>	<i>pharmacy manager, assistant pharmacists, GPs, specialists, specialists of consultation</i>
<i>E</i>	<i>Environmental constraints</i>	<i>‘permission’ of the GPs, motivation of the personnel, need for information by the patients</i>

In the fifth step, an activity model was drawn. In a relative simple model of a fence painting, Checkland and Scholes (1990: 37-41) gave an example of a householder who intends to paint his fence (**figure 6.1**). This example was used in order to produce an activity model for the pharmacy manager. In this model the minimum activities necessary are assembled in order to meet the requirements of the root definition and CATWOE. Clearly, the main activity in the model will be ‘paint the fence’ (cell 5, **figure 6.1**), and this will be surrounded by other activities which fit with CATWOE. In general, they aim to express the main operations and to bring about the transformation (in the light of the CATWOE) in a handful of activities. The guideline is: aim for  $7 \pm 2$ , this coming from Miller’s celebrated paper on cognitive

psychology in which he suggests that the human brain may have a capacity which can cope with about this number of concepts simultaneously (Miller 1968). If this seems sparse, it need not be a problem: each activity in the model can itself become a source of a root definition to be expanded at the next resolution level. Checkland and Scholes (1990) argued that the core activity 'paint the fence' will be contingent upon obtaining the necessary materials (cell 4), and this will be contingent upon deciding the colour (cell 3) in the light of the overall decoration scheme of the property (cell 1) and taking a decision on the scope or extent of the task (cell 2), since this is an amateur effort.

Root Definition:

A householder-owned and manned system to paint a garden fence, by conventional hand painting, in keeping with the overall decoration scheme of the property, in order to enhance the visual appearance of the property

- C - householder
- A - householder
- T - unpainted fence → painted fence meeting criterion in the definition
- W - amateur painting can enhance the appearance
- O - householder
- E - hand painting

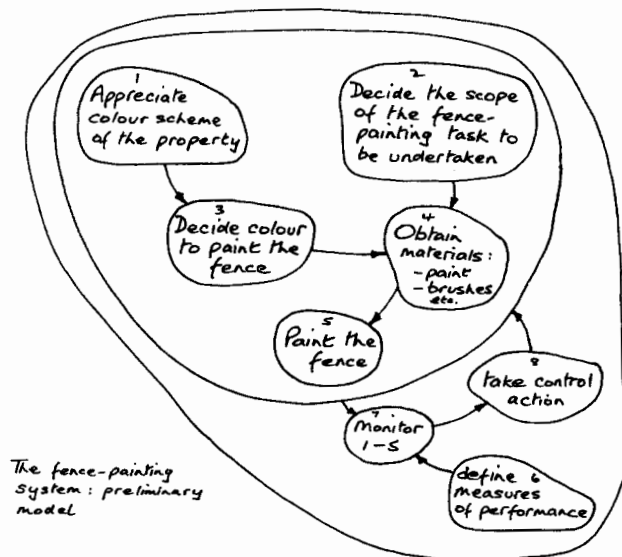


Figure 6.1. A root definition, CATWOE and a first model from root definition for a householder painting his fence (Checkland and Scholes 1990: 37-38).

These considerations yield the operational subsystem shown in **figure 6.1**. According to Checkland and Scholes (1990), because this is a system we need to also add the process of monitoring and control (cell 7). As always with such constructions, this process embodies the guarantee that the entity could in principle survive in a changing environment.

Forbes and Checkland (1987) showed that any conversion of input into output would be judged to be successful or unsuccessful on three different counts. These are the measures of performance (cell 6) and comprise efficacy, efficiency and effectiveness. With the criterion for efficacy it is monitored if the means chosen actually work in producing the output: 'does the means work?'. Within the example, this could be 'does this fence count as a painted fence?'. With the criterion for efficiency it is monitored whether the transformation is being carried out with a minimum use of resources: 'the amount of output divided by the amount of resources used'. Within the example, this could be 'was the resource use minimum?'. With the criterion for effectiveness it is monitored in what way the longer term aim, expressed by Z, is achieved: 'is T meeting the longer term aim?'. Within the example, this could be 'does the fence enhance the property?'. With the criteria defined, it can be used by the householder as a mirror during the transformation process, and, if necessary, control action can be taken (cell 8). The model of the fence painting was used as an example in order to illustrate and facilitate the modelling process of customer activities for the pharmacy manager.

*The model 'painting the fence' was used to clarify a moment in the interview. Since root definition and CATWOE were described we were in need of an activity model. By analogy with the example the main activity in the pharmacy activity model would be 'Implement activities' (cell 4, **figure 6.2**). It could be argued that the core activity 'Implement activities' is contingent upon cell 3 'Decide on information-shop improvement activities'. But what is the origin of these activities? What was the decision on which these specific activities were contingent? In the example, the selected activities related to knowledge of the patients, the policy of the insurance companies and the threat of competition. On this basis, the main part of the activity model (**figure 6.2**) was drawn. Cells 5, 6 and 7 were added as a standard procedure of SSM. All cells were clarified by the pharmacy manager.*

## Root definition

An information-shop improvement system (X) directed at oral and written information (Y) in order to hold onto customers (Z).

C	Customers	patients, GPs, environment of the patients
A	Actors	assistant pharmacists, pharmacy manager, patients' associations, specialists of consultation
T	Transformation process	information shop → improved information shop
W	Weltanschauung	it is possible to hold onto customers by increasing their knowledge
O	Owner(s)	pharmacy manager, assistant pharmacists, GPs, specialists, specialists of consultation
E	Environmental constraints	'permission' of the GPs, motivation of the personnel, need for information of the patients

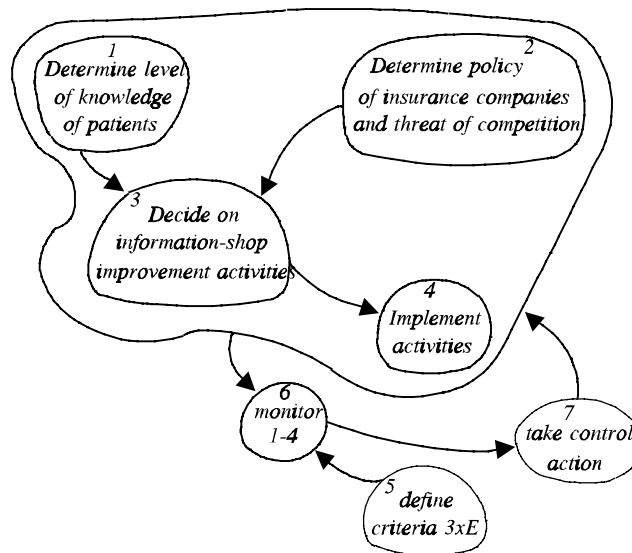


Figure 6.2. An example of a pharmacy activity model from root definition and CATWOE.

In the sixth step, a detailed description was made based on the cells of the inner part of the activity model (cell 1-4).

*In the example, the pharmacy manager clarified cell 1 **'Determine level of knowledge of patients'** in the following way: 'The level of knowledge of patients is determined by the personnel via the counter and telephone. In addition, I am confronted with questions from the patients about the quality of certain products. The questions are asked as a result of advertising material; in some cases the products are 'nonsense products'. The level of knowledge is mostly low. The cause can be found within the pharmacy, but also outside the pharmacy. Advertising material with doubtful information is regularly received at the pharmacy. Television programmes with a low level of quality of information are often shown. These programmes are often purely commercial, they are purchased programmes'. In the example, cell 2 **'Determine policy of insurance companies and threat of competition'** was clarified in the following way: 'I determine [information of] external developments with respect to insurance companies and threats of competition via meetings, commissions, department and main office of the KNMP (Royal Dutch Association for the Advancement of Pharmacy) and pharmacists' association. The pharmacy manager also notices developments in practice. For example, patients of certain insurance companies need to collect medical devices at a centre for medical devices, and sign contracts in which devices are offered under the fixed price (taxe). General developments are: the open market and competition stimulated by the authorities; the consequences of the IWG-report (interdepartmental report of the Dutch Ministries of Health and Economic Affairs in order to study what legislation should be adapted to stimulate market action in the Dutch pharmaceutical industrial column), and more specifically, the emergence of a mail-order pharmacy run by the insurer 'Zilveren Kruis'. In the example, cell 3 **'Decide on information-shop improvement activities'** was listed earlier in the interview. The listed activities were: organize consultation, introduce KNMP self-care standards, produce brochure for foreigners, produce pharmacy brochure, and organize direct mail. In the example, cell 4 **'Implement activities'** involved a detailed description of the required sub-activities. What sub-activities were necessary to organize a consultation, to introduce KNMP self-care standards, to produce a brochure for foreigners, to produce a pharmacy brochure, and to organize direct mail? The sub-activities were listed in a table (compare table 6.2).*

Functional area	Intended activities 1996	Intended sub-activities 1996
oral information	-organize consultation	-start off with colleagues -have consultation for diabetes (only during first half year) -determine target group -involve patients' association -approach general practitioners (GPs) -organize consultation once in every two weeks -seek publicity via local paper, via diabetes nurse from hospital, via pharmacy
	-introduce KNMP self-care standards	-assess possibilities by pharmacy manager -study self-care standards by pharmacy manager and assistant pharmacists -discuss methodology of asking questions: WHAM (Who is the patient and what are the symptoms? How long have the symptoms been present? Action taken; what medicines have been tried? Medication being taken for other problems?) -introduce standards -discuss new AMP results ('mystery guests': assessors pretending to be real customers) after some time
written information	-produce brochure for foreigners	
	-produce pharmacy brochure	
	-organize direct mail	

**Table 6.2.** An example of a description of the intended customer activities and sub-activities (Y).

In the seventh step, a detailed description was made based on the cells of the outer part of the activity model (cell 5-7). This step comprised the formulation of the criteria for efficacy, efficiency and effectiveness. With the criterion for efficacy it is monitored if the means chosen actually work in producing the output. With the criterion for efficiency it is monitored whether the transformation is being carried out with a minimum use of resources. With the criterion for effectiveness it is monitored in what way the longer term aim, expressed by Z, is achieved. In addition, a detailed description of the monitor activities was made. These measurements were described in order to be able to draw conclusion about the successfulness of the activity in the light of T and Z.

*In the example, cell 5 'define criteria 3xE' comprised the formulation of the criteria for efficacy, efficiency and effectiveness. With the criterion for efficacy it is monitored if the means chosen (oral information and written information) actually work in producing the output (improved information shop); 'does the means work?'. For the pharmacy manager in the example the criteria were positive reactions from patients, positive reactions from GPs, positive reactions from*



insurance company, and increased need for information by the patient. With the criterion for efficiency it is monitored whether the transformation (information shop→ improved information shop) is being carried out with a minimum use of resources; 'the amount of output divided by the amount of resources used'. For the pharmacy manager in the example the criteria were: stay within the budget; the flow of prescriptions should be in order→ it should be possible to keep the pharmacy business going. With the criterion for effectiveness it is monitored in what way the longer term aim, expressed by Z (hold onto customers), is achieved, 'is the transformation (information shop→ improved information shop) meeting the longer term aim (hold onto customers)?'. For the pharmacy manager in the example the criterion was to have the number of prescriptions at least stable. In the example, cell 6 'monitor 1-4' consisted of a detailed description of the monitor activities. These measurements were described in order to be able to draw a conclusion about the successfulness of this activity in the light of T (information shop→ improved information shop). The monitor activities were listed in a table (compare table 6.3.).

Functional area	Intended activities 1996	Intended monitor-activities 1996
oral information	organize consultation	-interest in consultation -consultation is occupied, about four visitors per afternoon
	introduce KNMP self-care standards	-pharmacy manager looks and listens -AMP results (WHAM-questions not applied yet, applied later) -discuss AMP results in discussion of progress
written information	produce brochure for foreigners	
	produce pharmacy brochure	
	organize direct mail	

**Table 6.3.** An example of a description of the intended monitor activities.

In the example, cell 7 'take control action' consisted of an intervention in the inner system when necessary according to the monitoring, which was defined in cell 6.

The outcome of the interviews was used as a logbook for organizational change to the customer mix for a period of a year. After a year the interviews were conducted again. In these second interviews, the models were evaluated, with a description on the one hand of the realization of customer activities and monitor activities, had the activities been transformed into action?, and on the other hand of problems and solutions involved in the implementation process.

The interviews at  $t_3$  contained seven other steps. It should be remembered that in the design of this study (described in **chapter 2**), the interviews and a repetition of the survey were made with a group of 15 VNA/SAL pharmacy managers and a group of 16 independent pharmacy managers. With two other groups of 16 independent pharmacy managers only the survey was repeated.

The seven steps comprised a discussion of the results of the survey, assessments of the actual performance of intended customer activities, of the actual performance of intended monitor activities, and of the actual use of the criteria for effectiveness, efficiency and efficacy, a description of problems and solutions involved in the implementation of customer activities, a description of problems and solutions involved in the implementation of monitor activities, and an explanation of the choice of (non)performance. All items were written by the researcher. The model produced at  $t_1$  was used as a starting point.

The first step, consisted of a discussion of the new results of the survey of 1997 in comparison with the results of 1996. The following questions were asked: ‘What do you think of the change in the results?’ and ‘Do you agree with the change in the results?’. It provided a link between the quantitative survey results of 1996 and 1997.

*For example, the results of the survey of 1997 for case 239 showed that the pharmacy manager was in the cluster with customer-product-process for thought. In comparison with the results of 1996 (product-customer-process) customer moved from second to first position, product moved from first to second position, and process remained in third position. The results for action in the survey of 1997 showed that the pharmacy manager was in the cluster product-process-customer. In comparison with the results of 1996 (process-product-customer) customer remained in third position, process moved from first to second position, and product moved from second to first position. The pharmacy manager could identify herself with the results for thought and action. She wished to stress customer, product and process respectively. However, mainly product and process actions were still being performed. The action cannot completely work for the customer. An aspect of this is that it is not likely that customers will be attracted if the product is not good. If the product is poor you are selling ‘air’; of course you can do that, but the pharmacy manager does not want to do that. The pharmacy manager has owned the pharmacy for two-and-a-half years; that makes process actions easier than a year ago. Through additional experience she has come to know exactly what she wants, and is now going straight for the goal. That is probably why process moved from first to second position in action.*

*In another example, the results of the survey of 1997 for the case 1015 showed that the pharmacy manager was in the cluster with product-process-customer for thought. In comparison with the results of 1996 (customer-product-process) customer moved from most important to least important, product moved from second to first position, and process moved from third to second position. The results were of no use to the pharmacy manager. He agreed with the results for thought for 1996, but not with those for 1997. However, the pharmacy manager also notes that product and process are naturally very important: it is the basis from which you work. The results for action of the survey of 1997 showed that the pharmacy manager was in the cluster*

*process-customer-product. In comparison with the results of 1996 (product-process-customer) customer moved from third to second position, process moved from second to first position, and product moved from first to third position. The pharmacy manager agreed in such a way that he could explain the results: that customer had moved to the second position was the result of a lot of materials being offered by institutions and organizations. That process actions scored so well was also explicable: the pharmacy manager had become managing partner in the last year. That is possibly the reason why a lot more process actions were performed.*

The second step, involved an assessment of the actual performance of intended customer activities; e.g. Was the main activity 'organize consultation' performed? Were the sub-activities, for example, start off with colleagues, have consultation only for diabetes (only during first half year), determine target group etc. actually performed? The tables of the first interviews were used and the activities and sub-activities were marked with ✓ (activity succeeded), ✗ (activity not succeeded), and ? (unknown). Intended activities and intended sub-activities were qualified separately. It was possible to qualify an activity as successful even if most sub-activities were unsuccessful, and vice versa.

**Table 6.4.** shows that the first activity 'organize consultation' was successful. However, the second activity 'introduce KNMP self-care standards' was not. This is remarkable since all sub-activities were marked as being successful. How is this possible? In the interview all activities and sub-activities were marked by the pharmacy manager. The criterion for the marking was the success per individual activity and individual sub-activity in the perception of the pharmacy manager. Consequently, the activities were qualified fairly separately from the sub-activities. The activities were marked before the sub-activities; the pharmacy manager firstly marked all activities such as: 'organize consultation', 'introduce KNMP self-care standards' etc. The pharmacy manager then marked all sub-activities such as: 'start off with colleagues', 'have consultation for diabetes (only during first half year)' etc.

It seems that the model was no longer an accurate reflection of reality, the real world around the manager had changed so to say. Life is obviously not static, activities change all the time. In order to keep up with reality, models have to be adapted all the time. With the help of criteria for efficacy the manager was able to do so, and to change the model whenever necessary. Vital sub-activities were seemingly missing, for example, with the activity 'introduce KNMP self-care standards' and the related sub-activities of **table 6.4.** How else could it have been concluded that the activity 'introduce KNMP self-care standards' was unsuccessful, although the sub-activities were successful? Above we presented an answer: something had happened in terms of the control action of SSM. The model appeared not to be a good representation of reality; the model might have been adapted by the manager. In general, the control action of SSM relates to the process in which the activities of the

model are monitored with criteria 3xE, and also relates to the process in which the consistency and usability of the model itself is monitored. The information of **table 6.4.** suggests that the structure of the model had been adapted. This table shows that additional and not-planned sub-activities were vital for the introduction. For example, if the KNMP standards had been introduced, this might have led to problems experienced by assistant pharmacists with their actual use. Also, not all of the activities relating to the organizational change could have been planned in 1996. To avoid a situation in which vital information was missing, the pharmacy manager was invited to indicate whether an activity or sub-activity was unsuccessful (✖) or unknown (?). This explanation will be described in the forthcoming fifth step (**table 6.6.**) and sixth step (**table 6.7.**). However, careful analysis of **table 6.4.** in conjunction with **table 6.5.** shows that the pharmacy manager in the example had additional information. The fifth sub-activity ‘discuss new AMP results (so-called ‘mystery guests’: assessors pretending to be real customers) after some time’ shows that the results were discussed successfully, but nothing more than that. In addition, **table 6.5.** shows that the actual AMP results were poor. As a result, the pharmacy manager had the perception that the second activity ‘introduce KNMP self-care standards’ was unsuccessful (**table 6.4.**).

Functional area	Intended activities 1996	Intended sub-activities 1996
oral information	✓1-organize consultation	✓2-start off with colleagues ✓3-have consultation for diabetes (only during first half year) ✓4-determine target group ✓5-involve patients' association ✓6-approach general practitioners (GPs) ✓7-organize consultation once in every two weeks ✓8-see publicity via local paper, via diabetes nurse from hospital, via pharmacy
	☐1-introduce KNMP self-care standards	✓1-assess possibilities by pharmacy manager ✓2-study self-care standards by pharmacy manager and assistant pharmacists ✓3-discuss methodology of asking questions: WHAM (Who is the patient and what are the symptoms? How long have the symptoms been present? Action taken; what medicines have been tried? Medication being taken for other problems?) ✓4-introduce standards ✓5-discuss new AMP results (mystery guests) after some time
written information	✓1-produce brochure for foreigners	
	✓produce pharmacy brochure	
	☐1-organize direct mail	

**Table 6.4.** An example of a description of the successfulness of intended activities and sub-activities.

The third step, involved an assessment of the actual use of the criteria 3xE; criteria for efficacy (does the means work?), efficiency (what is the amount of output divided by the amount of resources used?), and effectiveness (is the transformation meeting the longer term aim?). The criteria were marked in the same way as the success of intended activities and sub-activities: ✓, ☐ and ?. A minimum requirement was that all unsuccessful activities or activities in which the outcome was unknown were clarified by the pharmacy manager.

*In the example the applied criteria were:*

<i>Efficacy:</i>	<ul style="list-style-type: none"> <li>✓-positive reactions from patients</li> <li>✗-positive reactions from GPs→ GPs do not refer to the diabetes consultation in the pharmacy and do not refer to the leaflets for foreigners</li> <li>?-positive reactions from insurance company→ no reaction received</li> <li>?-increased need for information by the patient→ hard to compare with preceding years, because there is more material at the moment; there is a demand for material</li> </ul>
<i>Efficiency:</i>	<ul style="list-style-type: none"> <li>✓-stay within the budget</li> <li>✓-the flow of prescriptions should be in order→ the pharmacy business should be kept going.</li> </ul>
<i>Effectiveness</i>	<ul style="list-style-type: none"> <li>✓-the number of prescriptions at least stable</li> </ul>

The fourth step, involved an assessment of the actual performance of monitor activities; e.g. Were the monitor activities related to ‘organize consultation’ performed? As with the activities, the tables of the first interviews were used and the monitor activities were marked. The intended activities and the monitor activities were qualified separately, as with the qualification of activities and sub-activities. In addition, it was possible to qualify a monitor activity as having been successful even if most monitor sub-activities had been unsuccessful, and vice versa. It should be noted that the qualification of ‘organize consultation’ in the *monitor tables* was only a label to qualify all *monitor* activities related to this specific activity. In the *activity tables* it related to the activities itself. For example, the overall qualification of the intended monitor-activities related to the activity ‘introduce KNMP self-care standards’ was: ‘successful’. Even though the introduction of the standards was not qualified as being a success, the monitor activities did their work. The monitor function was a success in the eyes of the pharmacy manager, and, as was mentioned above in the description of the activities, the model was changed. Furthermore, the overall qualification of the intended monitor-activities related to the activity ‘organize consultation’ was also: ‘successful’. That is remarkable since only one out of two intended monitor activities was a success. In fact, the monitor-activities were prioritized. The interest in the consultation was found to be a more important ‘proxy’ of the success of the consultation than the number of visitors.

Functional area	Intended activities 1996	Intended monitor-activities 1996
oral information	✓organize consultation	✓-interest in consultation ✗-consultation is occupied→ about 4 visitors per afternoon
	✓1-introduce KNMP self-care standards	✓2-pharmacy manager looks and listens ✗-AMP results→ WHAM-questions not applied yet, applied later ✓3-discuss AMP results in discussion of progress
written information	✓produce brochure for foreigners	
	✓pharmacy brochure	
	✗organize direct mail	

**Table 6.5.** An example of a description of the successfulness of monitor activities.

The fifth step, described problems and solutions involved in the actual performance of intended customer activities; e.g. ‘What were the problems faced in ‘organize consultation’?’ and ‘What solutions to the problems were found by the pharmacy manager?’. As with the criteria 3xE, a minimum requirement was that all unsuccessful activities or activities in which the outcome was unknown were clarified by the pharmacy manager.

Functional area	Intended activities 1996	Intended sub-activities 1996	Problems with realization	Solutions for realization
oral information	✓1-organize consultation	✓2-start off with colleagues ✓3-have consultation for diabetes (only during first half year) ✓4-determine target group ✓5-involve patients' association ✓6-approach general practitioners (GPs) ✓7-organize consultation once in every two weeks ✓8-look for publicity via local paper, via diabetes nurse from hospital, via pharmacy	✓1-8 -at first GPs were not enthusiastic→ was the pharmacy manager creating a too distinctive profile for himself? GPs are often afraid of 'too well-informed' nagging patients	✓1-8 -when the GPs realized that the consultation was organized for fellow-sufferers it was no problem. A trained diabetic informs a diabetic. The problem was solved via pharmacotherapeutic consultation and letters for the GPs, formulated in cooperation with colleagues
	☐introduce KNMP self-care standards	✓1-assess possibilities by pharmacy manager ✓2-study self-care standards by pharmacy manager and assistant pharmacists ✓3-discuss methodology of asking questions: WHAM ✓4-introduce standards ✓5-discuss new AMP results (mystery guests) after some time	☐-AMP results showed good score for attitude, bad score for content→WHAM-questions are still not being asked ✓2-counter folder with KNMP-standards was discussed; until recently no time for self-study: content of the folder is still not known by all assistant pharmacists	☐-self-study, and possibly discuss subjects at discussion of progress ✓2 -evaluate at discussion of progress who read the counter folder; in situation of full complementation→ self-study at home for assistants who had not yet studied the folder. If this has no effect→ possibly discuss subjects at discussion of progress
written information	✓1-produce brochure for foreigners			
	✓produce pharmacy brochure			
	☐1-organize direct mail			

**Table 6.6.** An example of a description of problems and solutions in the implementation of customer activities.



The sixth step, described problems and solutions involved in the actual performance of intended monitor activities; e.g. ‘What were the problems faced in the context of the modelled monitor activities related to ‘organize consultation?’ and ‘What solutions to the problems were found by the pharmacy manager?’. As with the criteria 3xE and the problems and solutions in the implementation of customer activities described before, a minimum requirement was that all unsuccessful activities or activities in which the outcome was unknown were clarified by the pharmacy manager.

Functional area	Intended activities 1996	Intended monitor-activities 1996	Problems with realization	Solutions for realization
oral information	✓organize consultation	✓-interest in consultation ☒-consultation are occupied, about 4 visitors per afternoon	☒-interest in consultation was disappointing→ 1-4 visitors per afternoon	☒-hang announcement poster more prominently in pharmacy; evaluate with local colleagues
	✓1-introduce KNMP self-care standards	✓2-pharmacy manager looks and listens ☒-AMP results (WHAM-questions not applied yet, applied later) ✓3-discuss AMP results in discussion of progress	☒-AMP results showed→ WHAM still not applied and attitude was good, content was not	☒-evaluate again at discussion of progress who read the counter folder; in situation of full complement→ self-study at home for assistants who had not yet studied the folder. If this has no effect→ possibly discuss subjects at discussion of progress
written information	✓produce brochure for foreigners			
	✓produce pharmacy brochure			
	☒organize direct mail			

**Table 6.7.** An example of a description of problems and solutions in the implementation of monitor activities.

The seventh step, described an explanation of the choice of (non)performance in 1997; what were the reasons why the modelled activities were or were not performed?

*For example, the pharmacy manager in case 1015 used the criterion that 'the activities should preferably be performed in a relatively simple way, easily digestible chunks being very convenient in such a situation. In addition to the [customer] activities described before, a lot of other activities have to be performed. Successful activities of other pharmacy managers make things easier: you can take up and use existing concepts. Most activities which were not performed cost a lot of time and cost more effort than the other existing activities. Sometimes an activity did not get any priority, that is why it was not performed.' In another example (case 1029), the pharmacy manager is starting to do the easiest bits of the activities he intends to carry out. 'That counts for all intended activities.' He also prefers to use existing activities, because this is easier to do. Next, he is also carrying out activities which have a direct relationship with his daily work. It is noticeable that self-study of assistant pharmacists for self-care is not included. He has not yet got down to the implementation of this. 'It has not become a part of my daily work. The problem, lack of knowledge of the team, will remain, even after a second monitoring with mystery guests.' Further, the pharmacy manager has noticed that he has made a summary for the content of the medication surveillance. That summary for self-care did not get off the ground; perhaps that has a restraining influence. 'Finally, with self-care there is less daily necessity for knowledge; there is an escape route. If you don't know the WHAM-questions, you just don't ask them. However, if you provide interaction brochures it is evident that you tell something about it.'*

### 6.2.2. Support-structure methods

Between time  $t_1$  (October 1996) and  $t_3$  (September 1996), the support structure of VNA/SAL pharmacies was studied. You are again reminded of the design of this study, described in **chapter 2**; the interviews and a repetition of the survey were made with a group of 15 VNA/SAL pharmacy managers and a group of 16 independent pharmacy managers. With two other groups of 16 independent pharmacy managers only the survey was repeated. The support structure was studied by means of a mix of qualitative and quantitative methods: questionnaires, observations, interviews, and surveys. With questionnaires and observations a description was made in order to study the support of the organizational change to the customer mix. With interviews a qualification was made for the support of the organizational change to the customer mix. With the survey the results of supported and non-supported pharmacy managers were compared between 1996 and 1997.

#### 6.2.2.1. Qualitative methods

In **chapter 2**, we showed that the VNA/SAL pharmacy managers were set apart in the design in order to study the support they received. The support was studied between the interviews of October 1996 and September 1997. As was mentioned before, the nine pharmacy managers of stichting VNA (VNA pharmacy managers) were members of the so-called 'quarter group' (a group which met and exchanged ideas quarterly) and the six pharmacy managers of SAL Apotheken (SAL pharmacy

managers) were members of the so-called 'SAL meeting' (a group which met and exchanged ideas monthly). With the exception of the SAL meeting in February, all meetings were attended by the researcher.<sup>37</sup> Firstly, questionnaires were used and observations were made at all separate meetings. Pharmacy managers were invited to describe the ideas which they had got from the meeting. At the end of every meeting a questionnaire was filled in. The questionnaire listed the customer activities modelled with SSM in 1996. The pharmacy manager could describe what new ideas were gained during the meeting with respect to these listed activities. Ideas for new activities could also be added. Furthermore, observations were made at meetings of the quarter group and the SAL meetings. Secondly, a year later, when all meetings were finished, interviews were conducted in which we aimed to find out whether pharmacy managers had been put their ideas to use and what they thought about the support structure, whether it was useful or not. As a part of the SSM-session in 1997, pharmacy managers were asked to mark their ideas. Were the ideas gained at the meetings actually used and transformed into action? Again, as with the intended activities and sub-activities, they were asked to indicate whether the idea had been used. **Table 6.8.** shows an example of the support-structure analysis in connection with the examples described earlier.

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<sup>37</sup> The support structure of stichting VNA, the so-called 'quarter group', consisted of four meetings (November, February, May and August). In November 1996 the first meeting was held at a pharmacy of the stichting VNA. All meetings were held at different pharmacies of the quarter group and one meeting at the central bureau of the stichting VNA. During the first meeting there was some opposition with respect to the observation. The pharmacy managers required an hour in which daily problems could be discussed without observations. As a consequence of this meeting, it was decided to have a first hour each meeting without the presence of the researcher. Consequently, information may have been missed. However, the pharmacy managers promised not to discuss any subjects relevant to this thesis in that hour. It was assumed that the study of the four meetings, without the first hour, was sufficient to draw conclusions about the role of the support structure of stichting VNA. The support structure of SAL Apotheken, the so-called 'SAL meeting', consisted of nine meetings (October, November, December, January, February, March, May, June, September). As with the first meeting in October 1996, all SAL meetings were held at the central bureau of SAL Apotheken in Gouda. In May 1997 after the first session of the management weekend of SAL Apotheken had taken place, and as a direct consequence of this session, it was decided to change the form of the support structure of SAL Apotheken. The pharmacy managers decided that the management weekend should be held more frequently at the expense of ordinary SAL meetings. Consequently, the number of meetings was reduced, starting in May. In addition, a second session of the management weekend was planned for October 1997. However, a total of 9 out of 12 intended meetings were still convened in *phase two*. It was assumed that the study of nine meetings was sufficient to draw conclusions about the role of the support structure of SAL Apotheken.

Intended activities 1996	Gained ideas at the meetings
-organize consultation	✘-at the meeting of 29/5→ consultations with dieticians are perhaps a suitable way of drawing attention to the pharmacy→ GPs did not react positively to this form of marking the identity
-introduce KNMP self-care standards	✓-at the meeting of 28/8→ activity had already been implemented, no new ideas were gained; I did inform my colleagues that it had not been implemented for 100%
-ideas for new activities	✓-at the meeting of 4/2→ make a list of leaflets for foreigners ✘-at the meeting of 29/5→ consider if one of the assistant pharmacists (the older one) can take a course in tropical care→ still in consideration

**Table 6.8.** An example of the gained ideas at the meetings.

In addition, as another part of the SSM-session in 1997, pharmacy managers were asked the following question: ‘What is the usefulness of the support structure?’.

*For example, the pharmacy manager in case 1015 noted: ‘You get your information from everywhere, consequently, also from the quarter group of stichting VNA. That is why this group is useful. This group consists of pharmacists who develop many activities and which are a source of good ideas. The stichting VNA has put little effort into the support of the intended activities relating to the front office. An exception has been happily made in some cases, for example, for the printing of the pharmacy brochures and the delivery forms. However, stichting VNA could do more. For example, the [so-called] formula [in which pharmacists are cooperating] of Service-apotheken are on the Internet, while we are not. That is one of the reasons why Service-apotheken is distinguishable for the patient, that facilitates communication. In addition, stichting VNA could provide more easily digestible chunks. At the moment, stichting VNA is concentrating on the internal organization and the quality of process tasks and product tasks; the back office. In itself that is a good thing. However, stichting VNA wants to be more than a conveyancing organization. Consequently, there should be more support. With respect to front-office activities there should be done more.’*

### 6.2.2.2. Quantitative methods

As we mentioned in the design presented in **chapter 2**, a year later the first survey was repeated with four selected groups: three groups of 16 independent pharmacy managers, and one group of 15 VNA/SAL pharmacy managers. Again, these groups were set apart. This time the separation was made in order to study if the support a

year later had had an impact on the results of the survey. The questionnaires of the survey were used at time  $t_0$  (May 1996) and repeated at time  $t_2$  (May 1997) for all four groups. The survey for *thought* and *action* was repeated, in the same way as in **chapter 5** but only for the selected 63 pharmacies. The main focus was on differences between the scores of 1996 and 1997 and differences between the four groups. In the data-collection method used to study *thought* of the pharmacy manager, there were 26 questions which consisted of three sub-questions with respect to the three pharmacy mixes. As with the survey the sub-questions were ranked on a scale from 1 to 3, representing *important -less important -even less important* issues. A Friedman test was applied and, in addition, some ordinary means were calculated in order to compare this ranking with the result of the Friedman test. In the data-collection method used to study *action* of the pharmacy manager, 209 out of 384 questions related to the three pharmacy mixes. The remaining 175 questions related to general issues. As with the pilot study all questionnaires consisted of binary questions (true/false). The data were processed with cluster analysis. As with the survey an agglomerative hierarchical cluster analysis was used. However the results of both surveys were used in a more descriptive way than in **chapter 5**. Only a change in the pattern of the general results and the group results over time were described.

### 6.3. Results

One of the elements of SSM is the transformation process; a process in which an entity is transformed into that entity in a changed state. In this current thesis we used SSM to study a group of 31 pharmacy managers who transformed their organization into a customer-oriented organization. SSM was not applied to the other group of 32 pharmacy managers. We should be aware that the group in which SSM was applied was selected out of the pharmacy managers participating in the survey and was very motivated to change their pharmacy organization. Before the actual implementation of this transformation process or organizational change to the customer mix, we modelled their intended customer activities in a root definition, an activity model, and related criteria, the latter comprising norms and monitor instruments. During the year-long transformation process the pharmacy managers took control action if necessary. The control action was debated at the end of that year. We argued previously that we were interested in the problems of the pharmacy managers and the help which some of them would receive from a support structure. We used SSM as a methodology to unravel the problem 'knots' experienced by these pharmacy managers.

#### SSM

In this part of the study we started with action in the real world: deliberate, decided, and willed action of a pharmacy manager; in SSM labelled as 'purposeful action'

(Checkland and Scholes 1990: 2). We assume that a model could be useful in explaining problematic aspects of the real world; it is a device to look at the real world. So what we would like to do is to ‘catch’ some of this action in a model. A step from the real world to the modelled world is, among other, expressed in the difference between ‘action’ and ‘activity’. In SSM the real-world ‘purposeful action’ would then be changed into the modelled ‘purposeful activity’. A general expression of purposeful activity is the root definition, defined as: ‘do X (what?) by Y (how?) in order to achieve Z (why?)’. With this root definition we are starting to model the real world.

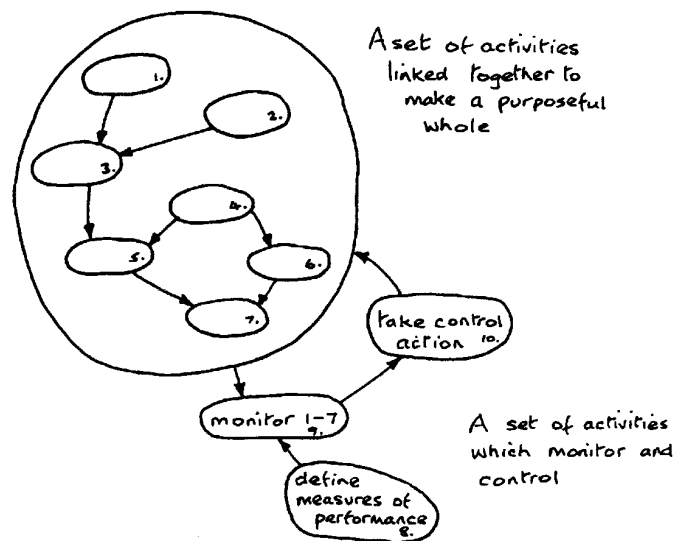


Figure 6.3. The form of activity models in SSM (Checkland and Holwell 1988: 15).

Before we start to discuss the content of our models, we will describe some general system concepts following the issues raised in **chapter 3** in order to be able to construct and explain the models. In modelling with SSM we have to make sure that the set of activities is linked together in order to make a purposeful whole (**figure 6.3**). SSM is ‘systemic’ in such a way that activities are described in a holistic way. We have to think in wholes. In connection with this issue Checkland and Scholes (1990: 18-19) have described the essence of systems thinking and related it to ‘emergent properties’, ‘layered structure’, and ‘processes of communication and control’. These three concepts clarify their meaning of the term ‘system’. The concept of emergent properties is described as being the properties which refer to the complex whole and which are meaningless in terms of the parts. The example given by Checkland and Scholes provides some help in the explanation of this concept. “The vehicular potential of a bicycle is an emergent property of the combined parts of a bicycle when they are assembled in a particular way to make the structured whole”

(1990: 19). It is evident that a bicycle chain only will not help us with cycling. We are in need of the other parts to assemble the bicycle and in order to be able to cycle. Checkland and Scholes also noted that the concept of emergent properties relates to existing layers in a hierarchy, which has been called 'layered structure'. "In the biological hierarchy, for example, from atoms to molecules to cells to organs to organism, an observer can describe emergent properties at each layer" (Checkland and Scholes 1990: 19). Furthermore, they argued that "the hierarchically organized whole, having emergent properties, may in principle be able to survive in a changing environment if it has processes of communication and control" (1990: 19). We noted earlier that we were interested in problems of pharmacy managers transforming their pharmacy into a customer-oriented pharmacy. Let us therefore present some examples from pharmacy practice and discuss some of their problems in terms of emergent properties, layered structure, processes of communication and control, and other issues relevant to SSM and related theories which were described in **chapter 3**. This means that we sometimes will have to 'travel' between different items discussed in SSM (and these related theories) in order to provide you with a sketch of wholes.

#### *Root definition*

A pharmacy manager produced the following root definition:

*"a customer-relations improvement system (X) via content and attitude for the provision of information, internal organization, and stock control (Y) in order to achieve better quality of life for the patient, increased efficiency in the use of medicine, and reduction in the cost to society (Z)" (case 1004).*

This root definition provides us with information about what the pharmacy manager would like to do: she would like to make a system able to improve her customer relations. The 'how' question was attributed to content and attitude towards information, internal organization, and stock control. Since this is rather abstract we are in need of more detailed information. We would have to ask her about a so-called 'lower layer' in which content of information can be translated into activities, for example, 'provide OTC consultation', 'improve information about prescription medicine', and 'organize project for diabetes type II'. At another lower layer, the sub-activities necessary to get the job done are described. For example, in order to organize the diabetes project she would 'prepare the consultation', 'educate specialized assistant pharmacists', 'perform medication surveillance', 'involve GPs', 'invite the patients', 'perform consultation', and 'pay attention to the patients' way of life'. Here we see the layered structure described before. We assume that these activities and the related sub-activities are linked in such a way that they would make up a purposeful whole. We did not test whether these activities and sub-activities were the only or best possible option in the light of the means Y, nor did we test

whether the activities and sub-activities were the best to achieve the aim Z as we have previously claimed (**chapter 3**) that there was no best way to organize quality. We aimed for a reasonable explanation of why the pharmacy manager selected this particular root definition and set of activities and why they were qualified as being successful or not. That there is no best way to organize quality is illustrated by some of the following examples. In these examples we see that what was experienced as a success by one pharmacy manager could be labelled as a failure by others.

*Managers of various pharmacies participating in the activities of the KNMP National Children's Week and having a comparable outcome, were divided in the way they qualified the week. For example, the manager in case 254 qualified the week as being unsuccessful. He argued: 'It was a flop, although it was a good PR action. The whole afternoon the pharmacy was full with children. Well over 20 children were put make-up on. However, I did not give any professional advice. I am not a pharmacist for that.' The next time the KNMP selected a similar theme he would again participate, although he would invest less time and modify the content of the project personally. In contrast, the manager in case 1014, qualified the week as being successful. He argued: 'As a PR action it was very successful, over 200 children were put make-up on. The number of appointments was a bit low'.*

*In another example, in case 1031, the activity 'provide pharmacy brochure' was not realized due to delays caused by cooperating with stichting VNA. The design was compared by colleagues within the quarter group. However, the pharmacy manager noted that it was worthwhile waiting. The prototype was very good. The new brochure would soon be ordered. In case 1027, a pharmacy manager participating in the same brochure project as case 1031 also noted that the activity 'provide pharmacy brochure' was not realized due to delays caused by cooperating with stichting VNA. However, this pharmacy manager argued that he disliked the colours which were chosen by stichting VNA. His personal preference was different to the cooperatively-produced brochure. Consequently, he was hesitating about ordering the brochures.*

#### *Emergent properties*

Here we see what Checkland and Davies (1986: 109) described as "one man's 'better' can be another's 'worse'." In terms of 'purposeful wholes' the pharmacy manager in case 254 determined that the activity 'organize Children's Week' did not link to the other activities. It was not a purposeful whole in relation to the other activities: in his perception they all linked to a professional contribution in order to secure the survival of the pharmacy (Z). Also, the other activities did affect the emergent properties of his customer-relations system (X). He concluded that a part of his system had failed, next time he would not perform the activity in the same way. This would affect his future operations. In the bicycle example of Checkland and Scholes (1990: 19) this person would, for example, conclude that a windscreen was not an appropriate part of his whole since his Y consisted of 'feeling the wind' in order to feel free (Z). Here, the pharmacy manager concluded that the Children's Week did not match with his root definition. For case 1014, the Children's Week was linked to the other activities which for him comprised a purposeful whole



together. The pharmacy manager expected the week to be a good PR-action (Y) in order to 'improve customer relations' (Z) and it worked accordingly. The emergent properties of the system had not changed; the bicycle still looked the same so to say.

In the other example in cases 1031 and 1027, we have two managers who were both involved in the same pharmacy-brochure project. We note that the disapproval in case 1027 was related to a specific aspect of this activity, namely the colour scheme of the brochure. He argued that he disliked the colours but failed to argue how relevant this was in the light of the other activities or the root definition. However, in terms of SSM we would have agreed with the pharmacy manager if he had explained that the brochure would not be a brochure anymore just by selecting these colours or that the function of the brochure in relation to the other activities and Z was somehow negatively affected. In the terms of Checkland and Scholes (1990), he would have experienced that the colour of the bicycle decided upon was important enough to conclude that the bicycle was not a bicycle anymore. The emergent properties of the whole would have been meaningless in this particular colour. However, we find it hard to believe that the colour scheme would affect the 'continuity of the pharmacy' (Z) in case 1027. In this situation he would have argued that the colour was vital in order to make the brochure a purposeful whole; for example, that with another colour more customers would be satisfied, and consequently the continuity of the pharmacy would be improved. The pharmacy manager did not discuss the contribution to Z; he introduced merely his personal preference rather than the function in relation with Z.

#### *Weltanschauung*

In addition, we have to say something about 'Weltanschauung' in general, and in particular about the 'Weltanschauung' of these pharmacy managers. Within SSM the core of the CATWOE is the pairing of the transformation process T and the 'Weltanschauung' W. Checkland and Davies (1986), in reaction to a note by Fairtlough (1982), acknowledged that in his earlier work (Checkland 1981) Checkland used eight different senses of the term 'Weltanschauung'. This was found to be rather confusing. They solved this problem by redefining three new Ws, namely: W<sub>1</sub>, W<sub>2</sub>, and W<sub>3</sub>. W<sub>1</sub> is a device to help model building and that is all it is. W<sub>2</sub> and W<sub>3</sub> relate more directly to the problematical situation and were used for the purpose of analysis in this thesis. W<sub>2</sub> is about relevancy of purposeful activities in

the eyes of the pharmacy manager,  $W_3$  is similar, but concerns a wider social reality.<sup>38</sup> Checkland and Davies (1986) added that it is well-known that one man's 'better' can on occasion be another's 'worse'. We should hence be aware of the fact that differences in what is perceived by pharmacy managers as being an improvement would exist. We note that this is not very new information, since Vickers (1965) mentioned that experiences from the past do influence our sets of norms today: "It is neither possible nor desirable that such a body or anybody should make value judgements otherwise than from within a social-historical situation, and about a social-historical situation" (1965: 101). Consequently, it seems obvious that managers with a different social-historical background may value similar situations differently.

However, within this thesis we are especially interested in what the contribution to the learning cycle is for the individual. SSM brings with it this idea of the learning cycle, meaning that each time round the cycle the world experienced is a somewhat different place. We hope to have learned something from our past experience. Within this current thesis learning could mean performing, adding, changing or even striking the intended activities. In principle, this learning process is never-ending.

In the first example above, we in fact see that the  $W_2$  of the pharmacy manager in case 254 changed. Before, he expected that the KNMP National Children's Week would make a contribution to the Z 'survival of the pharmacy'. After the week the manager was not satisfied with the actual contribution to Z. He expected a more professional contribution instead of merely a PR operation. In addition, on the level of  $W_3$  the pharmacy manager also changed: in similar projects he would modify the project in such a way that it had a more satisfactory contribution to Z. In future, projects would be shaped or re-shaped in such a way that they would match with his professional contribution in order to secure the survival of the pharmacy (Z). Consequently, we would expect this learning to affect future operations. In contrast, since the pharmacy manager in case 1014 was satisfied, the  $W_2$  and  $W_3$  did not change. The result was as he expected. Neither the taken-as-given assumptions relating to the relevancy of the activities or the assumptions relating to the wider

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<sup>38</sup> In a more formal description, Checkland and Davies (1986: 109-115) defined  $W_1$  as "that taken-as-given set of assumptions about the world which makes a particular root definition meaningful. The several versions of  $W_2$  relate to the taken-as-given assumptions which render certain purposeful activities relevant in the eyes of the would-be problem solvers to improve a problematical situation.  $W_3$  relates to the problematical situation which is itself set in a wider social reality.  $W_2$  is thus similar to  $W_3$  but narrower in scope." They advised us to use the category  $W_1$  for the modelled world, 'below the line' of the seven-stage model.  $W_2$  and  $W_3$  should be used for the real world, which is 'above the line'. In this thesis  $W_1$  was used merely as a tool to model the real world and will therefore not be described in our further analyses. We concentrated on the real world; in particular the  $W_2$ , and additionally the  $W_3$  were used in the analyses of cases 254, 1014, 1031, and 1027 below. For reasons of practicality, however, the term 'Weltanschauung' or 'W' has been used within this thesis to indicate that  $W_2$  or  $W_3$  had been discussed.

social reality changed. This purposeful activity was relevant in the eyes of the pharmacy manager in order to achieve the Z 'improve customer relations'. Within this context, it could be expected that he would also continue other forms of cooperation in a wider social reality. Since he was enthusiastic about the result of the cooperation we could expect him to participate another time again in the same project ( $W_2$ ) or in another cooperation project with the KNMP as well as with other organizations ( $W_3$ ) in order to 'improve customer relations'. With respect to the learning cycle he had 'learned' that participation is worth the effort in terms of this particular long term aim Z.

In the second example, we can see that the  $W_2$  and  $W_3$  of the pharmacy manager in case 1031 did not change; he was satisfied with the brochure in terms of the Z 'realize customer relations'. Again, with respect to the learning cycle, we would expect the pharmacy manager to have 'learned' to continue his contribution to the same project or another similar project in the light of his aim Z. However, in case 1027 we did not observe a change in  $W_2$  or  $W_3$ . The pharmacy manager argued that he disliked the colours. We described above that this argument would be sensible in terms of SSM if the colour had negatively affected the emergent properties of the system, 'the bike was no longer a bike', or a negative contribution to aim Z, *not* 'feeling free'. In terms of contribution to the 'continuity of the pharmacy' (Z) the pharmacy manager did not use similar arguments. Although he was not positive about this particular result of the cooperation we cannot say much about his participation in future. The pharmacy manager said nothing about participation in similar future projects of stichting VNA. However, according to our data we may doubt whether there had been a change of  $W_2$  and  $W_3$ . He mentioned that the selected colour of the brochure was merely not in accordance with his personal preference. Based on this argumentation we would therefore question a contribution to the learning cycle since he did not mention a change. He did not argue that his world had changed or that he would do the project in another way for future operations in order to improve the link with Z.

#### *Formulation and use of the aim Z*

Within SSM we now described some problems observed with respect to purposeful wholes, emergent properties and Weltanschauung. However, we have not yet raised the question of why the pharmacy manager intended to perform the activities. The answer should be in the Z of the root definition. Let us now go back to our earlier root definition so that we can discuss some problems with respect to the formulation and use of the Z in pharmacy practice.

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*“a customer-relations improvement system (X) via content and attitude for the provision of information, internal organization, and stock control (Y) in order to achieve better quality of life for the patient, increased efficiency in the use of medicine, and reduction in the cost to society (Z)” (case 1004).*

Before, in **chapter 3**, we noted that Simon (1945) had described some well-known problems with respect to means and ends. He warned us of incompletely or incorrectly stated ends, the impossibility of complete separation of means and ends, and the tendency to obscure the role of time. In contrast, it was noted that Vickers was not a great fan of this means-and-ends approach at all. Vickers (1965) argued that establishment and modification of relationships through time is more important than the endless strive for goals and, in addition, no end or goal can ever be more than a means. In terms of SSM, therefore, we could at least expect problems with the formulation of incomplete or incorrect Zs, some kind of overlap between Ys and Zs, and that Xs, Ys, and Zs could change over time. However, the change over time would be rather interesting, especially if the change related to the learning cycle of SSM (you are reminded that we adopted time as an important constituent in our design; compare **chapter 2**). We would therefore not expect problems but insight into the learning cycle with respect to time.

Although it is hardly possible to judge whether the formulated ends were incomplete or incorrect, we did see that in our example of Z ‘better quality of life for the patient, increased efficiency in the use of medicine, and reduction in the cost to society’, the pharmacy manager in case 1004 argued a year later that her Z was in no way achievable. She argued that her Z was formulated too abstractly and vaguely. In terms of emergent properties we would be interested in the relation between Z and the activities. Does Z provide us with an achievable goal which is related to the linked activities of the model which together make up a purposeful whole? The modelled activities were, for example, ‘provide OTC consultation’, ‘improve information about prescription medicine’, and ‘organize project for diabetes type II’. These activities were the parts to make up the whole: a transformation process T in order to achieve Z. If root definition and activities made up a purposeful whole together, we could assume that the implementation of T, by performing the modelled activities, would change the pharmacy in the direction of Z. If we want to assess this transformation T, we need criteria for monitoring this change. In Simon’s terms (1945) this would be problematic since the formulation of Z seems rather incomplete or even incorrect. However, we would argue here that we prefer the arguments of both Vickers (1965) and Checkland and Scholes (1990). Following Vickers (1965) we would argue that the establishment and modification of relationships through time is more important than the endless strive for goals. In this current example, we can actually see that change and learning is at stake. Following Checkland and Scholes (1990) we would be in the learning cycle if, as in case 1004, the manager concluded

that her past Z had been rather abstract, vague, and unachievable. In terms of emergent properties we would argue that the link between activities and Z is vital. If there is no link, then either the Z or the activities are meaningless. In case 1004 we can in fact see that, even although all modelled activities were performed, the pharmacy manager experienced her Z and related criteria as being rather useless. In the example of Checkland and Scholes (1990) the person would, for example, conclude that cycling by feeling the wind was a good thing to do but *not* in order 'to feel free' (Z) because this aim was too vague and hence useless for her purpose. Furthermore, she would not know how to monitor the feeling of freedom. This person could, for example, formulate a more practical Z like: cycling by feeling the wind in order 'to improve my physical condition'. The improvement of her physical condition would then be monitored by the average speed of her daily home-to-work cycle distance, for instance. This would make us conclude that a part of the initial model was rather meaningless in the real world of the pharmacy manager. It seems that the performance of the modelled activities in the real world did not suffer from this problem in the model. We could agree, but not before showing that there is another problem: the problem of control and control action. In other words, has the pharmacy manager made sure that she knows where she is going?

#### *Formulation and use of criteria for effectiveness*

In this section, and also later in the sections about criteria for efficacy and efficiency, the term criteria will be used. The term criteria refers to norms as well as to measurements.<sup>39</sup> Some of the problems in the use of the criteria for effectiveness relate to a well-known problem described in the systems theory of control of De Leeuw (1994: 69-72). De Leeuw noted that with control we could expect the influence of the environment to be present, and, consequently, it is not very easy to determine if the realization of goals is the partial or complete result of the control. It does not mean that the control did not function if the objective was not realized, and, likewise, if the objective had been realized it is questionable if this were thanks to or in spite of the control. Following Simon (1945), this appears to be a more operational problem: how we can actually support decision-making in a pursuit of

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<sup>39</sup> Checkland and Scholes (1990) do not provide us with a clear distinction between norms and measurements. Although they distinguish 'measures of performance' and 'monitor' and it is clear that the 'monitor' can only take place with information from the 'measures of performance' and the activity model, they fail to give a description of the both terms useful in this context. In relation with this issue, Wilson (1984: 251) argued: "Assessment of the control information ... enables the controller to direct control action to whichever activity is unsatisfactory. The decision on whether or not to take control action would be dependent upon the norms for performance set for each activity." Consequently, we would argue here that norms are the measures of performance with which a certain activity, set of activities or model can be judged. The measurements or monitor instruments are the instruments which visualize or monitor to what extent the norm has been achieved.

ends. He determined some problems in this context: ends are often incompletely or incorrectly stated, the complete separation of means and ends is impossible, and there is a tendency to obscure the role of time. We also noted that Vickers (1965) distanced himself from this perception of means-and-ends. Vickers preferred “standards or norms, rather than goals, and the focus on goals is replaced by one on managing relationships, according to standards generated by previous history” (Checkland and Holwell 1998: 47). However, we stress that it is not easy to define good norms and monitor instruments for effectiveness. In connection with this issue, we have to keep in mind the warning of Schön (1983) that, it would be hard to diagnose signs of trouble, especially how to find out what is wrong. We observed a similar problem at the pharmacy managers. For example, although the norm ‘a good score on a telephonic customer-satisfaction study’ seemed a good norm for monitoring ‘customer satisfaction’ (Z), it was still hard to be sure whether the realization of goals was thanks to or in spite of the control. Moreover, if we unravel the Z of the pharmacy manager in our previous example (case 1004), we see that it was based on some meso issues in the pharmaceutical sector: quality of life, efficiency in the use of medicine, and reduction in the cost to society. Compare her aims with, for example, the definition of pharmaceutical care that was given by the Special Interest Group (SIG) for pharmaceutical care of the KNMP/WINAp: “pharmaceutical care is the care of the pharmacist and his staff for the individual patient in pharmaco-therapy to improve the Quality of Life of the patient” (Venema 1998e: 738). In discussions on the meso level between authorities, KNMP, wholesaler, industry, patients’ association etc. it has been suggested that the community pharmacy sector as a profession should contribute to the quality of life with efficient use of medicine at least cost (Wieringa *et al.* 1998). It is clear that this discussion is taking place on the meso level. These aims represent a strong ethical involvement of the profession in the quality of life of the patient. Within this definition the profession does more than ‘just’ provide the medicine. That is indeed very positive; but is it usable in terms of the managerial activities of the individual pharmacy manager? We would argue that it is hard to transform these goals into tacit actions; if formulated like this they would hardly be usable within the individual pharmacy practice. How would we determine what a better quality of life for the patient consists of? What is better quality of life? Even if we knew what it meant, how would we define a norm and a proper measurement? The same goes for ‘increased efficiency in the use of medicine, and reduction in the cost to society’, though, it should be noted that the pharmacy manager in case 1004 did model norms and related measurements. She formulated ‘an improved use of medicine assessed in a longitudinal-comparative study’, ‘an improved provision and use of medicine for diabetics type II’, and ‘an improved provision and use of medicine for COPD’ as norms for effectiveness in order to be able to monitor and take control action if necessary. What she did is translate the meso goal to criteria on the micro level,

especially the diabetes and COPD. However, during the year she did not perform any of the modelled measurements and consequently did not take control action. She argued that the norms and monitor instruments were not used due to the 'vagueness of the criteria'. She added that the performance of a longitudinal-comparative study was 'in no way achievable'. Next time she would change the measurement related to the norms. In order to monitor the improvement of the provision and use of medicine for diabetics type II and COPD, she would agree with the assistant pharmacists' proposal, checking patient compliance via assessment and description of changes in the medication and asking patients for an explanation.

If we compare case 1004 with the description of Schön (1983) we have to note that this so-called 'reflection' is rather special. Schön (1983) argued that managers reflect on their reflection-in-action seldomly. However, we could easily argue that this itself is a part of the layered structure of the modelled world of SSM. This structure would impose the possibility of another monitor: the monitor of the monitor. Checkland and Scholes (1990) referred to this structure with the term 'layered structure', describing a more general feature of systems which can be, for example, sub-systems of other systems etc. However, here it is somewhat special since the structure was not modelled but only observed in the real-world behaviour of the pharmacy manager; the monitor activities were evaluated and control action was performed. The pharmacy manager changed her monitor instrument into an instrument more adequate for her purpose. Although the modelled monitor activities were not performed, it should be noted the learning effect for this pharmacy manager seems to be high since she would not use these criteria next time. She had changed her model, so to speak. Following the example of Checkland and Scholes (1990) she had concluded that the combined and assembled parts of her bicycle did not create a bicycle and decided that her bicycle had to be assembled from other parts. Next time she would do it in another way: we would expect this experience to have affected her purposeful action for future operations. Next time this particular Z and related norms and monitor instruments would not be used by this pharmacy manager. It is however remarkable that these were formulated in the first place.

In many other cases there was no intervention on the basis of criteria for effectiveness; most of these criteria were met, although the quality of these proxies was doubtful. The linking of criteria with Z seemed rather loose, open to misconstruction or misinterpretation. Nevertheless we stress that it is hard to find workable criteria. For example, in case 043, the Z 'customer relations' was monitored with the norm 'stability of the number of prescriptions'. This confirms the relevancy of the statement of Schön (1983) that it is hard to assess how we can find out whether something is wrong; even when the monitor is performed. In the situation of case 043, we could as well argue that other factors influenced the achievement of the

norm. For example, a good contact with the GPs, lack of alternative pharmacies for the patient (in a small village), barriers visiting another pharmacy ('go to another pharmacy') could also have resulted in the 'stability of the number of prescriptions'. It should be clear that we have not got round to any fixing of the problem. Following Simon (1945) we would say that the connection between means and ends is unclear. In other cases we see that achievement of the norms for effectiveness was visualized in using 'hard' measurements like counting the 'number of patients' or the 'number of prescriptions', and sometimes measurements like 'customer-satisfaction studies', 'turnover', or 'profit'. Fewer measurements were 'soft'; these included 'reactions of customers', 'reactions of the GPs', or a 'good atmosphere in the team'. Two statements should be made here. The first statement is: soft measurements 'just' provide impressions of the achievement. For example, in case 1028, the pharmacy manager intended to 'improve the information' and monitor this with a 'personal impression'. We could argue that a personal impression would not be enough to conclude that the information was improved. We would then be in need of harder data, for example, the number of contacts at the counter, the nature of questions at the counter, the time spent on communication at the counter etc. However, another second statement could be made: soft measurements provide a rich impression of the achievement; richer than, for instance, any customer-satisfaction survey. For example, in case 160, the pharmacy manager argued that he was not interested in the results of a customer-satisfaction study. That would turn out to be the creaking door and the parking space. "I know that, I have seen enough of my colleague's results." It should be stressed that we have no preference for either 'hard' or 'soft' measurements. It is assumed that both measurements could be applied and yield relevant information. It should be recalled that Vickers (1965) supported this idea by arguing that with value judgements of appreciation we have no external 'objective' criteria. The correctness cannot be proven. In this present thesis we were more interested in the usability of the criteria. If we look at the data in this way, we see that it is hard to define usable criteria especially in the light of the aim Z. Pharmacy managers are in need of usable norms and proper measurement tools to visualize the achievement of such norms, and by which the purposefulness of their actions may be improved. We also note that the support of the KNMP, for example, is poor with respect to these micro issues. Although they are a good source of new ideas, organizations like the KNMP fail to give proper support in formulation and measurability of goals for individual pharmacy practices with respect to the customer mix. In the other areas of the triangle, represented by the product and the process mix, support in formulation and measurability of goals given by the KNMP, as well as by many other organizations, has been vividly present in the pharmaceutical sector for many years. Individual pharmacy managers are not helped with meso goals especially not if they do not know how to translate this to their pharmacy practice. They are in need of goal formulation and related evaluation applicable at their own pharmacy.

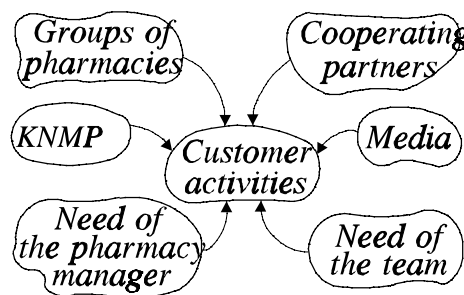


*Origin, formulation and use of Y*

As we have now described some problems in the formulation and evaluation of goals within pharmacy practice we may as well turn to the lower layers of the model: the activities and the sub-activities with which the manager intended to achieve his or her aim Z. Here we address the 'how' question: how does the pharmacy manager intend to achieve his or her goal? Within this issue we discuss the modelled Y, but mainly the related activities and sub-activities at different layers in the model. It should, however, be noted that the 'what' question will also remain an issue at stake. The modelled activities will be evaluated in terms of emergent properties: what was the contribution of this particular activity in the light of the longer term aim Z. This may lead to the conclusion that a certain activity was not a satisfying contribution to Z, which will in turn affect the 'what' of the activities. As we mentioned earlier, in order to keep abreast of reality, models have to be adapted all the time. With the help of criteria for efficacy, the manager is able to change the initial model and the composition of the activities whenever it is necessary to improve the connection between the parts and the whole. However, before we discuss the formulation and use of criteria for efficacy, we would be interested in the source of their ideas. In practice, pharmacy managers gain their ideas from various sources. In the following example we can see what factors might influence the choice of activities.

*For example, a pharmacy manager in case 254 noted: 'I learn about developments in the environment by media (newspaper, tv, radio), the consumers' magazine, colleagues within the partnership, colleagues outside the partnership, Pharmaceutisch Weekblad (KNMP), family and friends as a sounding board, assistant pharmacists and sales representatives. In addition, I choose activities and developments in the environment that have a clear added value with respect to pharmaco-therapy. I like to work on pharmaco-therapy.'*

As with case 254, a mix of internal and external sources was used in other pharmacies (figure 6.4). A main source for the intended activities was *external*, and was mostly comprised of general information about the national environment. The issues mainly covered technological and market change. It was remarkable that only a small number of pharmacy managers used the results of studies done among their own customers, for example, using a neighbourhood customer-satisfaction study as a trigger for change.



**Figure 6.4.** Sources of customer activities used in the activity models.

However, most pharmacy managers monitored what was going on in the sector via pharmaceutical literature and general media. We stress that the KNMP had a main role in the provision of information. Pharmacy managers received some of their information via national activities, such as the national pharmaceutical journal *Pharmaceutisch Weekblad*, direct mail, etc., and via regional activities, such as department meetings, quality circles, etc. Other sources of external information originated from cooperating partners. Various partners named were: GPs, hospitals, the management of homes for the elderly, the management of nursing homes, insurance companies and software houses; all these were used as sources of ideas. Another source of external information was the group in which the manager participated. For example, VNA/SAL pharmacy managers received a substantial part of extra information via central activities like meetings, study groups and newspapers. A source of *internal* information came from the personal needs of the pharmacy manager and the needs of the team. Both sources were very frequently used. Personal preferences consisted of pleasure in doing things, as well as a feeling of unease with the present organization, which stimulated the change.

Now we have said something about the *origin* of the activities, we have to say something about the *nature* of the activities also. What kind of activities did the pharmacy manager model? Before we describe these it should be clear that we will not say anything about the quality of the change with respect to the number of activities. Some pharmacy managers planned not more than five activities, others planned around 20 activities. We argue that many reasons could cause this variation. For example: the pharmacy managers with many activities could have been more active, could have had a larger time horizon, or were more used to planning and working deliberately. The others could have made more intensive use of emerging activities. We stress here that the number of activities gave no information about the magnitude of the change to Z. The magnitude of change in the model depends mainly on the detail with which the activities were described, for example, how much detail about the plans and related learning experiences was given by the pharmacy manager. It should be stressed that we might well have missed some activities with the modelling; among many others, Bertalanffy (1968: 176-178) has argued that “the main reproach against models ... is that of oversimplification.” We have to be honest: in the examples that we are about to give we can in fact see that we have missed some activities of the real world. These activities were, apparently, not visualized in the model, but might have been involved and could have affected the magnitude of change.

*With respect to the variation in the number of activities a pharmacy manager noted: ‘Not all customer activities performed were recorded in the study, a lot more has happened on the way than was described here.’ (case 254). With respect to the quality of change it can be noted that most pharmacies in the Netherlands will have participated in the organization of the KNMP*

*National Children's Week, derived from the results described (Noort 1997). However, some pharmacy managers did not mention it in their plans. For example, case 1030 did not plan the Children's Week in the activities. However, in relation to the activity 'perform direct mail' he noted that he did not perform direct mail. Only some exceptions were made like in the KNMP National Children's Week: he sent 1200 letters; probably more than anyone else. In addition, in case 160 the pharmacy manager noted: 'I was very surprised to read that activities such as BOS/MBJ (Decision Support Systems/computerized Medication Surveillance Journal), EPD (Electronic Pharmaceutical Documents) and stock control were allowed to be planned. I thought that these activities were not allowed in the list. These kinds of activities would have increased my list substantially. A year later, I would have been able to show a beautiful list of plans that had been realized.'*

As was promised above, we will now give a short impression of the *nature* of the modelled activities. In the modelled change to the customer mix, most customer activities were translated into patient activities. This means that the activities primarily could be used in health-care organizations. Most activities discussed in the field and stimulated by the KNMP were adopted. The pharmacy managers often took up national and regional activities. Many pharmacy managers intended to participate in national activities like the KNMP National Children's Week and WHAM questions.<sup>40</sup> Regional activities of the quality circles of the KNMP were also mentioned very often. In addition, pharmacy managers mostly obtained specific brochures from national operating organizations (e.g. KNMP, S&L, Pinpoint, SUI, NIGZ) rather than producing brochures themselves. VNA/SAL pharmacy managers also modelled specific activities related to stichting VNA and SAL Apotheken. For example, some VNA pharmacy managers were working on their VNA certification and some SAL pharmacy managers were preparing the 24-hour service of SAL in The Hague.

Projects with groups of patients, oral information, written information, and computerization were the most popular intended activities. Projects with groups related mainly to COPD, diabetes, and children, and occasionally to nutrition. Oral information related mainly to self care WHAM questions and consultation, and occasionally to information for incontinence and lectures. Written information related to specific information in brochures and first dispensing of medicine, and to general information in a pharmacy brochure and a pharmacy newspaper, and occasionally, to newsletter, direct mail, illuminated-news trailer, and instruction leaflets.

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<sup>40</sup> This is remarkable because, the interviews were conducted shortly after a study of the Dutch consumers' organization *Consumentenbond*. The results showed that OTC-medicine was provided with too little information; WHAM questions could help to improve this situation (Graatsma 1996). After the results were published, the KNMP among others, stressed the importance of the use of the WHAM questions again in their communication campaign (Peeters-Udding 1996). Many pharmacy managers seemed to have followed this advice.

Computerization related to medication surveillance, BOS/MBJ, stock control, and occasionally to EPD or EDI (Electronic Data Interchange) with the GPs. In addition, a variety of other subjects were mentioned. For example, improvement of privacy at the counter and/or a separate room for private conversations, OTC (Over The Counter) assortment, organization of labour, and occasionally activities related to care protocols, homes for the elderly, and nursing homes. As was mentioned before, most activities concentrated on the patient. However some activities related to customers in general, and these mainly took place at VNA/SAL pharmacies. These were activities that could very likely be used in organizations other than those to do with health care. Most popular were customer studies, registration of complaints, registration of mistakes, delivery at home, and PIN automation, and as an addition to these, it was planned to introduce coffee in waiting room, video in waiting room, music in waiting room, and a 24-hour service.

If these activities are to be performed in the real world, it can be expected that not everything will be implemented equally smoothly. Pharmacy managers would have to find tricks for problems that occur before, during or even after implementation. In this study we were interested in the problems as well as the tricks used by pharmacy managers to implement their modelled ideas. With respect to performance the pharmacy managers were asked about the problems and they were asked about what they had learned from the implementation process. It should be said that we encouraged the pharmacy manager to mention any problems. For the researcher, problems are interesting for the purpose of analyses. It was argued above that one of the main questions related to problems in the organizational change to the customer mix. More problems would yield extra insight in this process of change. Consequently, most activities did have related problems. In addition, for the pharmacy managers, it was important to mention their problems because they could learn from the other respondents. After the interview, each SSM interview respondent would receive a full report of all interviews. This meant access to the modelled plans and ideas of colleagues, and, if everybody was open in mentioning problems, the learning effect would be greater than if this openness were not present.

#### *Formulation and use of criteria for efficacy*

After sketching some of the more general features of the modelled activities in pharmacy practice we will now go back to systems theory and SSM, and following the issues raised in **chapter 3** unravel some of the problem 'knots' in the implementation process. We remind you that the term criteria refers to the norms, the measures of performance by which a certain activity, set of activities or model can be judged, as well as to the measurements, the instruments which visualize or monitor to what extent the norm has been achieved. We argued before, with the help of Checkland and Scholes (1990: 19), that "the hierarchically organized whole,

having emergent properties, may in principle be able to survive in a changing environment if it has processes of communication and control.” Processes of communication and control are thus necessary in order to survive. In addition, De Leeuw (1990) noted that evaluation is a minimum requirement for effective control. Checkland and Scholes (1990) have defined an even more specific monitor requirement: the monitor should logically be judged on efficacy, effectiveness and efficiency. In relation with this judgement, some problems were described in **chapter 3**; such as with the formulation of criteria. Vickers (1983) warned us that cultural and personal criteria are very complex. However, we are in need of criteria here. He also argued that we could expect problems with evaluation: it was hard to formulate a norm. Furthermore, he described difficulties with comparability of disparate variables, uncertainty, and the difficulty of time and added that value judgements of appreciation cannot be proved correct or incorrect, since there are no external, ‘objective’ criteria. We saw above that in SSM a similar statement was made with respect to the ‘Ws’ or ‘Weltanschauungen’: ‘better’ could as well be ‘worse’ for different individuals. In addition, Schön (1983) has warned us that the use of algorithms generally has failed to yield effective results in business management. Here we have to accept that we are in a swamp of confusing messes where algorithms can hardly be used. It is hard to diagnose signs of trouble within an organization. According to Schön (1983) the manager faces a twofold problem: how to find out what (if anything) is wrong, and how to do so in a way that enhances rather than reduces his ability to fix what is wrong, We are warned.

Since we would like to say something about the modelled customer activities and some of the related actions, we could just as well use the criteria for efficacy in our description. Let us start with an example in order to show how easy and useful the application of criteria for efficacy can be.

*In case 1029, the oral-information activity ‘implement KNMP self-care standards’ was monitored via ‘pharmacy manager looks and listens, AMP results of mystery guests (WHAM-questions not applied yet, applied later), and discussion of the AMP results during discussion of progress’. He argued that ‘the AMP results showed that WHAM questions still were not applied and that the subject ‘attitude’ was good and the subject ‘content’ was not.’ He made an intervention. ‘During the discussion of progress we determined how many of the assistant pharmacists had read the counter folder. Some assistants had not read it.’ He decided that in a situation of full completeness, assistants would make self-study at home if they did not study it before. If this had no effect: possibly he would discuss WHAM-questions and related OTC-subjects at the discussion of progress.*

Following SSM, this pharmacy manager did exactly what we would have expected him to do: in using the criteria for efficacy he had monitored the outcome of the actions. In this case, he had to conclude that the norm, the use of WHAM-questions by the team, had not been achieved; the situation had not yet improved. A main

instrument for determining this result was an external audit with so-called ‘mystery guests’ (assessors pretending to be real customers). Consequently, he changed the activities and related actions, and prepared to wait again and see what the effect was; measured by using these mystery guests. Each time we go around the learning cycle: the manager models activities, performs them, measures the result, compares the result with the norm, and makes alterations if necessary etc. Although the example above, in case 1029, seems rather straightforward, in other cases problems with the usability of the monitor results were present. In other words: it might be hard to find usable criteria to which one can really respond if something is the matter. Following Checkland (1981, 1990, 1998), Vickers (1965, 1983) and Schön (1983), it would have been difficult or even impossible to value the sensibility of the performance and control since we would not find any hard criteria which are useful for this purpose. We will, however, try and say something about the interaction between activities, criteria and control action using the learning cycle of SSM. We have argued that in terms of this learning cycle we hope to have learned something from our past experience which in turn might be useful for future operations. In addition, we have said that learning could mean performing, adding, changing or even striking intended activities, and that in principle, this learning process is never-ending. In the example of case 1029 we could actually see that the manager was learning from his past experience. In another example of the same case (1029) we will now show that the monitor itself was evaluated. Following Schön (1983), this monitor seems rather special. Schön described reflection-in-action as a reflective conversation with the situation. Some of the problems he described include the process of learning from experience and the effect of the learning on the way in which organizational problems are set and solved. He added that managers reflect on their reflection-in-action seldomly. However, within SSM the layered structure itself would logically impose another monitor possibility: the monitor of the monitor.

*In case 1029, the written-information activity ‘produce interaction brochures’ was monitored via ‘collection of impressions at the check of prescriptions and the daily practice that brochures are handed out’. The pharmacy manager noted that a collection of impressions and daily practice was too vague. The intervention was that he decided to use medication lists with a description of the signal settlement; comparable with the EPD.*

These modifications of the monitor activities based on the practice of monitor actions, were done in a similar way to how it was meant in SSM; in the learning cycle we would attribute a different meaning to the same criteria over time. Here we are: observing pharmacy managers which change their modelled world on the basis of the real world because monitor instruments were found to be too vague or unnecessary because of better instruments being available. The Weltanschauung changed for case 1029. He argued that the criteria were too vague in this situation. We also would expect the pharmacy manager to have an increased alertness for the

formulation and use of monitor instruments in general. We should note that on the basis of the available data we are not sure about this. Nevertheless, we would doubt the presence of a real norm in the new situation. Although the manager was technically able to monitor the issue of the brochures by means of the medication lists, he did not, for example, describe the numbers of brochures to be handed out. In this particular instance, improvement in the monitor is unsure. However, according to most of the material presented so far, we would expect the formulation and use of criteria for efficacy to be rather straightforward. In contrast, in the following examples we see that learning with the use of criteria is not always so easy for the pharmacy manager.

*In case 160, the oral-information activity 'increase the number of private conversations with the patients' was monitored via the norm 'positive impression of the pharmacy team and positive reactions of the patients'. However, he noted: 'I have positive reactions, but what should I do with them?' He did not intervene and argued: 'I have done the best I could, and it works.' In case 189, the project activity 'organize KNMP National Children's Week' was monitored via 'spontaneous reactions of the patients and study KNMP results'. She noted that the KNMP overemphasized favourable findings. 'The results differed from our own experiences and the experiences of the colleagues.' The local results were less positive. She argued that her own experiences and the experiences of the colleagues were more important than the KNMP findings; no intervention was made.*

We see that the pharmacy managers in the examples have made a proper measurement but experienced another problem: what to do when the norm is achieved? It does appear that the norm is not very usable. In case 160 we are not sure what has been learned. Although the manager doubted his own norm, there was no argument for not using these or similar norms for future purposes. In fact, we could say that his norm, the positiveness of impressions and reactions, did not provide him with the right sort of information to make decisions for control action. The norm was useless in terms of intervention. Although it seems rather harmless, the pharmacy manager had failed to argue why he thought the private conversations worked. There was seemingly no problem at all since the result was positive anyhow, and the norm was achieved. The measurement would have been more dubious if there had been no or negative reactions and he had concluded that 'I did the best I could, it works' in spite of this. In case 189 the pharmacy manager also was not satisfied with the result of the monitor. Differences were observed in the outcome of various measurements for efficacy. She argued that her own experiences were far more important than the national results of the KNMP. We see that she skipped one of the measurements because it did not correspond with her perceived reality and she introduced a new measurement: her own experiences and those of local colleagues. Along with her colleagues, she valued the success of the activity far more negatively than the KNMP. The results did not fit with her local situation. In contrast with the first example, case 160, we see that the pharmacy manager in case 189 presented

arguments for why she thought the measurement (the KNMP findings) was not a success. In terms of the learning cycle we would expect her to rely on local measurements with similar projects next time and formulate a related norm. In the following example the situation was much more questionable. The manager decided not to perform some monitor activities. We would seriously doubt the purposefulness of the action.

*In case 138, the written-information activity 'produce pharmacy brochure' was to be monitored via 'reactions of the customers and the taking of more than two brochures per day'. The pharmacy manager argued that he had watched the reactions of the customers, but there were no reactions. In addition, the number of taken brochures was not measured. He had the feeling that: 'If the brochure is ready, the process is ready. We inform, that is good enough.'*

With respect to case 138 above we note that the (absence of) control and control action cannot be explained in terms of the purpose 'customer relations' (Z). The manager decided not to assure himself whether and in what way the action made a contribution to Z in the real world, although he modelled two criteria for the activity. We would argue that he is not in the position to conclude that the brochures did work. The fact that there were no reactions could have been an indication that the mechanism underneath the activity had failed, or even that it had worked. Nevertheless, we do not know. There is no norm in the formulation of 'reactions of the customers'. It is evident that reactions may have various value judgements. In deciding not to measure the number of brochures either, he was relying on his feeling only. We introduce Checkland and Scholes (1990: 19) again who argued that "the hierarchically organized whole, having emergent properties, may in principle be able to survive in a changing environment if it has processes of communication and control." Processes of communication and control are thus necessary in order to survive. In contrast we note that this pharmacy manager did not have a proper evaluation mechanism. According to De Leeuw (1990) the minimum requirement in exerting control was missing. We note that his feeling might have worked very well in this situation, but might just as easily have failed. The main thing is that we do not know anything about purposefulness of the action. In this situation the absence of evaluation seems rather insensible. He had no other instrument to monitor the success of the activity other than the performance of the activity itself or the assumed logic mechanism under the activity. Schön (1983) warned us that it would be hard to find 'signs of trouble'; this pharmacy manager reacted to this difficulty by ignoring his own norms and related measurements. We stress that he is not sure where he is heading. The actions could just as well have been successful as useless.

Above we discussed some of the major problems observed at community pharmacies. We showed that pharmacy managers experienced problems with the formulation of the aim Z and finding usable norms and measurements for effectiveness. A more



general aim Z and related norms for effectiveness expanded the domain and consequently covered more activities. It was however less usable within the individual pharmacy practice for facilitating control action. Conversely, many pharmacy managers did formulate proper norms for efficacy, performed measurements, and related control action; they learned from their work and improved it accordingly. Nevertheless, others experienced problems with the criteria for efficacy. A main problem was: 'What to do with the result if a measurement for efficacy was made without having a usable norm?'. Not all managers performed control action to manage such situations. Another problem was that some pharmacy managers did not monitor their modelled activities at all. We would argue, following Checkland and Scholes (1990), that this is a rather insensible thing to do if we want to survive.

#### *Formulation and use of criteria for efficiency*

Many pharmacy managers did formulate and use norms with respect to efficiency in a rather proper way.

*In case 1027, the criterion 'perform feasibility study on the financial repercussions of reconstruction' was used. As a consequence of measures by the authorities, the reconstruction was postponed. The pharmacy manager argued that he perceived the 5% or 10% reduction on purchase, or alternative distribution channels like hospitals as threatening his position. He noted that he was experiencing financial barriers. It was unsure what would happen in the coming years. The pharmacy manager noted that he needed more time to consider the issue more thoroughly. He would wait and see what would happen in the next half year or year.*

This pharmacy manager changed his model. The expected financial consequences of the measures by the authorities were so serious that he postponed the idea of reconstruction. As a result, the feasibility study for the reconstruction was also skipped. In other cases it was sometimes hard to find workable criteria. In some cases there was no clear norm. For example, in case 001 it was hard to determine whether the norm 'available time of the pharmacist' was exceeded or not. Again, this confirms the relevancy of the statement of Schön (1983) that it is hard to assess how we can find out if something is wrong. We again have not got round to any fixing of the problem. In contrast, the norm 'remain within budget', used by the budgeted SAL pharmacy managers and some VNA pharmacy managers, was much clearer in this context. Nevertheless, in some cases no norm was formulated. Pharmacy managers argued that they would perform the modelled activities anyhow, regardless of the cost, because the cost was very low, or because the money had been put aside already. Again, as with the criteria for efficacy, we would argue, following Checkland and Scholes (1990), that it is a rather insensible thing to do if we want to survive. With these latter results it does appear that the pharmacy manager is profligate with respect to money. However, we note that some of the modelled

activities did not have a major financial impact. This nuance is reflected in the statements made by pharmacy managers.

*For example in case 263, no criterion for efficiency was formulated. The pharmacy manager argued that money does not matter with the modelled customer activities. The cost is very low, for instance, the plasticed duty roster costs 0.10 Dutch Guilders per piece.*

However, we may find these results somewhat peculiar in the context of **chapter 3** and **chapter 5**. In these chapters it was suggested that pharmacy managers had a firm grasp on the financial situation at the pharmacy. Although *inconsistency* was observed in the process mix, the results for *action* showed that financial actions were performed to a considerable extent. In terms of the modelled customer activities, we may well doubt the firm grasp of the pharmacy manager with respect to efficiency.

Were these experiences in using SSM in any way new? If we look at most applications of SSM we can, in fact, see that the studies as a whole represent a process of learning (Checkland and Scholes 1990: 271). This is not surprising since SSM has its roots in action research. Miles and Huberman (1994: 9) argued that in action research “the researchers, with local help, design the outlines of a ‘field experiment’. The data are collated and given to the ‘activists’, both as feedback and to craft the next stage of operations.” Within this action research mode Checkland and Scholes (1990: 16-17) had used hard systems engineering in messy problem situations and concluded that it failed. Consequently, SSM emerged as an alternative in which researcher and ‘problem-owner’ were entwined in order to seek accommodations for a messy problem situations. The empirical descriptions contained a process of learning: researcher and ‘problem-owner’ tried to improve the clarity in problem situations. However, in terms of formulation of root definition and criteria

in practice, little attention was paid to descriptions of what was problematic.<sup>41</sup> The researcher as an expert in developing or using SSM was vividly present in these processes. We assume that eventual modelling problems were solved straight away, because of the continuity in this contact. During the process, for example, the researcher helped to formulate a usable and consistent model, such as root definition and related criteria. We think we are correct in assuming that the expert view was used in their case descriptions, without it being seen as problematic. Although the issues were discussed elaborately in a theoretical sense, Checkland does not provide us with much information about the problems of formulating a Z for the root definition and the related criteria. In addition, it is remarkable that none of his material was analyzed in terms of emergent properties. In this thesis there was some discontinuity present: the researcher's role was more observer than participant, and, in addition, there was a time gap of a year between the first and the second SSM session. No modelling help for the pharmacy manager was provided in between these sessions. We assume that this present thesis seems in some ways also related to the traditional model defined by Miles and Huberman (1994: 47), although we took SSM very seriously. This model "differentiates expert researchers from researched-upon 'informants'." As we could expect, a year later, the differences between the model and the real world were fairly large. Therefore, problems with, for example, the formulation of the aim Z, had become enlarged and could more easily be observed. We assume that, within more classical approaches of SSM such problems would have been solved in the modelling process. In this thesis we have shown that, somewhere between the action research model and the traditional research model, SSM can also be used for the description of a learning process.

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<sup>41</sup> Let us, for example, take a look at some of Checkland's texts describing the modelling process of root definitions. In the example of Airedale Textile Company, when SSM was in the developing stages, Checkland produced a root definition for this case and added: "This was the equivalent of what would now be called a root definition although that concept had not been formulated at the time of this study" (1981: 171). In his next book with Scholes many cases were described but the formulation of root definitions seemed rather unproblematic: "A number of detailed models were built from root definitions, and these were used in further interviews to shape discussions with managers in the sector. These discussions led to further ideas for relevant systems and new root definitions were formulated" (1990: 158), or even more straightforward: "At a project meeting many potentially relevant 'relevant systems' were discussed. ... Eleven root definitions were formulated and modelled" (1990: 194-195). They continued to argue that "Technically within SSM, however, there is nothing wrong with root definitions of this type. As always what is important is that those formulating them should be doing so consciously, aware of their nature and pitfalls, and mixing them with other choices" (1990: 198). In his latest work with Holwell, Checkland has argued thus: "Treating this [mission statement of the Information Department] as a root definition produced the model shown in Figure 7.2. ... Next some models relevant to the laboratories' role in the company ... were presented. These models were discussed, argued over, modified and commented on, in small groups." (1998: 179-180).

The modelled activities showed that pharmacy managers rely heavily on existing structures rather than inventing new ones. The role of the KNMP was very important. Many of the activities or suggestions were directly adopted from the KNMP. In addition, material and services from national operating organizations were used. VNA/SAL pharmacy managers received extra activities and suggestions via the support structure of stichting VNA or SAL Apotheken. Since we have discussed the aims as well as the means for achieving the aims and related control and control action, it now seems time to discuss the role of the support structure. What was the role of the support structure within the organizational process of change?

We mentioned earlier that many activities of VNA/SAL pharmacy managers were initiated by stichting VNA or SAL Apotheken. Our interest now is in the contribution of the support structure to the implementation process. The survey results for both 1996 and 1997 showed no striking or 'alarming' differences between the supported and non-supported managers.<sup>42</sup> However, we should for the moment be careful about drawing premature conclusions about the role of the support structure. Let us therefore take a closer look at the content and contribution of the support structure from a qualitative perspective by using the results of observations, questionnaires and interviews.

#### *Stichting VNA*

The support structure of stichting VNA consisted of quarterly meetings. The meetings were structured around cycles in which plans were discussed at the end of a year. In the next year the implementation process was reported to the group every quarter. It was remarkable that the SSM activity models produced in interviews, were used as their year plan. The activities were consequently discussed at the meetings in the beginning of the year. Discussions about progress in the implementation process of these modelled customer activities and problems with this process decreased later in the year. In connection with this issue the following statement of a pharmacy manager was striking.

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<sup>42</sup> The 'survey' was repeated for 63 pharmacy managers after a year. In comparing the results of the supported and the non-supported pharmacy managers no major differences were observed (for an elaborate discussion compare **appendix 3**). In the analysis of the first ranks, the results for *thought* showed that VNA/SAL had relatively less managers with product in the first rank after a year. For *action* the first ranks were comparable. In the analysis of the correspondence no major differences between supported and non-supported pharmacy managers were observed. For our purpose, we would conclude that no major difference was observed in time with respect to the change in the position of the supported managers within the triangle, as well as with respect to the change in the correspondence between *thought* and *action* in the survey. In addition, for both surveys the pharmacy managers were asked to give their opinion about the results. Most pharmacy managers recognized the results; the acceptance of the results among supported and non-supported pharmacy managers was comparable (**appendix 3**).

*In case 1030, the pharmacy manager argued that he wants the meeting to be a mirror for the development of various activities. "The advantage of the meetings is that you can talk freely and can exchange information freely. You can compare yourself with your colleagues. Unfortunately, the mirror function was not used with respect to the intended activities of the APOM-project in the meetings of stichting VNA last year. That is a pity. We had decided to report on the progress of the implementation of the activities per quarter. That was not done. Consequently, no cross-pollination was possible."*

In addition, the questionnaires which were filled in at the end of every meeting, showed that very few customer activities were actually supported by new ideas coming from colleagues. It is therefore remarkable that most pharmacy managers qualified the meetings as being meaningful and as a source for new ideas. The exchange of ideas probably related to other subjects. Nevertheless, some pharmacy managers added that the usefulness of the meetings was too limited. We could add that there was much variation in the level of quality of ideas and the related implementation per pharmacy: some pharmacy managers working on certification of stichting VNA were far ahead of their colleagues. However, in some cases there was some cross-pollination. In the first meeting, the pharmacy manager in case 1029 was encouraged to think about his monitor activities, and his colleagues gave comment. It should be noted that the pharmacy manager concluded that his measurements were too vague after a year. We have described this in the section above *Formulation and use of criteria for efficacy*. Although he defended his monitor activities in front of his colleagues at that time, he changed some of them later that year. We saw thus that learning had taken place; he adopted some of the comments and used them to improve his monitor activities. In addition, it was remarkable that it was only the pharmacy manager in case 1030 who stressed the importance and relevancy of the structure of the meetings. During the year the others failed to keep to the structure of the meetings. The structure faded away, but the pharmacy manager in case 1030 kept using the pre-determined structure very properly, even though this put him under considerable time pressure with some activities, such as the VNA certification. Most of the other managers in the group did not do this. In terms of SSM we could argue that it is remarkable that although some pharmacy managers argued that the usefulness of meetings was too limited, in spite of this dissatisfaction nothing really happened.

#### *SAL Apotheken*

The support structure of SAL Apotheken consisted of monthly meetings. The general structure of the meetings consisted of the issues 'discussion of the minutes of the last meeting', 'round of the pharmacies', and 'questions at the end of the meeting'. In addition, a spectrum of other activities was discussed. A planning system similar to the system of stichting VNA was also used. In some pharmacies the activity models of the SSM interviews and the activity plans for the SAL meeting were similar.

Some of the modelled activities, that had been planned through this study were mentioned during the meetings. For example, in the 'round of the pharmacies', or in the 'evaluation of the main issues of the last year', the progress of implementing the customer activities was reported. We did not however observe any overt discussions or conscious exchange of ideas with respect to the intended activities. The pharmacy managers merely informed each other. There were some exceptions in some situations, but the discussions were not continued. In connection with this issue it may be of interest to look at the following example.

*At the meeting of November 5<sup>th</sup> in 1996, for the agenda item 'research plan', the pharmacy manager in case 226 noted that he had problems in measuring the effect of information. "What is the contribution of my intended activities?" He suggested making a financial reservation for the measurements. The pharmacy managers of cases 1001 and 1005 argued that the KNMP was working on this issue. The director suggested that all participants should think about measuring possibilities, rather than just the well-known subjects COPD, diabetes, and old people. However, neither item was discussed later.*

The example above shows that in one of the first meetings the pharmacy manager in case 226 was asking his colleagues to think about his monitor activities. He was having problems in measuring the effect of information. The reaction was poor, no one really helped him out. The discussion was postponed and he did not receive an answer to his request he could act on. Moreover, the questionnaires which were filled in at the end of every meeting, showed that very few customer activities were actually supported by new ideas coming from colleagues. Again, as with stichting VNA's support, the results showed that the use was very limited, although the meetings were qualified as being meaningful. In contrast, however, the pharmacy managers argued that the value of the support structure was enhanced by the reorganization of the SAL meeting during the year. This change to the structure of the meetings was quite remarkable, since it happened during the year in which the support was studied. In May 1997 the first session of the SAL Apotheken management weekend was held. As a direct consequence of this session, pharmacy managers began to realize that the results of the present structure of the SAL meetings were not good enough. This thesis was also connected to this sudden change. In connection with this issue the pharmacy manager in case 1001 argued: "We had to fill in your questionnaire at the end of each meeting: the results were incredibly poor and there was a need to improve the results." Consequently, the number of meetings was reduced starting in May, and instead, a second session of the management weekend was planned for October 1997. In terms of SSM, we see that because some pharmacy managers had argued that the meetings were put to too limited a use, something happened. The structure of the meetings changed and most of the pharmacy managers thought that it had improved.

#### **6.4. Conclusion**

Since we have now determined the results, the main questions should be raised again. They were ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer mix?’ and ‘What is the role of the support structure in the organizational change to the customer mix?’. In addition, another question was raised: ‘What can be said about SSM as an interview-support technique and a methodology for analyzing data?’.

We have argued that it is not easy for pharmacy managers to define a usable aim Z and related criteria which ‘cover’ the modelled customer activities. We have shown that a definition of emergent properties gave a powerful frame of reference by which we can judge the consistency in the model and in the real world. We could say something about the sensibility of the modelled activities and the related real-world action of pharmacy managers by using this frame. For example, by using the manager’s arguments, in order to qualify an activity in the model as a success or as a failure, showed that we sometimes could seriously doubt their consistency. We repeat that we only used the statements of the managers. In this analysis we just need a model, some flavour of real-world action added with an explanation of the manager. All three separately and together must form a purposeful whole. We exemplified situations in which the activity in relation to the root definition did form a purposeful whole, as well as situations in which this was rather questionable. Both situations were vividly present in the data.

Furthermore, we noted that the link between root definition and modelled activities was not always very strong. The modelled activities could of course also be performed without the use of a root definition and related criteria. But then we would not be able to say much about the sensibility, and that is a problem if the pharmacy manager would like to operate effectively. We stressed that formulation of aim, criteria and proper control are necessary in order to survive, and to be able to judge whether or not the modelled activities and/or the performed actions had made a contribution to the process of change, or were a waste of effort.

In terms of the aim Z we added that it was hard to find evaluation mechanisms for pharmacy managers. Some aims were rather abstract, vague and defined for a meso level. We have noted that pharmacy managers sometimes did want to change these aims and related criteria for effectiveness. However, we also added that he or she would have a hard time finding proper alternatives. We would argue that in the pharmaceutical sector, most goals, criteria and measurements for monitoring or exerting control relate to the product and the process mixes. At the level of individual pharmacy practice, pharmacy managers have a lot to learn with respect to the customer mix. We also have noted that the support of, for example, the KNMP

was poor with respect to these micro issues. Although many organizations (like the KNMP) which operate in the sector are a good source of new ideas, they fail to give proper support to the individual pharmacy manager with the formulation and measurement of aims to do with the 'travel' to the customer mix. Pharmacy managers are not helped with meso goals and evaluation, especially not if they do not know how to translate this to their pharmacy practice. They are in need of micro-instrumentalization: goal formulation and evaluation for customer activities applicable at their own pharmacy. In terms of the attributes Y and related activities and control mechanisms we have argued that many managers evaluate their modelled activities in a rather proper way. Criteria for efficacy were modelled and actually used in the control process, which sometimes led to control action. However, some managers experienced another problem: what to do with the result if a measurement for efficacy was made without having a usable norm? Given that the manager had made proper measurements, then what should he or she do if the result was either negative or positive? Not all managers performed control action to manage such situations. Another problem was that some pharmacy managers did not monitor the modelled activities. Moreover, the criteria for efficiency showed that the firm grasp of the pharmacy manager was not always as strong as was suggested earlier in **chapter 3**. Although the managers modelled the criteria properly, it should be noted that some of the modelled customer activities did not have a major financial impact.

We argued before that it was hard to define a norm and find related measurements. However, the KNMP provides Dutch community pharmacies with good information of the sector via the Foundation for Pharmaceutical Statistics (SFK): for example, facts and figures about costs of pharmaceutical care, drug consumption within a European perspective, employed pharmacy staff, substitution etc. Pharmacy managers receive a general impression of their performance through these figures since the figures relate to the meso level. They can use this material for the purpose of benchmarking. It would be helpful for the pharmacy manager to have similar information (but then formulated on the micro level) for the production of norms. Norms defined for customer activities could be useful for managers in their individual pharmacy practices. Furthermore, it would be a good idea to link these norms to related measurements so that the manager can select measurements suitable for his/her purpose. In other cases it was showed that some pharmacy managers did not perform any monitor at all. In such situations we seriously doubted the purposefulness of the action, because we had no information about what the contribution of the action was to the root definition. Looked at in terms of emergent properties: they did not monitor, for example, whether a COPD-project contributed to the other parts in such a way that the customer relations would really improve. In other words, the manager had no information about whether the system worked. The mechanism to exert control if the customer-relations system was actually more than



its parts, had failed as it were. In the profession, the necessity and importance of the monitor should be clearer: without a monitor we cannot say anything about the usefulness of the modelled activity.

The quantitative surveys of 1996 and 1997 at 63 pharmacy managers showed that no striking or 'alarming' differences were observed between supported and non-supported pharmacy managers. In addition, these results were compared with the results of some qualitative methods: observations, questionnaires and interviews. We showed that very few customer activities were actually supported by new ideas from colleagues within the support structure of stichting VNA. It is therefore remarkable that most pharmacy managers qualified the meetings as being meaningful and as a source for new ideas. In terms of the learning cycle of SSM we could argue that it is striking that nothing really happened although some pharmacy managers argued that the use of the meetings was too limited. In spite of some dissatisfaction nothing changed. We also showed that very few customer activities were actually supported by new ideas from colleagues at the support structure of SAL Apotheken. Again, as with the support of stichting VNA, the results showed that although the meetings were qualified as being meaningful, the use was very limited. Conversely, we note that SAL Apotheken did reorganize their support structure during the year. The managers were dissatisfied with the results of the meeting. Their frustration was stimulated by this current study; the questionnaire made them realize that by the end of each meeting they still had few ideas. We could see the learning cycle in action in terms of SSM: because some pharmacy managers had argued that the use of the meetings was too limited there was some action to improve this situation. The structure of the meetings changed and most of the pharmacy managers thought that it had improved.

Within stichting VNA it was remarkable that most pharmacy managers qualified the meetings as being meaningful and as a source for new ideas. Although some pharmacy managers argued that the usefulness of the meetings was too limited, in spite of this dissatisfaction nothing really happened. In contrast, within SAL Apotheken something really changed. Because this change was at the end of the year the effect on the problems described earlier was rather limited. With this present material we would conclude that the support structures of neither stichting VNA nor SAL Apotheken provided solutions to the problems of the pharmacy managers described before. Nevertheless, we add that many of the ideas for activities as well as for some monitor activities came from the support structures. In fact, many inventive and fresh customer activities also usable in organizations other than health care, were modelled at VNA/SAL pharmacies. With respect to their modelled activities, however, the meetings with the colleagues were not of a great help to most supported pharmacy managers. We could even argue that as far as the modelled

activities are concerned, the managers used the support structure as an institute for the provision of good ideas and cooperative activities. In terms of the learning cycle we would doubt that there would be much improvement in the problematic situations through support. Most activities were not influenced by the discussions. In this sense, change was not facilitated by the support. In the discussions the managers merely informed each other and maintaining professional independence was important. However, we have to note that regional differences sometimes meant that problematic situations of the supported pharmacy managers could not be compared. The advantage of the supported pharmacy managers over their non-supported colleagues was that they had a structure which was close to their pharmacy organization and very present. Nevertheless the managers were not supported in solving the problems which they experienced in relation to changing the organization. We would therefore conclude that the difference between supported and non-supported pharmacy managers was minimal for the modelled change to the customer mix. In terms of solutions it should be noted that consultancy at an individual level could be very helpful for the pharmacy managers. Individual consultancy could meet the need of pharmacy managers to have a mirror with respect to their plans for and performance of activities, to improve the suitability with the local situation, and to respect their professional independence. We would also expect the supported pharmacy managers to be better off with this individual support in their change to the customer mix.

In analyzing the use of SSM, we could say that within classical data collection, methods for observation and those for intervention are in general strictly separated. In SSM, methods for observation and intervention are intertwined. However, we have used SSM as an interview-support technique in order to structure the data. The main reasons for selecting SSM as a methodology for collecting and analyzing data were the expected fuzziness of the problems, the subjectivity encapsulated in the problematic situations, and the structure and richness of the results from the pilot. In most SSM practices and case descriptions, researcher and respondents work jointly at a solution of (part of) the problem situation. The solution, a purposeful action, makes the learning cycle start over and over again. Within this approach data collection is a mix of observation and intervention. The role of the researcher is in general limited to giving advice with respect to systems language, although the solid contact between researcher and respondent will undoubtedly lead to interventions. The researcher is a major part of the real world of the respondent, and the researcher is also expected to influence this reality consciously and unconsciously. By using SSM, decisions with respect to activities and possible problems would usually have been made in the active presence of the researcher in the course of the year. It is an ongoing process of modelling activities, real-world action, evaluation, discussion and modification. In this present study however we have made an attempt to use SSM as a methodology for observation; intervention was limited to a minimum. Normally,

if the intervention is completely fused with the observation, problems related to causality will rise. It will not be clear whether the success or failure of a purposeful action was caused by the researcher's intervention, the respondent's action or a mix of both. The mix of action by both researcher and respondent is most likely to occur. Consequently, for the researcher it will hardly be possible to distinguish between intervention and observation. In this thesis, we have tried to isolate the intervention from the observation in order to avoid this problem. However, some other problems were still present. Intervention in the form of an interview and using the activity models as a logbook to document the change intervenes in the organization. Before the interview most managers did not have clear ideas about intended customer activities. The interview structured and refined their ideas about the activities and the related sub-activities. It was possible to work with the list of modelled customer activities and to 'just' perform the sub-activities. We note that the contact between researcher and respondents was mostly limited to two interviews in this study. This thesis was an interdisciplinary project between management science and pharmacy practice research. In pharmaceutical studies new medicines and the placebo effect are tested in groups of patients in a similar way. In organizational studies an identical experimental setting for patient compliance or setting like a pharmaceutical laboratory is not possible. Cook and Campbell (1979) argued that randomized experiments are characterized by the use of initial random assignment for inferring treatment-caused change. Random assignment is however more difficult with individuals or larger social groups than with objects, and is more difficult with humans in the field than in the laboratory. Consequently, random assignment will be less frequent with humans than with objects, and less frequent with humans in the field than in the laboratory. The application of random assignment is eliminated in the quasi-experiment, such as was done here. You are reminded that the quasi-experiment had treatments, outcome measures, and experimental units, but did not use random assignment to create the comparisons from which treatment-caused change could be inferred. In this thesis, a comparison between supported and non-supported groups was made using different stimuli. The stimuli were interventions; interviews of the researcher with the respondents. The structure of the interviews was in accordance with SSM. In this design the intervention group was isolated from the non-intervention group. The time period of a year between the interviews was considered to be a black box.

As was mentioned before, SSM can be used as a methodology to intervene and to describe interventions. It is a powerful framework for collecting as well as analyzing the data. In the data collection the structure of SSM helps the researcher to find what he or she is looking for. In the analysis of data it is a powerful tool to check for consistency within the modelled world, the real world, and the interaction between both worlds. It is amazing that we just need a mix of a model, some real-world

action, and an explanation by the manager in order to say something about the sensibility of the real-world action of pharmacy managers. The degrees of freedom in producing, interpreting and explaining models and real world are high. SSM just has some limited rules in the use. Consequently, we might expect the respondent to pull the researcher's leg much more frequently than in more classical data-collection methods. We could even expect the respondent to create a purposeful and consistent whole merely for the purpose of the study. It should be stressed that things were made hard for the respondents by having several connections between quantitative and qualitative methods and by using a time period of one-and-a-half year in the design. But within this context, the respondent could say whatever he or she liked; as long as there was a reasonable explanation within the model we would qualify the activities, action and explanation as consistent. Nevertheless, we stress that all three separately and together must form a purposeful whole. Although the degrees of freedom are seemingly very high, the practice showed that it is hard for managers to create consistency between their model, their action, and their ex-post explanation all together. In this study we in fact found and described many problems of pharmacy managers with the use of SSM. In connection with this issue, we might well quote Mark Twain in saying: 'if you tell the truth, you don't have to remember anything' and conclude that a good lair will be in need of a large 'hard disk' capacity in order to take researchers for a ride in a consistent manner.

### 7.1. Introduction

Now that we have presented the empirical material in the previous three chapters we propose to go back to the position of the individual pharmacy manager. We recall that the central theme of this study was: ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer mix?’. In **chapter 3** we showed that this question was contingent upon all other study material. Since we would like to improve our understanding of this organizational change, we will explain what we have learned from our results. We will start at the beginning of this study in order to make a sketch of the field and define our point of departure. After that, we invite you to ‘walk’ with us through the results of this thesis. Finally, we will discuss the news of this thesis both from the pharmaceutical and the organizational perspective.

### 7.2. Results

At the beginning of this study, in **chapter 3**, we presupposed that despite consensus of purpose, pharmacy managers interpret good quality in different ways. We assumed that the manager would select a certain mix of activities appropriate for the mission. According to the theoretical study, the manager would select a mix of pharmaceutical activities, financial-economic activities, and customer activities. We expected that the manager would stress some of these activities in accordance with his/her professional preference, all leading to good quality. Three pharmacy mixes were theoretically postulated: the product mix, the process mix and the customer mix. In each mix different activities were stressed. The product mix related to the specific standards the medicine should meet, the minimization of risks, and the minimization of error occurrence. The process mix related to what extent the pharmacy was organized profitably and efficiently. The customer mix related to the way in which the wishes of the customers were met. However, this was an analytical description. What were the pharmacy mixes in practice?

#### *Thought and action in pharmacy practice*

It was shown in a pre-pilot study that the pharmacy managers perceived all three mixes as being very important. Subsequently, a distinction was made between *thought* and *action* of the pharmacy manager. The methods for *thought* described what pharmacy-mix actions were perceived as being most important. The methods for *action* described what pharmacy-mix actions were actually performed. The theoretical and empirical descriptions of the three pharmacy mixes from the pilot were refined in a survey. This analysis showed that most pharmacy managers in the Netherlands *stressed* the importance of product and customer actions, but actually *performed* product and process actions. We were not surprised by this fact. In order to explain what we mean, we will re-introduce our presupposition and some issues from management science.

We presupposed that pharmacy managers could have different interpretations of what good quality would mean in terms of objectives and activities. Consequently, all three pharmacy mixes were legitimate positions from which to 'produce' good quality. We avoided some ethical problems by having this presupposition. We did not want to be in the position of judging whether a pharmacy manager was doing a good or a bad job with respect to product, process or customer performance. We note that these normative qualifications might have been helpful to other parties in the field. However, with such an approach we did not expect to be able to improve the manageability of the pharmacy organization for the individual pharmacy manager. Rather, we had to construct the fundamentals for the learning cycle of Soft Systems Methodology (SSM). We tried to visualize problems of modelled activities and purposeful action aimed at intended improvements, seen through the eyes of the pharmacy managers. We did thus not intend to give an ethical judgement of the outcome, but used it as a starting point to make a sketch of organizational change. If the perceived improvements were to be visualized later then we had to define a point of departure for these improvements.

#### *Management Science*

In **chapters 3 and 5**, some material from the field of management science showed that the differences between *thought* and *action* could be expected. Argyris and Schön (1978) showed that a manager does not always act in correspondence with his espoused theory. "This is the theory of action to which he gives allegiance and which, upon request, he communicates to others" (1978: 11). The actual behaviour is another theory: the theory in use. They argued that the theory-in-use "may or may not be compatible with his espoused theory; furthermore, the individual may or may not be aware of the incompatibility of the two theories" (1978: 11). We assume that we visualized the espoused theory as not being completely compatible with the theory-in-use; the espoused theory then would relate to the observed product and customer actions for *thought*, the theory-in-use then would relate to the observed product and process actions for *action*. In connection with this issue of perceptions and actualities, Mintzberg (1978, 1994) has described the difference between intention and realization. He argued that "some strategies get realized, some strategies do not get realized at all, perhaps because of unrealistic expectations or misjudgments about the environment, and some strategies were never intended but get realized" (1978: 936). Mintzberg (1994: 24-25) later argued that deliberate strategy concerns with the intentions which have been fully realized, and emergent strategy is a realized plan which was not expressed as intended. Unrealized strategy is evidently not realized at all. Other work of Mintzberg (1979) has also suggested that emerging strategies could be expected in quite small pharmacy organizations. He argued that many small organizations have an entrepreneurial mode of strategy-making. This means that this strategy-making process tends to be highly intuitive and

non-analytical. “It is not, therefore, surprising that the resulting strategy, seldom made explicit, reflects the chief executive’s implicit vision of the position of the organization in its environment. In fact, that strategy is more often than not a direct extrapolation of his personal beliefs, an extension of his own personality” (1979: 307). In addition, we assume that the differences between *thought* and *action* also have relations with the dynamics of this planning process. The manager does learn on the ‘way’ from intention to realization. Sometimes, this learning might involve the adaptation of one’s earlier intentions, even if this means that some intentions were not realized at all. We characterized the learning cycle of SSM earlier on: “each time round the cycle the world experienced is a somewhat different place ...” (Checkland and Scholes, 1990: 3). We hope to have learned something from our past experience. In principle, this learning process is never-ending. Thus, in terms of SSM, we would argue that it is not only wise to adapt your intentions, but it appears to be inevitable. We have to keep in mind that learning could mean performing activities, but could as well mean adding, changing or even striking intended activities. Additionally, with respect to time, we should note that not all intentions might have been realized. Intention might be ahead of realization, as it were. The organization might be on its way to realizing what was intended. Pharmacy managers might have not come round to start the implementation of customer activities yet or had not completed the customer actions yet. This more ‘modern’ way of thinking about intention and realization has been adopted by others as well. Among them were Johnson and Scholes (1988: 115) in saying that “organization objectives should not be regarded as being an unchangeable set of expectations. The objectives should be viewed as open to amendment and will change as strategies develop.” In addition, Mintzberg (1994: 26) said “good bye to the long tradition in the planning literature, that likes to decompose and determine the importance of things a priori, and the fact that every failure of implementation is, by definition, also a failure of formulation.” What we have theoretically postulated here is that differences between *thought* and *action* are rather common, and that many strategies will emerge ‘on the way’.

#### *Pharmacy practice on the meso level*

This analysis would make us conclude that nothing very peculiar was happening at the community pharmacy in terms of management science. If we were not surprised by this fact, then what was the news? For the presentation of the results, a point of departure was determined first of all. No pure types were observed; different combinations of pharmacy-mix activities were stressed for both *thought* and *action*. This would be useful for our sketch of the organizational change. Although our current point of departure, the difference between *thought* and *action*, appears to be a common one, we would argue that it is more special than it seems. Differences between *thought* and *action* are predictable within management science, but are somewhat special when applied to the Dutch community pharmacy sector. Observed

customer and process actions are closely related within management science: many organizations try and improve their customer relations in order to make a profit and/or survive. In this situation, one would logically expect major importance to be given to financial activities that are in close relation with customer activities. However, the pharmacy managers showed that they had other perceptions of importance. We found a relation between product and customer. The professional quality of the pharmacy manager was perceived as being the most important issue here, and not profit. We did have some questions about the apparent specificity of the observed difference between *thought* and *action*: ‘Why is there a missing link between customer and process?’ and ‘Why is professional quality of major importance?’.

We described the missing link between customer and process as being a special feature in comparison with other organizations. The community pharmacy sector suggests that pharmacy managers concentrate on (positive) customer activities. It seems plausible that pharmacy managers are securing their market share by stressing the customer mix and avoiding related financial issues. Sector organizations stimulate the customer mix by launching many ideas and activities. We can recognize this in the results for *thought*. However, as in any organization, the pharmacy has to make profit in order to survive. This profit is under major pressure. The tone of the public debate on financial issues in community pharmacy practice is mostly negative. The media and the authorities contend that pharmacy managers are concentrating on (negative) process activities and make too much money. There appears to be a tension between money and care in this line of business. A possible explanation for this tension can be threefold: pharmacy managers do need profit in order to enable survival, making profit by selling medicine to ill people is perceived to be not very ethical, and the authorities are in need of a reduction of public spending on health care. Within health care, and within the community pharmacy practice especially, the financial system has been changed many times (Gerritsen and Van Linschoten 1997). The authorities have tried to control public spending on health care and especially spending on medicine. For example, the introduction of maximum prices for medicine and a stronger selection of new medicine allowed for the reimbursement system affected the financial position of the pharmaceutical chain (Snier 1995, MarketScan International 1997, Nyfer 1997). The income of the pharmacy managers is consequently under major pressure. We assume that in reaction to this, the pharmacy managers have improved the monitoring of their financial activities. We can recognize this in the results for *action*. Considering the degree of negativity in the media (mentioned earlier in **chapter 3**) we believe that the pharmacy managers have done quite a good job. The link missing between *thought* and *action* has been an outcome of the ongoing dispute within the community pharmacy sector which is all about care, money, and ethics. Although we have resolved *not* participating in an



ethical discussion, we thus have to acknowledge that we have landed in the middle of one. We have to accept that ethical disputes about care and money are systemic within this line of business, and therefore cannot be avoided.

However, earlier we did also suggest that this study showed a nuance of both positions; of the position of the pharmaceutical sector, as well as of the position of the authorities. It should be remembered that the product mix was the pivot of the pharmacy organization. It is remarkable that in terms of *thought* and *action*, most *inconsistent* positions were found within the process mix and the customer mix. These results showed that pharmacy managers are neither consistently organized with respect to process (profit) nor to customer (patient). There seems therefore to be little evidence to support the statements of the authorities and the community pharmacy sector. Most consistent positions were found within the product mix. A possible explanation for the importance of the actions in the product mix is that it is the field in which pharmacy managers are well-educated and trained. It appears to be their main purpose. The historic conception of pharmaceutical tasks of the community pharmacist is still of great importance in education, work and mind of pharmacy managers. As well as this, customers, physicians and authorities also demand the highest professional quality. Activities of the process mix and the customer mix are conditional on the pharmaceutical expertise of the pharmacist. We would, of course, agree that customers also demand high professional quality of a greengrocer or a butcher. However, since we are operating within health care we argue that it is different. The domain of this sector is disease and health, which has a different importance to the customer and, consequently as well, to the pharmacy manager, when compared to food, for instance. To illustrate this, the consequences of the provision of an incorrect product can differ dramatically. A butcher's customer who has been given a fillet instead of a (cheaper) steak, might have noticed that the fillet was unexpectedly tasty and juicy. However, we cannot compare the butcher providing the right product with the pharmacist providing the right medicine to 'produce' a healthy patient. In the case of the butcher providing the wrong meat, the result would be a different meal to the one that was expected. In contrast, if the medicine of the pharmacy was incorrect, like we exemplified in **chapter 3** (WINAp 1997), the customer might be dead. That is another matter. We recognize the importance of this professional interest and knowledge of the pharmacy manager in the results of both *thought* and *action*; the product mix was the pivot of pharmacy organization.

Now that we have explained the missing link between customer and process and the importance of the product mix, we can introduce our 'travel' to the customer mix. But not before making some remarks about the issues we have to take into consideration for our sketch of the process of change, and the relevance of using

SSM. We predicted that the specificity of this observed *inconsistency* at the community pharmacy could make our sketch of the ‘travel’ to the customer mix hard. Organizational change to the customer mix was expected to be a difficult matter since the product mix was the pivot of the pharmacy organization. The strong consistency in the product mix and the *inconsistency* in the customer mix could handicap the ‘travel’ to the customer mix. In addition, it could be hard to ‘catch’ the organizational change in a model. It should be remembered that, a substantial part of the work of the pharmacy manager would involve emerging strategies and actions, and could therefore be hard to ‘catch’. We have also been warned that the strategy of the pharmacy manager would be implicit. In this case we might well have to deal with personal beliefs and/or the personality of the manager; therefore the issues of complexity and subjectivity were at stake here. As we mentioned earlier in **chapter 3**, SSM is a methodology which could enable us to unravel ‘knots’ related to subjectivity and complexity. Subjectivity within SSM has been defined as the crucial characteristic of human affairs. Again, we stress that we were interested in the individual pharmacy manager and his/her managerial problems in the organizational change. And here we are: modelling improvements in the eyes of those who take the action. Subjectivity was a core issue in this part of the study. Moreover, SSM was most frequently applied to complex organizational problems; ‘messy’ problems. We argue that most organizational processes of change are complex, and therefore SSM could be suitable for our purpose. We had to accept however that, within SSM (Checkland 1981, Checkland and Scholes 1990, Checkland and Holwell 1998), little attention has been paid to descriptions of what was problematic in terms of formulation of root definition and criteria in practice. Consequently, we also introduced the work of other authors in order to help us with this problem. Let us therefore take a look at some specific problems we could expect in an organizational change.

#### *Management Science*

We claimed earlier that the survival kit of a manager in an organizational change would consist of an aim and related criteria; the latter comprising norms and monitor instruments. Since the pharmacy manager intended to change the organization we were in need of a destination or aim. Where do we go? We established earlier that the customer mix was the destination for the pharmacy organization in this study. We did not however say anything about the specific difficulties we could expect here. How hard is it to define a usable destination? Simon (1945) introduced an operational problem in connection with this issue: how can we actually support decision-making in a pursuit of ends. He determined some problems in this context: ends are often incompletely or incorrectly stated, a complete separation of means and ends is impossible, and there is a tendency to obscure the role of time. Following De Leeuw (1994), we could expect the influence of the environment to be present in a

control situation, and, consequently, it would not be very easy to determine whether the realization of goals is the partial or complete result of the control. With this information, we learned that it may be rather difficult for managers to define a usable aim. Moreover, Vickers (1965) noted that the establishment and modification of relationships through time is more important than the endless strive for goals and, in addition, no end or goal can ever be more than a means. Some of the problems in the use of the criteria for effectiveness related to a well-known problem, which De Leeuw (1994: 69-72) described in his systems theory of control. It does not mean that the control did not function if the objective was not realized, and, likewise, if the objective had been realized it is questionable if this were thanks to or in spite of the control. We stress that it was not easy to define good norms for effectiveness. In connection with this issue, we have to keep in mind that Schön (1983) has warned us that it would be hard to diagnose signs of trouble; especially how to find out what is wrong. We observed a similar problem with the pharmacy managers.

Now let us assume for the moment, that managers are able to overcome these problems. What we then need are criteria. The necessity of such criteria is threefold. First, in an organizational process of change it would be convenient to obtain information about whether we are on the right track to our destination. Second, we would want to know where on this track we are during such a process of change. Third, we might want to judge whether in the light of our destination the modelled activities were worth the effort. Checkland and Scholes (1990) argued that such processes of communication and control are necessary in order to survive; the activities should logically be judged on efficacy, effectiveness and efficiency. De Leeuw (1990) is of the opinion that an evaluation is a minimum requirement for exerting effective control. We have thus established that criteria are vital in the organizational change, but how hard is it to find and formulate the related norms and monitor instruments? Vickers (1983) warned us that cultural and personal criteria are very complex, and that problems with evaluation could be expected: it was hard to formulate a norm. He described difficulties with the comparability of disparate variables, uncertainty, and the difficulty of time. He added that value judgements of appreciation cannot be proved correct or incorrect, since there are no external, 'objective' criteria (Vickers 1965). Their correctness could not be proved. We saw earlier that in SSM (Checkland and Davies 1986) a similar statement was made with respect to 'Weltanschauung' or 'Ws': 'better' could just as well be 'worse' for different individuals. In addition, Schön (1983) warned us that the use of algorithms generally failed to yield effective results in business management. Here we have to accept that we are in a swamp of confusing messes in which algorithms can hardly be used. According to Schön (1983), it is hard to diagnose signs of trouble within an organization. The manager faces a twofold problem: how to find out what (if anything) is wrong, and how to do so in a way that enhances rather than reduces his

ability to fix what is wrong. We can infer, therefore, that even if the manager is able to construct an aim, it would be hard to define usable criteria relating to this aim. Now that we have re-introduced some theoretical issues we would invite you to go back with us to the pharmacy practice. Were these problems, in any similar way, experienced by the pharmacy managers?

*Pharmacy practice on the micro level*

In **chapter 6**, pharmacy practice was studied on the micro level. Here, the main questions of this thesis were studied: ‘What problems does a pharmacy manager face if he/she ‘travels’ to the customer?’ and ‘What is the role of the support of stichting VNA and SAL Apotheken in this process of change?’. It was argued that a pharmacy manager, in such a process of change, would be in need of an aim (for instance, ‘improve customer relations’) and would also be in need of a mechanism in order to evaluate whether the modelled activities were successful in the light of this aim. These instruments are necessary in order to survive, and in order to be able to judge whether the modelled activities and/or the performed actions had made a contribution to the process of change, or were a waste of effort. Criteria are generally involved in evaluation; these consist of norms and monitor instruments. In this thesis it was decided to define norms as the measures of performance by which a certain activity, set of activities or model could be judged. The measurements are defined as the instruments to visualize or monitor to what extent the norm had been achieved. Furthermore, aim, activities, norms, monitor instruments should be linked; we would expect them to form a ‘purposeful whole’. We adopted the term ‘emergent properties’, applied it on various levels, and analyzed whether any of the parts made up a ‘purposeful whole’.

It was observed that pharmacy managers experienced problems with the formulation and use of aim, norms and monitor instruments and problems linking aim and customer activities. We argued that it is not easy for pharmacy managers to define a usable aim and related criteria which ‘cover’ the modelled customer activities. In the pharmaceutical sector most aims, norms and measurements, for monitoring or exerting control, relate to the product mix and process mix. However, in the customer mix, some aims were rather abstract, vague and defined for a meso level. In this situation it was hard to find proper criteria (comprising norms and monitor instruments) for the micro level. In terms of the modelled customer activities, and related criteria for efficacy, in order to monitor whether these customer means did work, we argued that many managers did evaluate their activities in a rather proper way. Criteria for efficacy were modelled and actually used in the control process, and this sometimes led to control action. However, a main problem was: ‘What to do with the result if a measurement for efficacy was made without having a usable norm?’. Not all managers performed control action to manage such situations.

Another problem was that some pharmacy managers did not monitor their modelled activities at all. A lot has to be learned with respect to the customer mix. Managers do need aims and evaluation for their individual pharmacy practices.

We also noted that the support in the pharmaceutical sector was poor with respect to these problems. Although many organizations (like the KNMP) which operate in the sector are a good source of new ideas, they fail to give proper support to the individual pharmacy manager with the formulation and measurement of aims to do with the 'travel' to the customer mix. Pharmacy managers are not helped with meso goals and evaluation, especially not if they do not know how to translate this to their pharmacy practice. They are in need of micro-instrumentalization: aims, norms and monitor instruments for customer activities, applicable at their own pharmacy.

Moreover, the quantitative survey of 1996 and 1997 at 63 pharmacy managers suggested that no striking or 'alarming' differences between supported and non-supported pharmacy managers could be observed. However, we did find some subtle differences in our qualitative data. Many of the ideas for activities, as well as for some monitor activities, came from the support structures of stichting VNA and SAL Apotheken. In fact, many inventive and fresh customer activities that could be used in organizations other than health care, were modelled at pharmacies of stichting VNA and SAL Apotheken. Professional independence was important. In many cases, pharmacy managers had the right to refuse participation in intended activities and monitor activities of the support structure. With respect to their modelled activities the meetings with the colleagues were not of a great help to most supported pharmacy managers. We would doubt much improvement in the problematic situation through the support. Most modelled activities were not influenced by the discussions. The support meeting did not facilitate change, so to speak. The managers merely informed each other during the discussions. We have to note however that regional differences sometimes meant that the problematic situations for the supported pharmacy managers could not be compared. The advantage of the supported pharmacy managers over their non-supported colleagues was that they had a structure which was close to their pharmacy organization and very present. Nevertheless the managers were not supported in solving the problems described earlier. We would therefore conclude that the difference between supported and non-supported pharmacy managers was minimal for the modelled change to the customer mix.

### **7.3. Discussion**

We assumed that most of the issues distilled from the field of management science, that were raised earlier would be relevant in community pharmacy practice. We confirmed that some pharmacy managers experienced problems with the formulation of usable aims. And even if managers were able to construct such aims, it was hard

to define usable norms and monitor instruments in relation to these aims. Since money and care are entwined such activities might be rather nasty in community pharmacy practice. In other profit-oriented sectors, activities would probably be easier to organize, since most of the activities would serve turnover, profit or cost-reduction. In addition, we suggested that the support structure was not much of a help for the pharmacy managers in tackling these problems. Most of these empirical conclusions appear to be in line with what we expected from the field of management science. We rise the question again: 'What was the news?'. The news comprised pharmaceutical and organizational issues. With respect to the pharmaceutical news we would like to show what we have learned from our work in the field. We will discuss the organizational change problems in the community pharmacy practice and the specific nature of these problems when compared to other sectors. With respect to the organizational news we would mainly like to show what we have learned about the use of SSM in this study.

#### *Pharmaceutical News*

This study showed that pharmacy managers would have a hard time in their 'travel' to the customer mix. From issues derived from the field of management science, they were expected to experience problems with the formulation of goals, norms and monitor instruments. We argued moreover that these issues would even be more complicated within community pharmacy practice, since activities related to money and care are entwined (Cancrinus-Matthijsse 1995, Van der Werf 1996). Evidence was found for these expectations in pharmacy practice. Let us try and make a sketch of the field. Many pharmacy managers in the field seemed to be aware of the fact that the customer is the key for survival of the community pharmacy. We could say that the importance of the 'travel' to the customer was not discussed by many pharmacy managers; it was a fact. Many activities and ideas had been initiated by organizations in the field. These initiatives were expected to improve the quality for the customer, reconfirm the position of the pharmacy within health care, and visualize these properties for other parties in the field. We assume that this support stimulated the pharmacy manager to think about the customer. The *thought* of pharmacy managers had already moved into the direction of the customer. The support of organizations such as the KNMP (and of course many others in the field) was a main source for this change to customer *thought*. The high degree of participation in national project weeks is just one example. In addition, the support of grouped pharmacies, such as the stichting VNA and SAL Apotheken, added some of their own flavour to these national developments. New initiatives, like the certification of stichting VNA and the 24-hour service of SAL Apotheken, were aimed at the added value of the community pharmacy. Within many of these groups the process of change in *thought* was therefore accelerated. Evidently, if activities were organized within such groups, a debate would precede the implementation

which would influence the *thought* of these managers. Within SSM, we would then say that each time they went around the learning cycle, the world would seem another place. After such a debate some issues (customer issues, for example) would seem more important than others. The preparation and organization of intended activities functioned as a source of awareness which changed the *thought* in the direction of the customer. If such support did affect the perceived importance of intended activities, it could also be expected that when the manager returned to the pharmacy after a meeting, the day-to-day *action* would be affected. Consequently, the debate within the support meetings would then also influence the *action*. We determined that many of the modelled customer activities originated from the support. If we would do so, then we could argue that the support was doing a good job with respect to organizational change; or at least partially. However, while on one hand the activities of the support were stimulating the pharmacy to change to the customer, on the other hand, the support was not solving many of the problems experienced by pharmacy managers; problems related to the formulation and use of aim, criteria and the link between them. Let us assume that a pharmacy manager introduced pharmaceutical care in the pharmacy, and, in doing so, intended to change, among other pharmacy mixes, to the customer mix. He/she might decide to adopt the Dutch definition of pharmaceutical care. This definition produced by the KNMP/WINAp Special Interest Group (SIG) for pharmaceutical care in April 1998, is “the care of the pharmacist and his staff for the individual patient in pharmacotherapy to improve the quality of life for the patient” (Venema 1998e: 738). In using the aim ‘improve the quality of life for the patient’ (Z), the manager will have a hard time finding a linked or consistent set of activities and criteria. We argue that the support and the *customer* action of the pharmacy manager would definitely be improved if some help were provided with respect to these managerial issues. But how could that be done? We mentioned earlier that the group sessions were not a great success in solving such problems. It should be remembered that we are dealing with small organizations which have a rather entrepreneurial mode of strategy-making. The strategy is seldom made explicit. It is often not more than the personal belief or an extension of the personality of the manager. We also presupposed that individual pharmacy managers could have different interpretations of what ‘good quality’ would mean in their pharmacy practice. Furthermore, we exemplified that the professional independence is rather strong in the community pharmacy practice, which sometimes blocked cross-pollination within the groups. If we take these remarks seriously, we would like to improve the consistency for each individual manager. We would argue that individual support might help them out. With individual support like that in the SSM sessions, the manager would be invited to make his/her strategy explicit. In this way the internal consistency of the mind of the manager could be tested. *Inconsistency* could be solved if proper aims and evaluation mechanisms can be provided. We contend that some research has to be done in this

field; usable aims, customer activities, norms and monitor activities, should be worked out and tested.

Suppose that the pharmaceutical sector is capable of solving some of these problems. We would then argue here that, although some of these problems would be solved, some special problems would remain within the community pharmacy practice. We are aiming at the tension between money and care. Within other lines of business such as supermarkets, a usual aim would be something like: 'maximize profit', 'minimize cost', or 'increase shareholders' value'. The aim 'maximize profit', for example, would in fact 'manage' the consistency between the other activities. An example of such activities would be: the purchase of products at minimal cost, the performance of the work by young, and therefore cheap, teenagers, the hiring of a location with a lot of parking space, the supply of free coffee and cake, and the play of cartoon videos for the children to improve customer satisfaction; and the introduction of special offers for regular customers in order to improve customer relations. If such activities did not have the expected effect on the aim they would be skipped. One could of course refute this argumentation by arguing that 'maximize profit' could be rather tricky to determine. But here we contend that this would be even harder within health care. Let us try and give some arguments on that statement.

It is quite clear that profit or turnover does also matter within the context of community pharmacy practice. We are however arguing that activities should not only be aimed at profit, but also at care. This combination will complicate formulation of aims and criteria. In other lines of business, which are solely profit-oriented, the activities would be aimed at cost reduction and profit; consequently, we would expect the organization to be less complex. Let us take a closer look at such an organization: McDonald's. Ritzer (1996), describing the keys to success of McDonald's, argued that formal rationality was an important feature: "it allows individuals little choice of means to ends. Since the choice of means is guided or even determined, virtually everyone can (or must) make the same, optimal choice" (1996: 19). Within this context, the optimal choice, however, must be calculable. He described four basic dimensions of McDonaldization: efficiency, calculability (or quantification), predictability, and increased control through substitution of human for non-human technology. He also noted that "reducing performance to a series of quantifiable tasks helps people gauge success. Handling less than the required number of cases is unsatisfactory performance, handling more is excellence" (1996: 19). As we can in fact see here, the organization is turned into a kind of hamburger factory where all tasks performed aim at profit. Ritzer added that "profit-making enterprises pursue McDonaldization because it leads to lower costs and higher profits" (1996: 144). In the context of this thesis we would, however, argue that the



calculability of 'quality of life' or 'quality of care' in community pharmacy practice is a more complicated matter. The debate about definite outcomes in terms of improved quality of life for the patient as defined by Hepler are not yet settled. Moreover, this matter will be complicated even further, when dealing with a combination of 'profit' and 'care'. The community pharmacy sector, and many others with them, have been wrestling with this problem for some time. Do the activities of the pharmacy manager aim mainly at maximum profit or at the Hippocratic oath? The comments of the eminent American pharmacist William Proctor, writing in 1858 when the production of medicine by the pharmacy was very important, are still relevant in this context: "... if the preparation of medicines is taken from the apothecary and he becomes merely the dispenser of them, his business is shorn of half its dignity and importance, and he relapses into a simple shopkeeper" (quoted in Hepler, 1993: 5). Moreover, for the Dutch situation, Kruithof (1995) noted that "After 1865, the examinations for pharmacists became more difficult, and, after 1878, all the pharmaceutical students had to attend lectures at one of the four Dutch Universities. Therefore, pharmacists perceived themselves more as scientists than as shopkeepers. Many pharmacists did not take interest in trade" (1995: 596). That this opinion is still vividly present within the field is shown by a resolution of the 'Groupement': "The pharmacists of the European Union are convinced that for scientific and ethical reasons members of the public must be encouraged by authorities to treat medicines as special products and not as ordinary goods. Medicines must therefore not be offered for sale by marketing methods which persuade people to buy medicines they do not need or in excess of their needs" (1997: 664). It cannot however be denied that profit is necessary for the community pharmacy in order to enable survival. Ideally, from an organizational point of view, the activities within the community pharmacy would have to serve both profit and care in order to enable survival; or, in other words, making the Hippocratic oath profitable. But this is precisely where the main part of the pain in the discussion lies: maximizing profit by selling medicine to ill people is perceived not to be very ethical. We would argue that this problem will not be resolved within the current context of Dutch community pharmacy practice. It is assumed here that this particular complication of money and care will remain for the community pharmacy manager, as well as for other managers in the health-care chain where money and care are similarly entwined. These managers will have to learn how to deal with this specific problem in order to improve their grip on the organization.

The McDonald's organization is again a good example; this time with respect to the uniformity of the system. The activities will be the same within each country. Minor differences are allowed between countries, such as the Indian 'lamb-burger', since beef from the holy cow is prohibited, and Dutch mayonnaise served with the French fries. Ritzer showed that in the case of product innovations, many ideas have

originated from the franchisees. For example, “successful creations, such as the fish sandwich, the Egg McMuffin, and, more generally, McDonald’s breakfast meals, came from franchisees” (1996: 32). The basic idea is evidently to introduce such innovations in all restaurants. *Thought* and *action* are thus not completely ready-for-use, which is what we would expect from the uniformity of the system. A delicate balance between centralized control and independence of the local managers is to be found. Centralized control is necessary in order to meet the basic dimensions of McDonaldization, however this should not destroy the innovativeness of the local partners. *Thought* and *action*, although debated in this part of the ‘food field’, will in the end only be determined at headquarters in order to achieve a uniform system. In this case, profit is the most important *thought*; all *action* has to be consistent with this aim, otherwise it will be skipped. In contrast, uniformity with respect to customer is not yet strongly organized in the pharmaceutical field. A major part of the activities of the community pharmacy manager are in fact formulated at each individual outlet.

At the community pharmacy profit is another matter; as we mentioned earlier in **chapter 3**, the pharmacy operates within a politicized line of business. We noted earlier that a pharmacy, as any organization, has to make profit in order to survive. We added that this profit is problematic and under major pressure. The authorities contends that pharmacy managers are concentrating on (negative) process activities and are making too much money. On the macro level, it has to be acknowledged that for the authorities, increased public spending on health care is problematic. However, the Dutch Department of Public Health has also recognized the fact that the use of medicine per citizen is low compared to other European countries, and it seems evident that there is a connection between an increase in the use of medicine and a decrease in the time spent in hospitals and other health-care institutes. It is interesting that the CBS (Centraal Bureau voor de Statistiek) has shown that the share of health care in the national income decreased by one percent point to 8,6 percent in 1997 (Van Veen 1998b). In Great Britain it has been argued that reduction in prescribing costs is possible because the practising pharmacist ensures that GPs pay attention to factors that lead towards rational prescribing (Wells 1998). In order to solve the health-care expenditure problem of the authorities money has been ‘pressed out’ of the sector. Consequently, the income of the pharmacy organization, as with many other organizations in the field, is under major pressure. What we have been able to see over the last few years is that the financial escape-route of the pharmacies, for example, using discounts and bonuses, have also been ‘squeezed’. In one sense, it could be argued that the authorities have been quite successful in cost containment of the pharmaceutical sector. In another sense, it could just as well be argued that this has resulted in a rather unstable regulation. We could expect the managers to react to these cut-backs by improving their financial grip on the pharmacy, reduce

their costs, or even look for alternatives, which in fact might have stimulated the observed process-mix actions. We then would argue that, the reaction of the pharmacy managers is systemic and cannot be solved by further cut-backs, since they will again stimulate the money orientation of the community pharmacy. However, we doubt if that effect is intended by the authorities.

We consider there to be two options relevant in dealing with this problem. First, we could expect the tension between money and care always to be present; it is a systemic feature of the line of business (Van der Werf 1996). Although the pharmacy manager is on the road to the customer with ideas and activities, the implementation is laborious and sometimes inadequate from an organizational perspective. The managers are definitely in need of a box of organizational tricks for the change to the customer mix. We should also remember, as Vickers (1965) has argued, that the establishment and modification of relationships through time is more important than the endless strive for goals. The main question for the future then would be: 'How would you organize your relationships?'. Based on the results so far, we suggest that it is not possible for the pharmacy manager to solve this problem alone; there should be a support structure showing how to deal with the tension between care and money. We argued above that the support should be on an individualized basis; micro-instrumentalization. Second, we could try and eliminate financial incentives for pharmacy managers. In this situation, if the authorities would take the care task of the community pharmacy seriously, we would expect them to pull the financial incentives out of the market. Such a measure would for example be the cooperative purchase of medicine organized by the Department of Public Health. If this happened, the pharmacy manager could improve the attention given to pharmaceutical and customer activities at the pharmacy. It should be noted that the authorities would, in fact, have the power to do so, since we are in a politicized line of business. Within this context it should be noted that the authorities intend to organize purchasing of medicine via the insurers (Schneider 1998, Coalition agreement 1998), and the KNMP aims at an improved transparency of the financial system within the Dutch pharmacy. We also note that in other countries, pharmacies are sometimes completely owned by the State. For example, in Sweden, the State owns 100% of the shares of the national operating organization Apoteket AB. In 1971, the authorities acquired all Swedish independently operating pharmacies. "Surveys show that drugs in Sweden have among the highest producer prices in Europe, while the price paid by the customer is among the lowest in western Europe. One of the reasons for this is that Apoteket AB is not allowed to maximize its profits" (Björnberg 1998: 4). At the moment, the position of Apoteket AB is strongly debated. Some people are in favour of market action, others prefer state ownership.

*Organizational news*

In this study we tried to 'catch' some of the real-world action with a mix of quantitative and qualitative research. As has been done in other studies (Woodward 1965, Cook and Reichardt 1979, Bryman 1988), we decided to develop a two-level project concentrating first on making a broad survey of the whole area and then making some more detailed studies of individual pharmacy organizations. The quantitative study was used for the purpose of sketching the field; generalization to the Dutch community pharmacy practice was made. The qualitative study was used for the purpose of sketching the problems of individual managers; the problems were exemplified with empirical material. Both studies have provided a relevant and new view over this pharmaceutical matter. The quantitative study helped us in the definition of a starting point. As could be expected, no pure types of the product mix, process mix, or the customer mix were observed. It also became clear that by using theories (even classical ones) we were able to constate new facts relevant to particular lines of business. We found that the seemingly evident link between the customer mix and the process mix, was missing, and that the product mix was still the pivot within pharmacy practice. The qualitative study was made with SSM. In the analysis of data it gave a powerful tool to check for consistency within modelled world, real world, and the interaction between both worlds. We used the general shape of SSM in order to model. We showed that the definition of 'emergent properties' gave a powerful frame of reference to judge the consistency within the model and the real world, and between both worlds. With this frame of reference we could say something about the sensibility of the modelled activities and the real-world action. For example, in using arguments of the manager in order to qualify an activity as a success or as a failure in relation with the model showed that we sometimes could seriously doubt their consistency. We repeat that we just used the statements of the managers. It is amazing to see that we just need a model, some flavour of real-world action added with an explanation of the manager in order to say something about the sensibility of the real-world action of pharmacy managers. All three separately and together have to form a purposeful whole. The degrees of freedom in producing, interpreting and explaining models and real world are high. SSM has only a few limited rules for use. As a consequence, we might have expected that the respondents would 'pull the researcher's leg' more frequently than happens with more classical data collection methods. They might well have created purposeful and consistent wholes just for the purpose of the study. It should be stressed that we did not make things easy for the respondents by having several connections between the quantitative and the qualitative methods, and by there being a time period of one-and-a-half year in the design of the study. But the respondents were able to say whatever they liked in the context of this study; just as long as there was a reasonable explanation within the model we would qualify the activities, action and explanation as being consistent. We did stress however that all three separately

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and together had to form a purposeful whole. Although the managers seemed to have high degrees of freedom, in practice it was hard for them to create consistency between their model, their action, and their ex-post explanation all together.

In this study, the main aim was to find managerial problems in organizational change. We in fact found and described many problems of pharmacy managers with the use of SSM. Consequently, with this thesis we expect to have improved knowledge of organizational change to the customer mix within community pharmacy practice. However, the key to the solution of these problems is still out in the field. For the moment, pharmacy managers themselves will have to improve the micro-instrumentalization of aims, norms and monitor instruments for customer activities, and, in addition, they will have to learn how to deal with the tension between money and care. Hopefully, in future new research will improve our knowledge about these evolved new subjects.



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## Appendix 1 Sample and Population

### *Introduction*

The *profile* results of the response are presented in **table a1.1.- a1.17.** below. In **table a1.1.-a1.5.** data from the Dutch population of community pharmacists were used. The issues presented within this section were sex, age, location, (in)dependence and so-called ‘formulas’ (in which pharmacists are cooperating with respect to various issues). In **table a1.6.-a1.17.** data from a large sample (N=700) were used.<sup>43</sup> The issues presented within this section were FTE (Full-Time Equivalence) assistants and other personnel, FTE pharmacists, total WTG (Wet Tarieven Geneesmiddelen) and non-WTG prescriptions, total patient population and total turnover. The hypergeometric distribution was applied for **table a1.1-a1.10** and is illustrated in **appendix 2.** For some results no population data were available (**table a1.11.-a1.17.**). The issues presented within this section were seniority, cooperation, total personnel in part-time, total personnel in full-time, net profit, time for direct tasks and time for indirect tasks.

### *Data from the population (N=1521);*

The sample of pharmacy managers consisted of 73% (compare **table a1.1.** for exact score: 73.3%) (rounded up population frequency [KNMP]: 65%) males and 27% (35%) females.

source	random sample		KNMP <sup>44</sup>
	n=146	%	N=1521
sex			%
male	107	73.3%	65.4%
female	38	26.7%	34.6%

**Table a1.1.** Sex.

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<sup>43</sup> Although these data did not represent the whole population, it was assumed that the frequencies of these sample features were similar to the population.

<sup>44</sup> From the data of the Royal Dutch Association for the Advancement of Pharmacy (KNMP) of July 1996.

The age group of 35 to 50 years was most frequently observed: 62% (52%). In addition, 25% (31%) was aged younger than 35, 13% (16%) was aged from 50 up to and including 65 years old and 0% (1%) was older than 65.

source	random sample		KNMP N=1521 <sup>45</sup>
	n=145	%	%
< 35 years	36	24.8%	31.3%
35-50 years	90	62.1%	52.1%
50-65 years	19	13.1%	15.5%
> 65 years			1.1%

Table a1.2. Age.

The location of 62% (57%) of the pharmacies was in the suburban area of a city and in the city centre. 38% (43%) of the pharmacies were located in rural areas and other.

source	random sample		KNMP N=1521 <sup>45</sup>
	n=140	%	%
location <sup>46</sup>			
city	87	62.1%	56.5%
rural area/other	53	37.9%	43.4%

Table a1.3. Location.

<sup>45</sup> From the data of the Royal Dutch Association for the Advancement of Pharmacy (KNMP) of July 1996.

<sup>46</sup> Within the questionnaire a distinction between city centre, suburb and rural area was made. The distinction within the population data was city and rural area/commuting area. KNMP data from July 1996 showed that 56,5% of the pharmacies were in a city, and 43,4% of the pharmacies were in a rural area/commuting area. It was assumed that city centre/suburb in the questionnaire corresponded with city in the population data, and that rural area corresponded with rural area/commuting area.



Within the random sample 72% (69%) of the pharmacy organizations were managed by an independent pharmacy manager. The pharmacy managers in employment were 26% (27%), in addition, 2% (4%) of pharmacy managers in employment were working towards being independent.

source	random sample		KNMP/VNA N=1521 <sup>47</sup>
	n=145	%	%
<b>employment</b>			
<b>independent entrepreneur</b>	104	71.7%	68.9%
<b>in employment</b>	38	26.2%	27%
<b>in employment and working towards being independent</b>	3	2.1%	4.1%

**Table a1.4.** (In)dependence.

<sup>47</sup> KNMP data relating to independent entrepreneurship, and data of the stichting VNA relating to pharmacy managers in employment and working towards being independent were used. The KNMP data from July 1996 showed that 60% of all pharmacy managers are pharmacy owners and 68.9% established owners. Within this study it was assumed that an independent pharmacy manager was an established owner. The data of the stichting VNA from September 1996 show that 63 pharmacists were 'in employment and working towards being independent'. The percentage was calculated by dividing this number of pharmacy managers by the total number of pharmacies in accordance with the KNMP data from May 1996 (1521). The percentage of the category 'in employment' was calculated as a 'remaining' percentage. The percentages from the other categories were subtracted from 100%.

The pharmacies not participating in a pharmacy concept were 83% (81%). In addition, 17% (19%) was related to so-called ‘formulas’ like Kringapothek, Meditheek, Extra Apotheek, Baliemodelapothek or the Service Apotheek. In formula pharmacies pay membership and cooperate with respect to information policy, interior design, education, customer studies et cetera.

source	random sample		formula-organizations <sup>48</sup> N=283
	n=142	%	%
pharmacy formula			
formula	24	16.9%	18.5%
no formula yet	118	83.1%	81.4%

Table a1.5. Formulas.

<sup>48</sup> The information used for the data was provided by the so-called ‘formula’ organizations. A total number of 238 pharmacies were connected with a formula in September 1996. Per formula the numbers are Kringapothek (66), Meditheek (76), Extra Apotheek (60), Baliemodel Apotheek (6), and Service Apotheek (75), figures all from September 1996. The category *no formula (yet)* was calculated by subtracting the number of formula pharmacies from the total number of pharmacies in accordance with the KNMP data from May 1996 (1521). The pharmacy formulas observed in the sample were Kringapothek (7), Meditheek (3), Extra Apotheek (5), Baliemodel Apotheek (1), and Service Apotheek (8).

Data from a large sample ( $n=700$ );

The FTE comprised pharmacists and other personnel. The complement in Full-Time Equivalence (FTE) for other personnel consisted of 4 to 7 FTE for 42% (50%) of the pharmacies. In addition, 25% (14%) used less than 4 FTE for other personnel, 23% (23%) used 7 to 9 FTE and 10% (13%) used 9 FTE or more.

source	random sample		SFK <sup>49</sup> N=700
	n=140	%	%
assistants and other			
<4 FTE	35	25.0%	14.2%
4 to 7 FTE	59	42.1%	50.1%
7 to 9 FTE	32	22.9%	23.2%
≥ 9 FTE	14	10.0%	12.6%

Table a1.6. FTE assistants and other.

The FTE for pharmacists consisted of less than 1.5 FTE for 74% (66%) of the pharmacies. In addition, 26% (33%) used 1.5 to 3 FTE for pharmacists, 0% (0.7%) used 3 to 4,5 FTE and 0% (0%) used 4,5 FTE or more.

source	random sample		SFK <sup>49</sup> N=700
	n=142	%	%
pharmacists			
≤ 1.5 FTE	105	73.9%	66.2%
1.5 to 3 FTE	37	26.1%	33.1%
3 to 4.5 FTE			0.7%
≥ 4.5 FTE			0%

Table a1.7. FTE pharmacists.

<sup>49</sup> From the data of the Stichting Farmaceutische Kengetallen (SFK) of July 1996 of all 700 participants of the SFK.

The total number of prescriptions (including non-Wet Tarieven Geneesmiddelen [WTG]) consisted of 50,000 to 70,000 prescriptions for 36% (32%) of the pharmacies in 1994. In addition, 25% (17%) of the pharmacies processed less than 50,000 prescriptions, 21% (28%) processed 70,000 up to and including 90,000 prescriptions and 18% (23%) processed more than 90,000 prescriptions.

prescriptions	source	random sample		SFK <sup>50</sup> N=700
		n=131	%	%
< 50,000		33	25.2%	16.7%
50-70,000		47	35.9%	32.4%
70-90,000		27	20.6%	27.6%
> 90,000		24	18.3%	23.3%

**Table a1.8.** Total WTG and non-WTG prescriptions 1994.

The total number of patients consisted of 8,000 to 11,000 patients for 39% (36%) of the pharmacies in 1996. In addition, 33% (29%) of the pharmacies served less than 8,000 patients, 22% (21%) served 11,000 up to and including 14,000 patients, and 6% (13%) served less than 14,000 patients.

patients	source	random sample		SFK <sup>50</sup> N=700
		n=141	%	%
< 8,000		46	32.6%	29.5%
8-11,000		55	39.0%	35.9%
11-14,000		31	22.0%	21.5%
> 14,000		9	6.4%	13.1%

**Table a1.9.** Total patient population 1996.

<sup>50</sup> From the data of the Stichting Farmaceutische Kengetallen (SFK) of July 1996 of all 700 participants of the SFK.

The total turnover consisted of 2.5 to 3.5 million Dutch guilders for 34% (34%) of the pharmacies in 1994. In addition, 29% (16%) of the pharmacies had a turnover of less than 2.5 million, 23% (27%) had a turnover of 3.5 up to and including 4.5 million, and 14% (23%) had a turnover of more than 4.5 million.

source	random sample		SFK <sup>51</sup> N=700
	n=128	%	%
<b>total turnover</b>			
< Dfl. 2,500,000	37	28.9%	15.8%
Dfl 2,5-3,500,000	43	33.6%	34.2%
Dfl 3,5-4,500,000	30	23.4%	27.1%
> 4,500,000	18	14.1%	22.9%

**Table a1.10.** Total turnover 1994.

*No usable data from the population available;*

Seniority was for 39% of the pharmacy managers 6 up to and including 15 years. In addition, 10% had a seniority of less than 2 years, 21% had a seniority of 2 to 6 years and 30% longer than 15 years.

source	random sample	
	n=145	%
<b>seniority</b>		
< 2 years	15	10.3%
2-6 years	30	20.7%
6-15 years	56	38.6%
> 15 years	44	30.3%

**Table a1.11.** Seniority.

<sup>51</sup> From the data of the Stichting Farmaceutische Kengetallen (SFK) of July 1996 of all 700 participants of the SFK.

A total of 60% of the pharmacies were independent. Of the remaining pharmacies, 4% cooperated with a health-care centre, 1% with a chain of pharmacies<sup>52</sup>, 16% had ownership of several pharmacies, 17% participated in a cooperation of some kind and 2,1% participated in a so-called 'transfer formula'.<sup>53</sup>

source organizational form	random sample	
	n=141	%
independent pharmacy	84	59.6%
health-care centre	6	4.3%
chain pharmacy	2	1.4%
management of several pharmacies	22	15.6%
part of a cooperation	24	17.0%
transfer formula	3	2.1%

**Table a1.12.** Cooperation.

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<sup>52</sup> A pharmacy chain is an intensive cooperation between pharmacies. Pharmacy managers are employed by the chain. An example is the Boots chain which recently started in the Netherlands.

<sup>53</sup> A transfer formula is a financial construction within which pharmacy managers become independent in stages. An example is the construction of stichting VNA in the Netherlands.

Personnel consisted of part-time and full-time staff. Full-time staff were employed for 38 hours per week or more, part-time staff for less than 38 hours. In the sample, 43% of the pharmacies employed 5 to 10 part-time members of staff. In addition, 8% employed 2 or fewer part-time members of staff, 39% employed 3 to 5 members of staff and 10% employed 10 or more members of staff.

source	random sample	
	n=145	%
<b>part-time staff</b>		
≤2	12	8.3%
<b>3 to 5</b>	57	39.3%
<b>5 to 10</b>	62	42.8%
≥ 10	14	9.7%

**Table a1.13.** Total part-time staff.

In the sample, 50% of the pharmacies employed 3 to 5 full-time members of staff. In addition, 22% employed 2 or fewer part-time members of staff, 27% employed 5 to 10 members of staff and 1% employed 10 or more members of staff.

source	random sample	
	n=145	%
<b>full-time staff</b>		
≤2	32	22.1%
<b>3 to 5</b>	72	49.7%
<b>5 to 10</b>	39	26.9%
≥ 10	2	1.4%

**Table a1.14.** Total full-time staff.

The net profit (after purchase and costs and before taxes) consisted of 100,000 to 250,000 Dutch guilders for 42% of the pharmacies in 1994. In addition, for 21% of the pharmacies the net profit was less than 100,000, 23% had a net profit of 250,000 up to and including 400,000, and 14% a net profit of more than 400,000.

source net profit	random sample	
	n=117	%
< Dfl. 100,000	25	21.4%
Dfl 100-250,000	49	41.9%
Dfl 250-400,000	27	23.1%
> 400,000	16	13.7%

**Table a1.15.** Net profit 1994.

The time for direct pharmacy tasks (for example, pharmaceutical tasks, managerial tasks, Pharmaco-Therapeutic Consultation (FTO) and checking of prescriptions) was more than 40 hours per week for 62% of the pharmacies. A total of 1% of the pharmacists spend fewer than 20 hours for these tasks, 8% spend 20 to 30 hours and 29% spend 30 to 40 hours.

source hours per week	random sample	
	n=146	%
< 20 hours	1	0.7%
20-30 hours	12	8.2%
30-40 hours	42	28.8%
> 40 hours	91	62.3%

**Table a1.16.** Time for direct tasks per week.



The time for *indirect* pharmacy tasks, for example, (committee) tasks related to the pharmaceutical profession in general, conferences and courses, was less than 10 hours per week for 70% of the pharmacists. A total of 20% of the pharmacists performed indirect tasks from 10 to 15 hours per week, 6% from 15 to 20 hours, and 4% more than 20 hours.

source	random sample	
	n=146	%
hours per week		
< 10 hours	102	69.9%
10-15 hours	29	19.9%
15-20 hours	9	6.2%
> 20 hours	6	4.1%

**Table a1.17.** Time for *indirect* tasks per week.

### Conclusion

The results of the sample and the data from the population were presented in **table a1.1.-a1.17**. Roughly, the correspondence seems reasonable. However, in some tables differences between sample and population were observed. Were these differences alarming? To give a more exact answer to possible non-correspondence between sample and population, a statistical comparison was made using the hypergeometric distribution in **appendix 2**. As well as thus an additional MANOVA was made, if non-correspondence was observed for a certain variable, for example, too many female pharmacy managers. In the MANOVA we checked if the scores of this variable for *thought* and *action* varied from other variables. In other words: did female pharmacy managers have other scores than male pharmacy managers?



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## Appendix 2 Generalization

### *Introduction*

The results of the sample and the data from the population were presented before, in **appendix 1**. Roughly, the correspondence seemed reasonable. However, in some tables differences between sample and population were observed. Were these differences alarming? Did generalization seem reasonable? To give a more exact answer to possible non-correspondence between sample and population, a statistical comparison was made using the hypergeometric distribution, in **appendix 2** here.

### *Methods*

Harnett and Murphy (1986: 205, 226-229) note that the binomial distribution has a widespread application in problems concerned with sampling. In such applications, use of the binomial distribution usually requires the assumption that one is sampling with replacement, because the probability of a 'success' on one trial ( $\pi$ ) must remain constant from trial to trial. However, many practical sampling problems involve sampling *without replacement*. Fortunately, if the number of trials ( $n$ ) is not too large in relation to the population size, the binomial can still be used because it provides a good approximation to the correct answer. However, in cases where sampling is without replacement and the sample size exceeds 5% of the population size, this approximation is not sufficiently accurate, and it is necessary to use the hypergeometric distribution to determine correct probability. The hypergeometric distribution applies to problems in which there are two or more different kinds of elements in a *finite population*. For this study, the hypergeometric distribution seemed to be a good distribution with respect to sampling. The random sample of this study was made *without replacement* in a population of 1521 pharmacies with a response of 9% (*more than 5%*) of the population. Molenaar (1971) defines an accurate approximation for the hypergeometric parameter  $r$  with one-sided confidence coefficient  $1-\alpha$ , when  $c$  red balls have been observed in a sample of size  $n \leq \frac{1}{2}N$ , drawn without replacement from  $N$  balls out of which  $r$  are red. The approximation is based on binomial bounds which are refined for a sample without replacement from a finite population. The applied formulas are:

$\lfloor r \approx \frac{1}{2}(c-1) + \frac{1}{2}(2N-n+1)\lfloor p;$	for the lower bound to the number of successes
$\lceil r \approx \frac{1}{2}c + \frac{1}{2}(2N-n+1)\lceil p;$	for the upper bound to the number of successes

where  $\lfloor r$  and  $\lceil r$  are the hypergeometric confidence bounds,  $c$  is the number of observed cases per cluster in the sample,  $N$  is the size of the population of Dutch pharmacies,  $n$  is the size of the random sample and  $\lfloor p$  and  $\lceil p$  are the calculated binomial confidence bounds based on  $c/n$ ,  $N$  and a lower bound (.025) and upper bound (.975). The hypergeometric confidence bounds of Molenaar were used to compare the sample characteristics with the population characteristics. Sample results are frequently used to make an estimation of the population, especially if no detailed

data from the population are available. For example, if we use a confidence interval of 95% and 39 female pharmacy managers were observed in the sample (146), it can be estimated that in the population (1521) the number of female pharmacy managers will be between 278 and 505. Within this study, some detailed information about the population was available. The sample results were used to calculate confidence bounds and, in addition, were compared with the available population results. In the example, the number of female pharmacy managers in the population (for example, 385) should be within the confidence interval: between the lower and upper bounds of 278 and 505. Consequently, if the population results were within the confidence interval, we assumed that the sample was a good representation of the population. A similar procedure was made for the non-response group.

However, if the number of female pharmacy managers in the population (for example, 526) was not between the calculated lower and upper bounds of 278 and 505; it was assumed that the sample was not a good representation of the population. Consequently, it was analyzed what the effects of an over-representation of under-representation were: 'Did female pharmacy managers have other scores than male pharmacy managers with respect to *thought* and *action*?'. Differences in the results of *thought* and *action* were tested. For example, the results of female and male pharmacy managers were compared. A frequently applied method to test means of different groups is MANOVA. Norusis (1992: 84) notes that two concerns dictate the choice of the multivariate criterion: power and robustness. That is, the test statistic should detect differences when they exist and not be much affected by departures from the assumptions. The most powerful and robust criterion is Pillai's. Pillai's trace was applied here. Lewis-Beck (1993: 337-369) considers that MANOVA evaluates mean differences on two or more dependent criterion variables simultaneously. MANOVA is usually conducted as a two-step process. The first step is to test the overall hypothesis of no difference in the means for the different groups. If this test is significant, the second step is to conduct follow-up tests to explain group differences. A common use of MANOVA is a first presentation of the multivariate tests, followed by a presentation of univariate tests. Stevens (1996: 161-163) notes that the multivariate tests show an overall level of significance, and the univariate tests show the contribution of the variables to the overall multivariate significance. Both tests were applied here.

The MANOVA was made for all questions with a level of significance of  $\alpha=.05$ . The factors used were the questions (female/male etc.) and the dependent variables were the pharmacy-mix scores for *thought* and *action*. A multivariate test was made for two scores of *thought* and all mix scores of *action*. The scores applied for *thought* were limited because the information of three scores could not be applied in MANOVA: the additions of outcome of all cases for *thought* were equal. The scores

for *thought* were dependent in such a way that if two scores were known (for example 1 and 2), the third score was evident (3). It was decided to use two scores for the multivariate tests. For the univariate tests, all scores of *thought* and *action* were used.

Stevens (1996: 6-9) also notes if  $k$  hypotheses are tested each with an  $\alpha$  of say .05, that we capitalize on change, and advises us to use  $\alpha/k$  as an 'overall  $\alpha$ ' instead of  $\alpha$  in these situations. The 'overall  $\alpha$ ' of this so-called Bonferroni Inequality was applied here for the significant results of MANOVA.

### *Results*

The (derived) data from the population were available for a total of 10 out of 17 main questions for profile. A hypergeometric distribution was used for all 33 subquestions for which the population data (N=1521) or the data from a large sample of the SFK (N=700) were available. A total of 18 out of 33 subquestions of the sample was observed within the confidence interval, and consequently 15 subquestions were not within the confidence interval. It was assumed that the 18 subquestions within the interval were corresponding within the population. However, 15 subquestions were not corresponding with the population. We cannot hence say much about the representativeness for the analyzed variables; the number of corresponding and non-corresponding variables was very similar. What was the effect of the non-correspondence with respect to the scores? A MANOVA was used to check if patterns could be found in the scores of *thought* and *action*. For example, did the scores of over-represented female pharmacy managers differ from scores of male pharmacy managers?

category	absolute numbers (N)	confidence bounds (n)
male	995	1004-1213
female	526	278-505
age 35-50	792	824-1054
age 50-65	235	508-738
age >65	167	∅ (0)
< 4 FTE assist. and other	215	276-483
4-7 FTE assist. and other	762	526-755
≤ 1.5 FTE pharmacists	1006	1012-1227
3-4.5 FTE pharmacists	10	∅ (0)
< 50.000 prescriptions	254	282-494
70-90.000 prescriptions	419	212-414
11-14.000 patients	327	87-221
> 14.000 patients	199	44-158
< 2.500.000 turnover	240	325-553
> 4.500.000 turnover	348	134-305

**Table 5.20.** Population data outside the calculated confidence bounds.

An additional MANOVA was made for all sample features with a double purpose. Firstly, was it worrisome to have an over-representation or under-representation of a certain category in the sample (the 15 not corresponding subquestions)? For example, **table 5.20** shows that female pharmacy managers were over-represented in the sample. It was tested if female pharmacy managers had a significantly different score for *thought* and *action* compared to male pharmacy managers. Secondly, was there a striking pattern in the scores of a any category? For example, it was tested whether pharmacy managers in urban areas had a significantly different score for *thought* and *action* compared to pharmacy managers in rural areas. The hypothesis of no difference in the means for the different groups for *thought* and *action* in the response group was consequently tested for all 17 main questions with a MANOVA.

The results of the multivariate analyses showed that the scores of 4 out of 17 main questions were significantly different for the groups sex, so-called 'formulas', location, and indirect tasks with a calculated p of .003, .005, .031 and .006 respectively. However, 17 hypotheses were tested. As mentioned before, Stevens (1996: 6-9) notes if  $k$  hypotheses are tested each with an  $\alpha$  of say .05, that we are capitalizing on chance. Put in another way: it is not surprising that we have found four significant results. These results might any well be the result of chance, and not of existing differences in the population. Stevens advises to use  $\alpha/k$  as an 'overall  $\alpha$ ' instead of  $\alpha$  in these situations. This is also known as the Bonferroni Inequality.<sup>54</sup> As a result, application of the multivariate and univariate tests in combination with the Bonferroni's Inequality results in a statistically non-significant relation between the categories for *profile* and the pharmacy-mix scores of *thought* and *action*. It was hence accepted that over-representation or under-representation was not worrisome, and that no striking pattern in the scores of any category of *profile* was observed.

#### Conclusion

It was assumed that although a poor correspondence of sample and population was observed for some of the questions, the random sample was a relatively good representation of the population, despite the four initial significant differences in scores. The hypothesis of no difference in the means for the different groups for *thought* and *action* was accepted. In addition, the observed differences between sample and population were accepted to have little importance on the pharmacy-mix scores. Consequently, the results for *thought* and *action* were generalized to all pharmacies in the Netherlands.

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<sup>54</sup> The calculated 'overall  $\alpha$ ' for *thought* and *action* would then be  $\alpha=.05/17=.002$ . All of the four significant results mentioned above had a calculated p-value larger than .002; none of the results was significant with the application of an 'overall  $\alpha$ '. The results of the univariate analyses showed that the scores of 7 out of 17 questions for 8 pharmacy-mix scores were significantly different for the groups sex (variable product mix *thought*), (in)dependence (variable product mix *thought*), cooperation (variable product mix *thought*), so-called 'formulas' (variable customer mix *thought*), location (variable customer mix *action*), direct tasks (variable customer mix *thought*), indirect tasks (variables product mix and customer mix *action*) with a calculated p-value of .002, .016, .028, .031, .032, .033, .007 and .009 respectively. However, 102 (=number of questions\*mixscores for *thought* and *action*= 17\*6) hypotheses were tested. The 'overall  $\alpha$ ' for *thought* and *action* would then be  $\alpha=.05/102=.0004$ . All of the eight calculated p-values which would be significant in using the  $\alpha$ , were larger than .0004, and therefore these results were not significant in using the 'overall  $\alpha$ '.





## Appendix 3 A Longitudinal Comparison

### *Introduction*

In the quantitative results of **chapter 6**, the results of supported and non-supported pharmacy managers were compared. What were the differences in the scores of the survey at  $t_0$  and  $t_1$  between the supported pharmacy managers of stichting VNA and SAL Apotheken and the non-supported pharmacy managers? What were the opinions of pharmacy managers about these results?

### *Surveys*

What were the differences in the scores of the survey at  $t_0$  and  $t_1$  between the supported and the non-supported pharmacy managers? The calculation for *thought* and *action* was made in the same way as in **chapter 5**. Using the Friedman test, the result for *thought* showed seven clusters in 1996 of which there were two clusters which were observed only in 1996 (cases 1014 and 254, presented in **table a3.1**).

group	ranking	case number	cases in quasi-experiment (survey)
1.	<i>product-process-customer</i>	case 22, 49, 104, 299	<b>4</b> (14)
2.	<i>product-customer-process</i>	case 54, 57, 79, 96, 122, 129, 138, 139, 143, 159, 160, 162, 164, 166, 167, 171, 189, 194, 196, 201, 218, 226, 230, 231, 239, 1003, 1005, 1030, 1031	<b>29</b> (82)
3.	<i>process-product-customer</i>	case 1014	<b>1</b> (3)
4.	<i>process-customer-product</i>		<b>0</b> (3)
5.	<i>customer-product-process</i>	case 1, 9, 19, 43, 44, 111, 115, 130, 251, 263, 271, 284, 293, 295, 1001, 1002, 1004, 1015, 1029, 1032, 1033	<b>21</b> (59)
6.	<i>customer-process-product</i>	case 27, 55, 89, 123, 297, 1027, 1028	<b>7</b> (12)
7.	<i>product=process=customer</i>	case 254	<b>1</b> (2)
	<b>total cases thought</b>		<b>63</b> (175)

**Table a3.1.** Ranking of pharmacy mixes for *thought* in the random sample and the selected sample 1996.

Using the Friedman test, the result for *thought* showed seven clusters in 1997 also, of which there were two clusters which were only observed in 1997 (cases 22 and 1002, presented in **table a3.2.**).

group	ranking	case number
1.	<i>product-process-customer</i>	case 171 <b>1</b>
2.	<i>product-customer-process</i>	case 49, 54, 79, 96, 122, 129, 130, 138, 139, 143, 159, 160, 162, 166, 189, 194, 196, 201, 218, 226, 263, 284, 299, 1015, 1028 <b>25</b>
3.	<i>process-customer-product</i>	case 89, 230, 1014 <b>3</b>
4.	<i>customer-product-process</i>	case 1, 9, 19, 27, 43, 44, 104, 111, 115, 123, 164, 167, 231, 239, 293, 295, 297, 1004, 1005, 1027, 1029, 1031, 1033 <b>23</b>
5.	<i>customer-process-product</i>	case 55, 57, 251, 254, 271, 1001, 1003, 1030, 1032 <b>9</b>
6.	<i>(product=customer)-process</i>	case 22 <b>1</b>
7.	<i>(process=customer)-product</i>	case 1002 <b>1</b>
	<b>total cases thought</b>	<b>63</b>

**Table a3.2.** Ranking of pharmacy mixes for *thought* in random sample and selected sample 1997.

The basis for the results for *action* in the survey of 1996 showed that 16 basic clusters were calculated in the cluster analysis; eight of which were only observed in 1996<sup>55</sup> (14 cases: cases 104, 130, 164, 263, 295, 1002, 57, 96, 297, 9, 139, 231, 251, 1031). The basic clusters were refined to five clusters (**table a3.3.**); one of

<sup>55</sup> The results of 1997 showed that some of the 1996 basic clusters were not observed anymore and some new basic clusters were formed. In the cluster product-customer-process, the basic clusters product>customer≥process and (product=customer)>process was observed only in 1996, the basic cluster product≥customer≥process was observed only in 1997. In the cluster process-product-customer, the basic cluster process=product≈customer was observed only in 1996. In the cluster customer-product-process, the basic clusters (customer≈product)>process, customer≥(product=process), and customer>(product≈process) were observed only in 1996, and the basic clusters customer>product>process and (customer≈product)>process were observed only in 1997. In the cluster customer-process-product, the basic clusters customer>(process=product), customer≈process≈product, and customer>process>product were observed only in 1996. In the cluster process-customer-product, the basic cluster process>(customer≈product) was observed only in 1997. In 1996, 9 out of 16 basic clusters were observed only in 1996, with a total of 14 out of 63 cases. In 1997, 4 out of 11 basic clusters were observed only in 1997, with a total of 12 out of 63 cases. It should be noted that the basic clusters did not result in major changes in the final clusters. However one cluster, customer-process-product, which contained two cases; was only observed in 1996. In addition, one cluster process-customer-product, which contained four cases, was only observed in 1997.

which was observed only in 1996 (cases 251 and 1031).

basic cluster <sup>56</sup>	ranking <sup>57</sup>	case number
1.	<i>product&gt;process&gt;customer</i>	case 19, 27, 129, 138, 166, 171, 293, 299, 1028 <b>9</b> (32)
2.	<i>product&gt;process≥customer</i>	case <b>122</b> <sup>58</sup> , 123, 160, 162, 201, 1005, 1015, 1030 <b>8</b> (19)
3.	<i>(product≈process)&gt;customer</i>	case 1, 43, 49, 194, 226, 271, 1001 <b>7</b> (21)
4.	<i>product&gt;customer&gt;process</i>	case 143, 167, 189, 196, 218 <b>5</b> (17)
5.	<i>product&gt;customer≥process</i>	case 104, 130, 164, 263, 295, 1002 <b>6</b> (17)
6.	<i>(product≈customer)&gt;process</i>	case 57, 96 <b>2</b> (3)
7.	<i>(customer≈product)&gt;process</i>	<b>0</b> (3)
8.	<i>process&gt;product&gt;customer</i>	case 22, 44, 54, 55, 111, 159, 230, 254, 284, 1003, 1004, 1029 <b>12</b> (24)
9.	<i>(process≈product)&gt;customer</i>	case 89, 239, <b>1014</b> , <b>1032</b> , 1033 <b>5</b> (17)
10.	<i>process&gt;(product≈customer)</i>	case 79, 115, 1027 <b>3</b> (10)
11.	<i>process≈product≈customer</i>	case 297 <b>1</b> (4)
12.	<i>customer≥(product≈process)</i>	case 9 <b>1</b> (4)
13.	<i>customer&gt;(product≈process)</i>	case 139, 231 <b>2</b> (2)
14.	<i>customer&gt;(process≈product)</i>	case 251 <b>1</b> (1)
15.	<i>customer≈process≈product</i>	case 1031 <b>1</b> (2)
16.	<i>customer&gt;process&gt;product</i>	<b>0</b> (1)
<b>total cases action</b>		<b>63</b> (177)

**Table a3.3.** Basic clustering of pharmacy mix ratio scores for *action* in the random sample and the selected sample 1996.

<sup>56</sup> The separate clusters are the first clusters produced with the agglomerative hierarchical clustering using the cluster method 'average linkage within groups' and using the similarity measure 'Pearson correlation'.

<sup>57</sup> In general, the first pharmacy mix mentioned had the highest score. The symbols applied are: > and < for larger and smaller than, ≥ and ≤ for larger and almost equal to and smaller and almost equal to, (mix1≈mix2) two mix scores being almost equal.

<sup>58</sup> Cases presented in **bold** and underlined were originally located in another cluster in the calculation with hierarchical cluster analysis.

The basis for the results for *action* in the survey of 1997 showed that 11 basic clusters were calculated in the cluster analysis; three out of which were only observed in 1997 (12 cases: cases 57, 164, 201, 254, 297, 115, 122, 130, 1015, 44, 1001, 293). The basic clusters were refined into five clusters (**table a3.4.**); one of which was observed only in 1997 (cases 115, 122, 130 and 1015).

basic cluster <sup>59</sup>	ranking <sup>60</sup>	case number
1.	<i>product&gt;process&gt;customer</i>	case 89, 111, 226, 230, 251, 263, 1002, 1005, 1030 <b>9</b>
2.	<i>product&gt;process≥customer</i>	case 19, 54, 138, 167, 171, 218, 239, 284, 299, 1027, 1029 <b>11</b>
3.	<i>(product≈process)&gt;customer</i>	case <b>1028<sup>61</sup></b> , <b>1033</b> <b>2</b>
4.	<i>product&gt;customer&gt;process</i>	case 96, 143, 162, 196, 231, 271, 295, 1031 <b>8</b>
5.	<i>product≥customer≥process</i>	case 57, 164, <b>201</b> , 254, 297 <b>5</b>
6.	<i>process&gt;product&gt;customer</i>	case 1, 22, 27, 79, 123, 129, 159, 194, 1014 <b>9</b>
7.	<i>(process≈product)&gt;customer</i>	case 9, 49, 55, 139, 160, 189, 1004 <b>7</b>
8.	<i>process&gt;(product≈customer)</i>	case 43, 104, 166, 1003, 1032 <b>5</b>
9.	<i>process&gt;(customer≈product)</i>	case 115, 122, <b>130</b> , 1015 <b>4</b>
10.	<i>customer&gt;product&gt;process</i>	case 44, 1001 <b>2</b>
11.	<i>(customer≈product)&gt;process</i>	case 293 <b>1</b>
	<b>total cases action</b>	<b>63</b>

**Table a3.4.** Basic clustering of pharmacy mix ratio scores for *action* in the random sample and the selected sample 1997.

Using the results of the Friedman test and the cluster analysis, let us now start with another table to illustrate the correspondence for both *thought* and *action* (**table a3.5.**). An analysis of this table shows that, in general, there are not many changes. We can see a similar result if we compare the cells of 1996 with the same cells of

<sup>59</sup> The separate clusters are the first clusters produced with the agglomerative hierarchical clustering using the cluster method average linkage within groups and using the similarity measure Pearson correlation.

<sup>60</sup> Mainly, the first pharmacy mix mentioned had the highest score. The applied symbols are: > and < for larger and smaller than, ≥ and ≤ for larger and almost equal to and smaller and almost equal to, (mix1≈mix2) two mix scores being almost equal.

<sup>61</sup> Cases presented in **bold** and underlined were originally located in another cluster in the calculation with hierarchical cluster analysis.

1997. For example, for *thought*, the second column product-process-customer shows that 4 cases were in this ranking in 1996 (second row) and 1 case in 1997 (fourth row). Similarly, for *action*, the same second column product-process-customer shows that 24 cases were in this cluster in 1996 (third row) and 22 cases in 1997 (fifth row). If we analyze the material in this way it seems clear that, in general, there are not many changes. However, before reaching this conclusion we have to refine our analysis, since these numbers alone do not give sufficient information about possible changes. Even if comparable numbers would be observed in each cell, the cases could be different. We will thus analyze the change in the pharmacy mix and the change in the correspondence between *thought* and *action* in time in the following tables to check this.

ranking method	product process customer	product customer process	process product customer	process customer product	customer product process	customer process product	(product=customer) process	(process=customer) product	product=process=customer
<b>thought 1996</b>	case 22, 49, 104, 299	case 54, 57, 79, 96, 122, 129, 138, 139, 143, 159, 160, 162, 164, 166, 167, 171, 189, 194, 196, 201, 218, 226, 230, 231, 239, 1003, 1005, 1030, 1031	case 1014		case 1, 9, 19, 43, 44, 111, 115, 130, 251, 263, 271, 284, 293, 295, 1001, 1002, 1004, 1015, 1029, 1032, 1033	case 27, 55, 89, 123, 297, 1027, 1028			case 254
total cases 63	4	29	1		21	7			1
<b>action 1996</b>	case 1, 19, 27, 43, 49, 122, 123, 129, 138, 160, 162, 166, 171, 194, 201, 226, 271, 293, 299, 1001, 1005, 1015, 1028, 1030	case 57, 96, 104, 130, 143, 164, 167, 189, 196, 218, 263, 295, 1002	case 22, 44, 54, 55, 79, 89, 111, 115, 159, 230, 239, 254, 284, 297, 1003, 1004, 1014, 1027, 1029, 1032, 1033	21	case 9, 139, 231	case 251, 1031			
total cases 63	24	13	21		3	2			
<b>thought 1997</b>	case 171	case 49, 54, 79, 96, 122, 129, 130, 138, 139, 143, 159, 160, 162, 166, 189, 194, 196, 201, 218, 226, 263, 284, 299, 1015, 1028		case 89, 230, 1014	case 1, 9, 19, 27, 43, 44, 104, 111, 115, 123, 164, 167, 231, 239, 293, 295, 297, 1004, 1005, 1027, 1029, 1031, 1033	case 55, 57, 251, 254, 271, 1001, 1003, 1030, 1032	case 22	case 1002	
total cases 63	1	25		3	23	9	1	1	
<b>action 1997</b>	case 19, 54, 89, 111, 138, 167, 171, 218, 226, 230, 239, 251, 263, 284, 299, 1002, 1005, 1027, 1028, 1029, 1030, 1033	case 57, 96, 143, 162, 164, 196, 201, 231, 254, 271, 295, 297, 1031	case 1, 9, 22, 27, 43, 49, 55, 79, 104, 123, 129, 139, 159, 160, 166, 189, 194, 1003, 1004, 1014, 1032	21	case 115, 122, 130, 1015	case 44, 293, 1001			
total cases 63	22	13	21	4	3				

Table a3.5. Table of correspondence for *thought* and *action* survey 1996 and 1997.

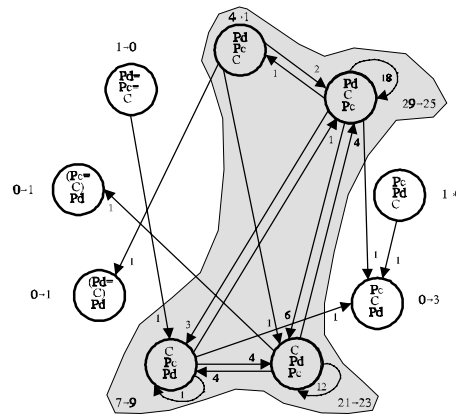
**Table a3.6.** gives us a starting point for judging the number of cases in which there was some change in *thought*. However, we are in need of a more refined presentation since we are interested in the origin (1996) as well as the destination (1997) of the pharmacy manager with respect to *thought*.

response	result	stable			change			stable			change		
	mix position experimental group	product in position 1	product to position 1	product to pos.2	process in pos.1	process to pos.1	process to pos.2	customer in pos.1	customer to pos.1	customer to pos.2			
continuation desired	VNA/SAL survey, interviews, questionnaire, observation	1	2	1	0	0	3	3	4	1			
	independent survey, interviews	5	1	0	0	0	0	5	2	2			
	independent survey	6	0	1	0	2	1	3	4	0			
no continuation desired	independent survey	6	2	2	0	0	2	2	1	1			
<b>total</b>	63 cases	18	5	4	0	2	6	13	11	4			

**Table a3.6.** Change in pharmacy mix position for *thought* survey 1996 and 1997.

The results for *thought* in the survey of 1996 showed that the rankings product-customer-process, customer-product-process, and customer-process-product were selected by most pharmacy managers; in each ranking 29, 21, and 7 cases respectively. A total of 57 out of 63 cases was observed in these rankings. The results of 1997 showed that the rankings were the same: product-customer-process, customer-product-process, and customer-process-product were selected by most pharmacy managers; in each ranking, 25, 23, and 9 cases respectively. The same total of 57 out of 63 cases was observed in these rankings. In general, we observed that most pharmacy managers perceived the product mix and the customer mix as being the most important pharmacy mixes. The results of 1997 showed a similar pattern: again, product and customer were perceived as being the most important pharmacy mixes. The changes in time showed that 31 cases remained in the same ranking: 18 cases in the ranking product-customer-process, 12 cases in the ranking customer-product-process, and one case in the ranking customer-process-product. In addition, 26 cases changed within the main observed rankings: cases with product or customer in the first ranking (compare **table a3.6.** and **figure a3.1.**).

A rough comparison<sup>62</sup> of the change in the rankings of pharmacy managers of stichting VNA and SAL Apotheken (VNA/SAL pharmacy managers) and the other pharmacy managers showed that the differences observed were not very striking. Most results were very similar. However four results were special. Firstly, one case of VNA/SAL pharmacy managers was observed with the product mix stable in the first ranking. At the independent pharmacy managers five or six cases were observed in this category. Secondly, three cases of VNA/SAL pharmacy managers were observed in a change to process in the second ranking. At the independent pharmacy managers zero to two cases were observed in this category. Thirdly, five cases SSM pharmacy managers were observed with the customer mix stable in the first ranking. At the other pharmacy managers two or three cases were observed in this category. Fourthly, two cases of SSM pharmacy managers and one case of nc-pharmacy managers were observed in a change to the customer mix in the first ranking. At both other pharmacies four cases were observed in this category.



**Figure a3.1.** Changes in *thought* survey 1996 and 1997.

In general, stichting VNA and SAL Apotheken had fewer pharmacy managers with product stable in the first ranking, but had more pharmacy managers in a change to customer in the first ranking. In addition, the number of VNA/SAL pharmacy managers with product stable in the first ranking, was fewer than the SSM pharmacy managers. In 1997, the results of the product mix showed that fewest VNA/SAL pharmacy managers were observed with product in the first ranking. The results of the process mix showed that the two only cases with process in the first ranking were observed at the c-pharmacy managers. The results of the customer mix showed that fewest nc-pharmacy managers were observed with customer in the first ranking. The other scores were comparable.

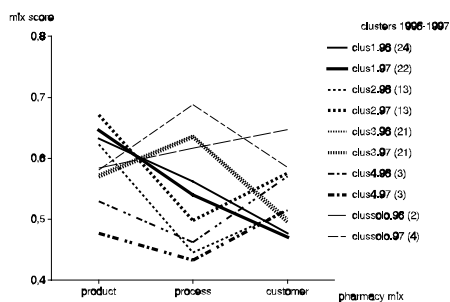
<sup>62</sup> The comparison of the differences involved four groups: VNA/SAL pharmacy managers, SSM pharmacy managers (independent managers with whom interviews were performed in using Soft Systems Methodology), c-pharmacy managers (independent pharmacy managers with whom only a survey was performed and which desired continuation), and nc-pharmacy managers (independent pharmacy managers with whom only a survey was performed and who did not desire continuation).

**Table a3.7.** gives us a starting point for judging the number of cases in which there was some change in *action*. However, again we are in need of a more refined presentation since we are also interested in the origin (1996) as well as the destination (1997) of the pharmacy manager with respect to *action*.

response	result mix position experimental group	stable			change			stable			change		
		product			process			customer			customer		
		in position 1	product to position 1	product to pos.2	in pos.1	process to pos.1	process to pos.2	in pos.1	customer to pos.1	customer to pos.1	customer to pos.2		
continuation desired	VNA/SAL survey, interviews, questionnaire, observation	4	4	0	4	1	1	0	1	0			
	independent survey, interviews	4	3	0	1	6	1	0	1	0			
	independent survey	5	4	0	2	3	1	0	0	1			
no continuation desired	independent survey	1	3	0	1	6	1	0	1	3			
<b>total</b>	63 cases	14	14	0	8	16	4	0	3	4			

**Table a3.7.** Change in pharmacy mix position for *action* survey 1996 and 1997.

The results for *action* in the survey of 1996 showed that 16 basic clusters were calculated in the cluster analysis; these were refined to five clusters, one of which was observed only in 1996. The results of 1997 showed 11 basic clusters which were refined to five clusters also; one of which was



**Figure a3.2.** Changes in mean scores per cluster for *action* survey 1996 and 1997.

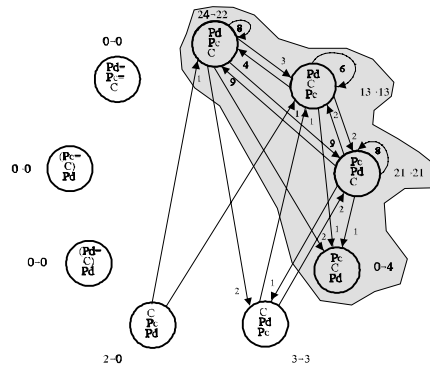


observed only in 1997.<sup>63</sup>

In 1996, the clusters product-process-customer, product-customer-process, and process-product-customer were selected by most pharmacy managers; in each cluster 24, 13, and 21 cases respectively. A total of 58 out of 63 cases was observed in these rankings. The results of 1997 showed that the rankings were the same: the clusters product-process-customer, product-customer-process, and process-product-customer were selected by most pharmacy managers; in each cluster 22, 13, and 21 cases respectively. A total of 56 out of 63 cases was observed in these rankings.

In general, the results showed that most pharmacy managers categorized actions related to the product mix and the process mix. The results of 1997 showed a similar pattern also: again actions related to product and process were performed mostly. The changes in time showed that 22 cases remained in the same ranking: eight cases in the cluster product-process-customer, six cases in the cluster product-customer-process, and eight cases in the cluster process-product-customer. In addition, 33 cases changed within the main observed clusters: these were cases with product or process in the first position.

A rough comparison of the change in the rankings of VNA/SAL pharmacy managers and the other pharmacy managers showed that the differences observed were also not



**Figure a3.3.** Changes in *action* survey 1996 and 1997.

<sup>63</sup> The results of 1997 showed that some basic clusters of 1996 were not observed anymore and some new basic clusters had been formed. In the cluster product-customer-process, the basic clusters product>customer≥process and (product=customer)>process was observed only in 1996, and the basic cluster product≥customer≥process was observed only in 1997. In the cluster process-product-customer, the basic cluster process=product=customer was observed only in 1996. In the cluster customer-product-process, the basic clusters (customer≈product)>process, customer≥(product=process), and customer>(product≈process) were observed only in 1996, and the basic clusters customer>product>process and (customer≈product)>process were observed only in 1997. In the cluster customer-process-product, the basic clusters customer>(process=product), customer≈process≈product, and customer>process>product were observed only in 1996. In the cluster process-customer-product, the basic cluster process>(customer=product) was observed only in 1997. In 1996, 9 out of 16 basic clusters were observed only in 1996, with a total of 14 out of 63 cases. In 1997, 4 out of 11 basic clusters were observed only in 1997, with a total of 12 out of 63 cases. It should be noted that the basic clusters did not result in major changes in the final clusters. However one cluster, customer-process-product; which contained two cases, was only observed in 1996. In addition, one cluster, process-customer-product; which contained four cases, was only observed in 1997.

very striking. Again, most results were very similar. Four results were special. Firstly, one case of the nc-pharmacy managers was observed with the product mix stable in the first position. At the other pharmacy managers, four or five cases were observed in this category. Secondly, four cases of VNA/SAL pharmacy managers were observed with the process mix stable in the first ranking. At the other pharmacy managers one or two cases were observed in this category. Thirdly, one case of VNA/SAL pharmacy managers and three cases of c-pharmacy managers were observed in a change to process in the first ranking. At both other pharmacies six cases were observed in this category. Fourthly, three cases of the nc-pharmacy managers were observed in a change to customer in the second position. At the other pharmacy managers zero cases or one case was observed in this category. In general, stichting VNA and SAL Apotheken had more pharmacy managers with process stable in the first ranking, but fewer pharmacy managers in a change to process in the first ranking. In addition, the number of VNA/SAL pharmacy managers with product stable in the first ranking was more than the nc-pharmacy managers and the number of VNA/SAL pharmacy managers with a change to customer in the second ranking was fewer than the nc-pharmacy managers. In 1997, the results of the product mix showed that fewest nc-pharmacy managers were observed with product in the first ranking. The other scores were comparable. The results of the process mix and the customer mix showed comparable results with respect to the four groups of pharmacy managers.

The analysis of the correspondence for *thought* and *action* showed that most results did not change (compare **table a3.8.**). Eight c-pharmacy managers were observed in the category 'stable correspondence', which was more than the other pharmacy managers (four or five cases in this category). Two c-pharmacy managers were observed in the category 'better correspondence', which was fewer than the other pharmacy managers (also four or five cases in this category). The number of cases in the category 'worse correspondence' was comparable for all groups of pharmacy managers and varied between six and seven cases. In general, we could conclude that the differences observed between the results of *thought* and *action* in 1996 increased in 1997.

response	expression of change result experimental group	all positions used <sup>64</sup>			limited positions used <sup>65</sup>		
		stable	better	worse	stable	better	worse
continuation desired	VNA/SAL survey, interviews, questionnaire, observation	4	4	7	6	3	6
	independent survey, interviews	5	5	6	7	4	5
	independent survey	8	2	6	8	2	6
no continuation desired	independent survey	4	5	7	8	3	5
<b>total</b>	63 cases	21	16	26	29	12	22

**Table a3.8.** Change in correspondence for *thought* and *action* survey 1996 and 1997.

### Interviews

What were the opinions of pharmacy managers about these results? The 31 pharmacy managers involved in the SSM sessions were asked to give their comment on the results of 1996 and 1997 in interviews.

In 1996, most pharmacy managers agreed with the results. A total of 18 pharmacy managers agreed with the results for both *thought* and *action*, 10 pharmacy managers only agreed with the results for *thought*, 2 pharmacy managers only agreed with the results for *action*, and one pharmacy manager did not agree with either results for *thought* and *action*. In 1997, a similar pattern was observed; most pharmacy managers agreed with the results. A total of 20 pharmacy managers agreed with the results for both *thought* and *action*, 10 pharmacy managers only agreed with the results for *thought*, and one pharmacy manager did not agree with either results for *thought* and *action*. The acceptance of the results among VNA/SAL pharmacy

<sup>64</sup> Change of correspondence is here expressed with five categories, *no correspondence*, *third position only*, *second position only*, *first position only*, and *complete correspondence*. The applied scale is: no correspondence ↔ correspondence in third position only ↔ correspondence in second position only ↔ correspondence in first position only ↔ complete correspondence. A *stable* correspondence is a correspondence within the same category, a *better* correspondence is a change from left to right, and a *worse* correspondence is a change from right to left.

<sup>65</sup> Change of correspondence is here expressed with three categories: *no correspondence*, *limited correspondence* and *complete correspondence*. The applied scale is: no correspondence ↔ (limited correspondence meaning: correspondence in third, second and first position only) ↔ complete correspondence. A *stable* correspondence is a correspondence within the same category, a *better* correspondence is a change from left to right, a *worse* correspondence is a change from right to left.

managers and independent pharmacy managers was comparable.

Some pharmacy managers agreed with the results of the survey. For example, the pharmacy manager of case 001 noted that many daily actions have little relationship to one's actual professional work, but have to be done. 'For instance, financial actions are pushed in the direction of the pharmacy manager; however, I am not educated for that'. In case 054, the pharmacy manager argued that pharmaceutical tasks are the basis of the work in the pharmacy. 'We probably gave even more attention to pharmaceutical tasks last year.' In case 138, the pharmacy manager noted that product actions were in the first place, and that this had been determined historically. 'However, as a pharmacist you have to control various issues. In this respect process actions are inevitable'.

Some pharmacy managers did not agree with the results of the survey. For example, in case 043, the pharmacy managers argued that the customer should be in the first position for action. A lot of time was spent on the customer. They had problems with the fact that product, process, and customer were in conflict with each other. 'In this pharmacy we think a lot about our customer policy, for example, developments with respect to cooperation with the hospital and training of the personnel. In addition, the fast collection of prescriptions is important in our daily work'. In case 254, the pharmacy manager noted that he partially agreed with the results for action. Process actions were indeed mainly at the front, especially in the last two years, since he had joined the partnership. In this period the reorganization was mainly related to money. 'However, I work a lot with training personnel and with pharmaco-therapy at the moment'. He also pays a lot of attention to the role of the customer, for example, via the projects of the KNMP and the reconstruction of the pharmacy, and the introduction of the counter model. In case 1005, the pharmacy manager said that the results had surprised him. He noted that he did not spend much time on either product, process, or customer actions. He spent most of his time on personnel problems related to the organization of the 24-hour service. 'During the last months I have not worked as a pharmacist, but as a confidant.'

### *Conclusion*

We can distill from our analysis above that the results of the quantitative survey of 1996 and 1997 at 63 pharmacy managers suggested that no striking or 'alarming' differences between supported and non-supported pharmacy managers were present. Moreover, the interviews in the quasi-experiment showed that most of the participating pharmacy managers agreed with the survey results. We would therefore conclude that the difference between supported and non-supported pharmacy managers was minimal for the modelled change to the customer mix.

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## Summary

Everyday around the world, managers do seek to transform their ideas into realized action. In the traditional sense of management science, we would expect a rather linear process. Managers start with intention, and after some time and effort they realize action. However, nothing is further from the truth. The process from intention to realization, respectively labelled as *thought* and *action* in this thesis, is dynamic and complex. Intentions are modified, drop out, or may even remain intended; activities never intended get realized and evoke new intentions, et cetera. Only some of the intended activities will be transformed into realized action in a linear process. Whereas the term 'activity' relates to a description of the 'modelled world', does the term 'action' relate to observations in the 'real world'. In this first line of thought a difference between *thought* and *action* appears to be inevitable. It is quite clear these days that change in intentions is common practice for managers. It is in fact the core of a never-ending learning process. We have tried to 'catch' some managerial problems in order to enhance such a learning process. In this present thesis, *thought* and *action* were studied in the specific context of community pharmacy practice in the Netherlands.

We would generally expect pharmacy managers, like other managers, to act within a shared purpose. Such a purpose could be: the supply of medicine to the population. At another layer, this purpose can be translated into a mission; for example, good quality of the provision and use of medicine. It seems quite obvious that most pharmacy managers in developed countries would agree with such a purpose or mission. However, despite consensus of purpose and mission, pharmacy managers interpret good quality in different ways. The intentions of the pharmacy manager may comprise a mix of, for example, pharmaceutical activities, financial-economic activities, and customer activities, all leading to good quality and serving the purpose well. Managers will try and realize activities which are consistent with their professional preference. The intended activities originate from within the outlines of the purpose; linked actions in the real-world become purposeful in a similar way. In this thesis, three mixes of such activities were postulated: the product mix, the process mix and the customer mix. In each pharmacy mix different activities were stressed. The product mix related to the specific standards the medicine should meet, the minimization of risks, and the minimization of error occurrence. The process mix related to what extent the pharmacy is organized profitably and efficiently. The customer mix related to the way in which the wishes of the customers are met. In most developed countries, pharmacy managers seek to structure their organization in accordance with the customer mix. That brings us to the central theme of this study: 'What problems does a pharmacy manager face if he/she 'travels' to the customer mix?'. We argued that in order to provide a sketch of problems in organizational change, it would be helpful to define some solid point of departure, which also might be useful for the debate in the field. Consequently, some methods were tested in the

field and a survey was performed at 169 community pharmacy managers in *phase one*. Based on these results, the study was continued on the micro level in the next phase, *phase two*. The main interest in this phase was to improve our knowledge of managerial problems in an organizational change to the customer mix, and, in addition, of the role of the support structure in such a process of change. In *phase two*, a group of 63 pharmacy managers was involved.

In the first part of *phase one*, the main purpose was method selection for a broad survey, since no validated methods were present on this issue. Seven methods to describe *thought* and *action* in Dutch community pharmacy practice were therefore formulated and tested. In addition, a method to describe the *profile* of the community pharmacy was formulated and tested in practice also. In the end, individual methods for *thought*, *action* and *profile* were selected and ready-for-use in the survey. In the second part of *phase one*, these methods were applied to a large sample of Dutch community pharmacy managers. The results for *thought* showed that product and customer were perceived as being the most important actions. The results for *action* showed that most actions performed were related to product and process. The results of *thought* and *action* of most pharmacy managers did not correspond. For a few pharmacy managers the complete ranking of *thought* and *action* corresponded (28→16%). Most of these pharmacy managers managed in the product mix (24). Most pharmacy managers managing completely *inconsistently* (47→28%), managed in the customer mix (24). It should be noted that the results of the survey were used for generalization to the population of community pharmacy managers. The study thus showed that most consistent positions were found within the product mix; most *inconsistencies* were found within the process and the customer mixes. A possible explanation for the importance of the product mix is that the pharmaceutical actions in both *thought* and *action* relate to the product-oriented tradition of the profession. The product mix relates to the field in which pharmacy managers are well-educated and trained. It is their main purpose. The traditional conception of pharmaceutical tasks of the community pharmacist is still of great importance in education, work and mind of pharmacy managers. Customers, physicians and authorities also require a maximum of high professional quality. Activities of the process mix and the customer mix are conditional on the pharmaceutical expertise of the pharmacist. Moreover, the difference expected between *thought* and *action* was also present, but in a rather special way. It should be remembered that it is predictable that there be differences between *thought* and *action*. However, the differences observed appear to be special. A contrast between customer and process actions was observed in this study. Normally, in a profit-oriented organization, customer activities are expected to lead to an improved financial position. In contrast, the results of this study showed that there were other perceptions of importance. Customer and process were not related in perceived importance. A relation between product and customer was found.

The professional quality of the pharmacy manager was perceived as being the most important issue here, and not profit. It should be noted that the Dutch pharmacy manager works in a politicized line of business. The relation customer and process is problematic. Moreover, as with many other organizations in the field, the income of the pharmacy organization is under major pressure due to measures from the authorities. On one hand, it could be argued that the authorities have been quite successful in cost containment of the pharmaceutical sector. On the other hand, it could just as well be argued that this has evolved in a rather unstable regulation. We could expect the managers to react to these cut-backs by improving their financial grip on the pharmacy, reduce their costs, or even look for alternatives, which in fact might have stimulated the observed process-mix actions. Authorities and insurers, and consequently the media, contend that pharmacy managers are concentrating on (negative) process activities. There appears to be a tension between money and care in this line of business. A possible explanation for this tension can be threefold: pharmacy managers do need profit in order to enable survival, making profit by selling medicine to ill people is perceived to be not very ethical, and the authorities are in need of a reduction of public spending on health care. In contrast, the community pharmacy sector contends that pharmacy managers concentrate on (positive) customer activities. This study showed a nuance of both positions. Remarkable is that most *inconsistent* positions were found within the process mix and the customer mix. If the pharmacy managers have been making more money than is socially acceptable, then here it does appear that these managers do it rather *inconsistently*. Similarly, the actions of the customer mix were also poorly organized in terms of consistency. These results show that pharmacy managers are neither strong organized with respect to process and customer. Consequently, there seems to be little evidence to support the statements of both the authorities and the community pharmacy sector. However, pharmacy managers seemed to operate well doing the more classical work at the pharmacy; *thought* and *action* of the product mix were most consistent. Now that the point of departure of the Dutch community pharmacy manager was determined, we are prepared to resolve our main question about problems in organizational change to the customer mix in *phase two*.

In *phase two*, the management of the organizational change to the customer mix was studied. Here, the main questions of this thesis were studied: 'What problems does a pharmacy manager face if he/she 'travels' to the customer?' and 'What is the role of the support of stichting VNA and SAL Apotheken in this process of change?'. The customer activities of pharmacy managers were modelled and evaluated a year later. Soft Systems Methodology (SSM) was used as a framework to model these customer activities, and in doing so, it enabled us to collect and analyze the data of this process of change. It was suggested that, in such a process of change, a pharmacy manager would be in need of an aim, for instance, 'improve customer relations', and

a mechanism in order to evaluate whether the modelled activities had been successful in the light of this aim. These instruments are necessary for survival, and to be able to judge whether the modelled activities and/or the performed actions had made a contribution to the process of change, or had been a waste of effort. Criteria are generally involved in evaluation, and these consist of norms and monitor instruments. In this thesis it was decided that norms are the measures of performance with which a certain activity, set of activities or model can be judged. The measurements are the instruments which visualize or monitor to what extent the norm has been achieved. Furthermore, aim, activities, norms, monitor instruments should be linked; we would expect them to form a 'purposeful whole'. We adopted the term 'emergent properties', applied it to various levels, and analyzed if any parts would make up a 'purposeful whole'.

It was observed that pharmacy managers experienced problems with the formulation and use of aim, norms and monitor activities and problems linking aim and customer activities. We argued that it is not easy for pharmacy managers to define a usable aim and related criteria which 'cover' the modelled customer activities. In the pharmaceutical sector we would expect most aims, norms and measurements for monitoring or exerting control to relate to the product and process mixes. In contrast, in the customer mix, some aims were rather abstract, vague and defined for a meso level. In this situation it was hard to find proper criteria, comprising norms and monitor instruments for the micro level. In terms of the customer activities, and related criteria for efficacy, to monitor if these customer means did work, we have argued that many managers did evaluate their modelled activities in a rather proper way. Criteria for efficacy were modelled and actually used in the control process, and this sometimes led to control action. However, a main problem was: What to do with the result if a measurement for efficacy was made without having a usable norm? Not all managers performed control action to manage such situations. Another problem was that some pharmacy managers did not monitor their modelled activities at all. A lot has to be learned with respect to the customer mix. The managers were in need of aims and evaluation for their individual pharmacy practice.

We also noted that the support in the pharmaceutical sector was poor with respect to these problems. Although many organizations (like the KNMP) which operate in the sector are a good source of new ideas, they fail to give proper support to the individual pharmacy manager with the formulation and measurement of aims to do with the 'travel' to the customer mix. Pharmacy managers are not helped with meso goals and evaluation, especially not if they do not know how to translate this to their pharmacy practice. They are in need of micro-instrumentalization: aims, norms and monitor instruments for customer activities applicable at their own pharmacy.



The survey in 1996 and in 1997 at 63 pharmacy managers suggested that no striking or 'alarming' differences were observed between supported and non-supported pharmacy managers, although our qualitative data showed some subtle differences. Many of the ideas for the modelled customer activities, as well as some monitor activities, came from the support structure of stichting VNA and SAL Apotheken. In fact, many inventive and fresh customer activities which could also be used in organizations other than health care were modelled at pharmacies of stichting VNA and SAL Apotheken. Professional independence was important. In many cases, pharmacy managers had the right to refuse participation in activities and monitor activities of the support structure. With respect to their modelled activities, the meetings with the colleagues were not of a great help to most supported pharmacy managers. We would doubt much improvement in the control of the problematic situation with the help of the support. Most modelled activities were not influenced by the discussions; change was not facilitated by the support meetings, as it were. In the discussions the managers merely informed each other. We have to note however that regional differences sometimes meant that the problematic situations for the supported pharmacy managers could not be compared. The advantage of the supported pharmacy managers over their non-supported colleagues was that they had a structure which was close to their pharmacy organization and very present. Nevertheless the managers were not supported in solving the problems described earlier. We would therefore conclude that the difference between supported and non-supported pharmacy managers was minimal for the modelled change to the customer mix.

In the context of *phase one*, it is quite clear that profit or turnover does also matter within community pharmacy practice. However here, on the basis of the results of *phase two*, we would argue that the modelled activities should not only be aimed at profit, but also at care. This combination would complicate formulation of aims and criteria. In other lines of business which are solely profit-oriented (for example, McDonald's) activities would be aimed at 'profit' and 'cost reduction'; consequently, we would expect the organization to be less complex. Four basic dimensions of McDonaldization are: efficiency, calculability (or quantification), predictability, and increased control through substitution of human for non-human technology (Ritzer 1996). It should be noted that calculability of 'quality of life' or 'quality of care' within community pharmacy practice is a complicated matter. The debate about definite outcomes in terms of improved quality of life for the patient is not yet settled. Moreover, this matter will be complicated even further, when dealing with a combination of 'profit' and 'care'. The community pharmacy sector, and many others with them, have been wrestling with this problem for some time. Do the activities of the pharmacy manager aim mainly at maximum profit or at the Hippocratic oath? It cannot be denied that profit is necessary for the community

pharmacy in order to enable survival. Ideally, from an organizational point of view, the activities within the community pharmacy would have to serve both profit and care in order to enable survival; or, in other words, making the Hippocratic oath profitable. But this is precisely where the main part of the pain in the discussion lies: maximizing profit by selling medicine to ill people is perceived not to be very ethical. We argue that this problem will not resolve within the current context of Dutch community pharmacy practice. It is assumed here that this particular complication of money and care will remain for the community pharmacy manager, as well as for other managers in the health-care chain where money and care are similarly entwined. These managers will have to learn how to deal with this specific problem in order to improve their grip on the organization.

In this study, the main aim was to find managerial problems in organizational change. We in fact found and described many problems of pharmacy managers with the use of SSM. Consequently, with this thesis we expect to have improved our knowledge of organizational change to the customer mix within community pharmacy practice. However, the key to the solution of these problems is still out in the field. For the moment, pharmacy managers themselves will have to improve the micro-instrumentalization of aims, norms and monitor instruments for customer activities, and, in addition, they will have to learn how to deal with the tension between money and care. Hopefully in future, new research will improve our knowledge about these evolved new subjects.

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## Samenvatting

Elke dag trachten managers over de gehele wereld hun ideeën om te zetten in gerealiseerde actie. In de traditionele zin van de Bedrijfskunde, zouden we een lineair proces verwachten. Managers beginnen met intenties en na enige tijd en inspanning realiseren zij actie. Maar, niets is minder waar. Het proces van intentie naar realisatie, in dit proefschrift *denken* en *doen* genoemd, is dynamisch en complex. Intenties worden gemodificeerd, vallen af of blijven intenties, niet intentionele activiteiten worden gerealiseerd en leiden tot nieuwe intenties etc. Slechts een deel van de intentionele activiteiten wordt in een lineair proces omgezet in gerealiseerde actie. In dit onderzoek verwijst de term 'activiteit' overigens naar een beschrijving van de gemodelleerde wereld en de term 'actie' naar observaties in de reële wereld. In deze redenering lijkt een verschil tussen *denken* en *doen* onvermijdelijk. Het is inmiddels algemeen bekend dat verandering van intenties door managers dagelijkse praktijk is. Eigenlijk is het de kern van een eindeloos leerproces. In dit onderzoek is getracht om een aantal managementproblemen te 'vangen' teneinde de kwaliteit van dit leerproces te verbeteren. In het onderhavige onderzoek zijn *denken* en *doen* bestudeerd in de openbare apotheekpraktijk in Nederland.

Verwacht werd dat apotheekmanagers, net als andere managers, handelen binnen een gemeenschappelijk strategisch doel. Een doel zou kunnen zijn: het verstrekken van geneesmiddelen aan de bevolking. Op een ander niveau zou dit doel vertaald kunnen worden in een missie. Bijvoorbeeld: goede kwaliteit van de geneesmiddelenvoorziening en het gebruik van geneesmiddelen. Het lijkt evident dat de meeste apotheekmanagers in ontwikkelde landen zouden kunnen instemmen met dit strategische doel en de daarbij genoemde missie. Desalniettemin, ondanks deze consensus bij strategisch doel en missie, zullen apotheekmanagers goede kwaliteit op een verschillende wijze interpreteren. De intenties van de apotheekmanager bestaan uit een mix van bijvoorbeeld farmaceutische activiteiten, financieel-economische activiteiten en klantactiviteiten. Al deze activiteiten zullen binnen het strategische doel vallen en op enigerlei wijze leiden tot goede kwaliteit. De manager zal proberen om die activiteiten te realiseren die consistent zijn met zijn of haar professionele beroepsopvatting. De intentionele activiteiten vinden hun oorsprong binnen de contouren van het strategische doel. Met elkaar verbonden acties in de werkelijkheid worden op soortgelijke wijze doelgericht. In dit onderzoek zijn drie mixen van activiteiten afgeleid: de productmix, de procesmix en de klantmix. In elk van deze apotheekmixen zullen verschillende activiteiten benadrukt worden. In de productmix worden de activiteiten zodanig ontworpen dat het geneesmiddel aan specifieke standaarden voldoet en risico en fouten geminimaliseerd worden. In de procesmix worden de activiteiten zodanig ontworpen dat ze efficiënt zijn en winst opleveren. In de klantmix worden de activiteiten zodanig ontworpen dat aan de wensen van de klant wordt voldaan. In de meeste ontwikkelde landen trachten apotheekmanagers de activiteiten voor de organisatie in overeenstemming met de klantmix te ontwerpen.

Dit ontwerp betreft de hoofdvraag van dit onderzoek: ‘Welke problemen komt een apothekmanager tegen als hij/zij naar de klantmix ‘reist’?’. In dit onderzoek is verondersteld dat een degelijke beschrijving van een vertrekpunt bruikbaar zou kunnen zijn bij een ‘schets’ van deze problemen bij een organisatie-verandering. Deze beschrijving zou dan eveneens nuttig kunnen zijn voor het huidige debat in het veld. Dientengevolge zijn enkele onderzoeksmethoden getest in het veld en is aansluitend een enquête uitgevoerd bij 169 apothekmanagers in *fase een*. Op basis van deze resultaten werd het onderzoek vervolgd op het micro-niveau in de daaropvolgende fase, *fase twee*. Het belangrijkste doel in deze fase was het vergroten van het inzicht in managementproblemen bij organisatie-verandering naar de klantmix en over de rol van een ondersteuningsstructuur in dit veranderingsproces. Daarbij is een groep van 63 apothekmanagers onderzocht.

In het eerste deel van *fase een* zijn methoden getest en geselecteerd aangezien nog geen gevalideerde methoden beschikbaar waren voor dit specifieke onderwerp. Zeven methoden zijn geformuleerd en getest teneinde *denken* en *doen* in de Nederlandse apothekpraktijk te beschrijven. Daarenboven is een methode geformuleerd en getest in de praktijk om het *profiel* van de openbare apothek te beschrijven. Uiteindelijk zijn afzonderlijke methoden voor *denken*, *doen* en *profiel* geselecteerd en waren de methoden klaar voor gebruik in de enquête. In het tweede deel van *fase een* zijn deze methoden gebruikt in een grote steekproef van Nederlandse openbare apothekmanagers. Uit de resultaten voor *denken* bleek dat de acties voor product en klant als belangrijkste werden ervaren. Uit de resultaten voor *doen* bleek dat de acties voor product en proces het meeste waren uitgevoerd. Voor de meeste apothekmanagers correspondeerden de resultaten voor *denken* en *doen* niet. Slechts bij een klein aantal apothekmanagers correspondeerde *denken* en *doen* compleet (28 → 16%). Daarvan zijn de meeste waargenomen in de productmix (24). Echter, bij de meeste apothekmanagers waar complete *inconsistentie* tussen *denken* en *doen* is vastgesteld (47 → 28%), bestuurden in de klantmix (24). Deze resultaten zijn gegeneraliseerd naar de populatie van openbare apothekmanagers. Daarmee zijn dus de meeste consistente posities in de productmix waargenomen; de meeste *inconsistente* posities zijn waargenomen in de procesmix en de klantmix. Een mogelijke verklaring voor het belang van de productmix is dat farmaceutisch-inhoudelijke acties in *denken* en *doen* verbonden zijn met de klassieke beroepsopvatting in de professie. Verondersteld zou kunnen worden dat de apothekmanager goed is opgeleid en getraind in de activiteiten van de productmix. Het is de belangrijkste reden van bestaan. De klassieke beroepsopvatting over farmaceutisch-inhoudelijke taken van de openbare apotheker is nog steeds van groot belang in opleiding, werk en brein van de apothekmanager. Ook eisen klanten, artsen en overheid maximale professionele kwaliteit van de apotheker. De farmaceutische expertise van de apothekmanager is randvoorwaardelijk voor uitvoering van activiteiten op het gebied van de procesmix

en de klantmix. Verschillen tussen *denken* en *doen* werden verwacht. Dit verwachte verschil tussen *denken* en *doen* was dan ook aanwezig in de resultaten, alleen op een bijzondere wijze. In dit onderzoek is een verschil tussen klant- en procesacties vastgesteld. In op winst gerichte organisaties zullen klantactiviteiten naar verwachting leiden tot een verbeterde financiële positie. Uit de resultaten van dit onderzoek bleek echter iets anders. Niet klant en proces maar product en klant waren met elkaar verbonden in *denken*. De professionele kwaliteit was van het grootste belang in de perceptie van de apothekmanager, en niet winst. In dit kader kan worden opgemerkt dat de Nederlandse apothekmanager in een gepolitiseerde branche opereert. De relatie tussen klant en proces is problematisch. De inkomsten van de apothekorganisatie staan fors onder druk, overigens net als bij andere organisaties in het farmaceutische veld. Overheidsmaatregelen liggen daaraan ten grondslag. Enerzijds lijkt de overheid nogal succesvol te zijn geweest in het beheersen van de kosten in de farmaceutische sector. Anderzijds lijkt het er ook op dat dit tot instabiliteit in de overheidsmaatregelen heeft geleid. In deze context kan worden verwacht dat de apothekmanager de financiële ‘grip’ op de apothek versterkt, de kosten reduceert, of zelfs naar alternatieven op zoek gaat. Een en ander kan de waargenomen proces acties hebben gestimuleerd. Overheid en verzekeraars, en dientengevolge media, suggereren dat de aandacht van apothekmanagers vooral uitgaat naar de (negatieve) procesactiviteiten. Er blijkt een spanning te bestaan tussen geld en zorg in deze sector. Een mogelijke verklaring voor deze spanning kan drie oorzaken hebben: apothekmanagers hebben winst nodig om voort te bestaan, winst maken door verkoop van geneesmiddelen aan zieke mensen wordt als niet-ethisch beschouwd en de overheid moet de uitgaven voor de gezondheidszorg terugdringen. Daarentegen suggereert de apothekersbranche dat de aandacht van apothekmanagers vooral uitgaat naar (positieve) klantactiviteiten. Dit onderzoek brengt enige nuancering aan in beide suggesties. Opvallend is dat de meeste *inconsistente* posities zijn waargenomen in de procesmix en de klantmix. Als de apothekmanagers meer geld verdienen dan maatschappelijk wenselijk is, dan blijkt uit dit onderzoek dat de organisatie op dit punt nogal *inconsistent* is. Tegelijkertijd kan bij de acties van de klantmix een soortgelijke vaststelling worden gedaan met betrekking tot de *inconsistentie*. Deze resultaten tonen dat apothekmanagers niet sterk zijn georganiseerd met betrekking tot proces en klant. De stellingen van overheid en apothekersbranche worden derhalve niet ondersteund door de onderhavige onderzoeksresultaten. Wel blijkt dat de apothekmanagers consistent besturen op het gebied van de traditionele werkinhoud van het vak; *denken* en *doen* waren het meest consistent in de productmix. Nu het vertrekpunt van de Nederlandse apothekmanager in *fase een* is vastgesteld zijn we voorbereid om de hoofdvraag in *fase twee* te behandelen: de problemen bij organisatie-verandering naar de klantmix.

In *fase twee*, is de besturing van de organisatie-verandering naar de klantmix onderzocht. In dit onderdeel zijn twee vragen uitgewerkt: ‘Welke problemen komt een apothekmanager tegen als hij/zij naar de klantmix zou ‘reizen’?’ en ‘Wat is de rol van de ondersteuningstructuur van de stichting VNA en SAL Apotheken in dit veranderingsproces?’. De klantactiviteiten van apothekmanagers zijn gemodelleerd en na enige tijd geëvalueerd. Voor de modellering van de klantactiviteiten is gebruik gemaakt van Soft Systems Methodology (SSM). SSM stelt ons in staat om de gegevens van dit veranderingsproces te verzamelen en te analyseren. Gesteld werd dat een apothekmanager in dit veranderingsproces een doelstelling nodig zou hebben, bijvoorbeeld ‘verbeter de klantenbinding’; waarbij het belangrijk zou zijn een mechanisme te ontwerpen waarmee geëvalueerd kan worden of de gemodelleerde klantactiviteiten succesvol waren in het licht van de doelstelling. Doelstelling en evaluatiemechanisme zijn noodzakelijk om te overleven en te beoordelen of de gemodelleerde activiteiten en/of de uitgevoerde acties een bijdrage hebben geleverd aan het veranderingsproces, of verspilde moeite waren. In het algemeen wordt bij evaluatie gebruik gemaakt van criteria. Criteria bestaan uit normen en meetinstrumenten. In dit onderzoek werd gesteld dat een norm een prestatiemaat is, waarmee een bepaalde activiteit, set van activiteiten of model kan worden beoordeeld. Een meetinstrument is een instrument dat visualiseert of evalueert in welke mate de norm is bereikt. Verder dienen doelstelling, normen en meetinstrumenten met elkaar verbonden te zijn; zij dienen een doelgericht geheel te vormen. De term ‘emergent properties’ is overgenomen en gebruikt voor de analyse op diverse aggregatieniveaus in het model teneinde vast te stellen of de delen een doelgericht geheel vormen.

In dit onderzoek is vastgesteld dat apothekmanagers problemen ervaren met de formulering en het gebruik van doelstelling, normen en meetinstrumenten en problemen ervaren met de verbinding tussen doelstelling en klantactiviteiten. Het blijkt niet eenvoudig om een bruikbare doelstelling te formuleren met bijbehorende criteria voor effectiviteit die de gemodelleerde activiteiten kunnen evalueren. Naar verwachting zullen in de apothekersbranche de meeste doelstellingen, normen en meetinstrumenten voor evaluatie en beheersing betrekking hebben op activiteiten van de productmix en de procesmix. Sommige doelstellingen in de klantmix waren daarentegen abstract, vaag en gericht op het meso-niveau. In deze situatie is het moeilijk om geschikte criteria te vinden die toepasbaar zijn op het micro-niveau. De evaluatie van het functioneren van de gemodelleerde klantactiviteiten door middel van de criteria voor ‘efficacy’ of werkzaamheid werd door de apothekmanagers op een geschikte manier uitgevoerd. Deze criteria voor ‘efficacy’ zijn gemodelleerd en gebruikt in het beheersingsproces, wat in sommige gevallen leidde tot bijstelling. Een belangrijk probleem was: ‘Wat te doen met de meetresultaten zonder dat een bruikbare norm geformuleerd is?’. Niet alle managers voerden een beheersactie uit om deze situatie te besturen. Een ander probleem was dat sommige apothek-

managers de gemodelleerde activiteiten niet evalueerden. Met betrekking tot de klantmix kan er in dit kader nog veel geleerd worden. De managers hadden behoefte aan doelstellingen en evaluatie voor hun individuele apotheekpraktijk.

Op het vlak van de bovengenoemde problemen blijkt de ondersteuning vanuit de branche vooralsnog gering. Alhoewel vele in de branche opererende organisaties, zoals de KNMP, een goede inspiratiebron voor nieuwe ideeën blijken te zijn, ontbreekt een geschikte ondersteuning voor de formulering en evaluatie van doelstellingen voor de individuele apotheekmanager bij de 'reis' naar de klantmix. Apotheekmanagers zijn niet geholpen met doelstellingen en evaluatie op meso-niveau, te meer omdat ze niet weten hoe dit vertaald moet worden naar de individuele apotheekpraktijk. Ze hebben behoefte aan micro-instrumentalisering: doelstellingen, normen en meetinstrumenten voor klantactiviteiten, toepasbaar op het micro-niveau.

Uit de resultaten van de enquête, uitgevoerd bij 63 apotheekmanagers in 1996 en 1997, zijn geen opvallende of alarmerende verschillen waargenomen tussen ondersteunde en niet-ondersteunde apotheekmanagers. Wel waren er subtiele verschillen in de kwalitatieve gegevens. Veel ideeën voor de in de modellen verwerkte klantactiviteiten en meetinstrumenten kwamen van de ondersteuningsstructuur van de stichting VNA en SAL Apotheken. In feite zijn veel frisse, inventieve klantactiviteiten, die ook toepasbaar zouden zijn in andere sectoren dan in de gezondheidszorg, gemodelleerd bij apotheken van de stichting VNA en SAL Apotheken. Professionele onafhankelijkheid was belangrijk. In veel gevallen hadden de apotheekmanagers het recht om deelname bij activiteiten en monitor-activiteiten, georganiseerd door de ondersteuning, te weigeren. Met betrekking tot de gemodelleerde activiteiten waren de bijeenkomsten met de collega's dan ook geen grote steun. Het kan betwijfeld worden of de beheersing van de problematische situatie verbeterd is door de ondersteuning. De gemodelleerde activiteiten werden niet beïnvloed door de discussies; de ondersteuningstructuur heeft de organisatieverandering daarmee niet duidelijk vergemakkelijkt. In de discussies informeerden de managers elkaar slechts. Opgemerkt dient te worden dat binnen de ondersteuningsstructuur regionale verschillen soms tot onvergelykbaarheid van de problematische situaties leidden. Het voordeel voor de ondersteunde apotheekmanagers was dat zij een structuur hadden die dicht bij hun organisatie was en duidelijk aanwezig. De managers werden echter niet ondersteunt bij de eerder genoemde problemen. Wij concluderen derhalve dat het verschil tussen de ondersteunde en niet-ondersteunde apotheekmanagers minimaal was in de gemodelleerde verandering naar de klantmix.

In de context van *fase een* blijkt dat winst en omzet ook van belang zijn in de

openbare apotheekpraktijk. Uit de resultaten van *fase twee* zou afgeleid kunnen worden dat activiteiten niet alleen gericht moeten zijn op winst, maar ook op zorg. Deze combinatie compliceert de formulering van doelstellingen en criteria. In andere alleen op winstgerichte branches zouden de activiteiten gericht zijn op 'winst' en 'kostenreductie'. Dientengevolge zou verwacht kunnen worden dat de organisatie minder complex is, zoals bijvoorbeeld bij McDonald's. Vier basisdimensies van McDonaldization zijn: efficiëntie, meetbaarheid (of kwantificering), voorspelbaarheid en toegenomen beheersbaarheid door de substitutie van menselijke door niet-menselijke technologie (Ritzer 1996). Opgemerkt kan worden dat meetbaarheid van 'kwaliteit van leven' of 'kwaliteit van zorg' in de openbare apotheekpraktijk een ingewikkelde kwestie is. De discussie over definitieve uitkomsten in termen van een verbeterde kwaliteit van leven voor de patiënt is nog niet ten einde. Deze discussie wordt nog gecompliceerder als naast 'zorg' ook nog eens 'winst' wordt toegevoegd. Gedurende enige tijd worstelt de apothekersbranche, en vele anderen met haar, met dit probleem. Zijn de activiteiten van de apotheekmanager vooral gericht op maximale winst of vooral op de eed van Hippocrates? Er kan niet worden ontkend dat voor de openbare apotheek winst noodzakelijk is om te overleven. Vanuit een bedrijfskundig standpunt zouden de activiteiten in de openbare apotheek idealiter gericht moeten zijn op winst en zorg teneinde te overleven. In andere woorden: maak de eed van Hippocrates winstgevend. Exact daar is echter het belangrijkste deel van de pijn in de discussie: winstmaximalisatie door verkoop van geneesmiddelen aan zieke mensen wordt als niet-ethisch aangemerkt. Dit probleem is niet oplosbaar binnen de bestaande context van de Nederlandse openbare apotheekpraktijk. Aangenomen wordt dat deze specifieke complicatie van geld en zorg zal blijven bestaan voor de apotheekmanager, overigens net als bij andere managers in de gezondheidszorg waar geld en zorg samenkomen. Deze managers zullen moeten leren om te gaan met dit specifieke probleem, ten einde de 'grip' op de organisatie te verbeteren.

Het hoofdprobleem van dit onderzoek was om te komen tot een beschrijving van managementproblemen bij organisatie-verandering. Veel problemen van apotheekmanagers zijn daadwerkelijk waargenomen en beschreven met behulp van SSM. Wellicht heeft dit onderzoek daarmee het inzicht in de organisatie-verandering naar de klantmix in de apotheekpraktijk vergroot. Echter, de sleutel voor de oplossing van deze problemen ligt nog steeds in het veld. Op dit moment moeten apotheekmanagers nog zelf de micro-instrumentalisering van doelstellingen, normen en meetinstrumenten voor klantactiviteiten verbeteren. Ook zullen ze moeten leren omgaan met de spanning tussen geld en zorg. Hopelijk zal toekomstig onderzoek het inzicht in de oplossing van deze problemen vergroten.



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## Epilogue

The linking pin between management science and community pharmacy practice was Jos van der Werf. He outlined the first research proposal which ultimately led to this thesis. He started with a relatively simple idea and a clear concept of what such a study would involve. This idea and concept has been the 'Leitmotif' throughout the study. The basic idea was that pharmacies either stress pharmaceutical activities, financial activities, or customer activities; a triangle. Furthermore, it was presupposed that the community pharmacy sector intended to shift towards customer activities. The aim of the study was to provide help for pharmacy managers in such a process of change. A design similar to that of Joan Woodward (1965) was selected; she decided to carry out a survey and some case studies in her study. We thought that a similar design would provide us with rich data and good learning experiences. It was expected that a survey would provide a stable and general picture of the sector with respect to the triangle. Some follow-up case studies were planned in order to study the process of change in detail. As you have been able to see in this thesis, this first idea and concept have been worked out throughout the study. Besides the usefulness of the results, this design has given me the opportunity to work with quantitative and qualitative methods. I could recommend it for all management scientists since it makes you aware of the specific advantages and limitations of each method.

Management science is about real life, and indeed, as Schön pointed out, we are in "a swamp of confusing messes" (1983: 42), from which we have to learn our lessons for the sake of management and science. That explains the relatively good match of management science and pharmacy practice. Both fields deal with complexity and dynamics of managerial actors in connection with their environment. The major difference with classical pharmaceutical science is the aspect of isolation, for example, bacteria can be isolated from the environment in order to study their behaviour. In neither management science nor in pharmacy practice can isolation in this sense be regarded as fruitful. The core issue of these fields is interaction; this feature, among others of course, made the data rather 'messy'.

Quantitative methods were very helpful in clearing up some of this mess. Once a method has been found, the results are within one's reach. You are always quite sure that in the end there will be a number waiting to be explained. Numbers truly are magic: they seem to reduce complexity. The major problem with these methods was selection. The relevancy of the selected method in the light of the research question is vital; although it is obvious I stress it again. Quantitative methods, although very complicated sometimes, can be helpful for certain research questions, for me however the real 'brain cracker' and the biggest learning experience came from the analyses of the qualitative data. It was a 'brain cracker' because one seems to have no real tool to distil conclusions from the data; no numbers are waiting at the end. How

could I find a tool which was relevant for my thesis, applicable as a good sieve, and which did not violate the messages from the data? The answer was simple: a good theory. The learning experience related to this quest for a suitable sieve. If we were using SSM for the collection of data it seemed appropriate to use SSM as a methodology for analysis as well. Other related theories were added to give a more accurate view over the material. Although this seems a trivial point, the usability of a good theory for the purpose of analyses did surprise me. I used theory as a booster for the analyses. I learned that theory provides you with a good map through a 'mess' of data and is truly indispensable for the analyses of qualitative data.

This study has given me many ideas for possible future research, some of which are presented here. From the point of view of management science, the role of the authorities within health care is a rather tricky one; complicated and emotionally charged. That is exactly what makes this field special and interesting for another study. New studies about the management of the 'messes' of problems observed within community pharmacy practice could improve our knowledge about this evolved subject. Moreover, it would be interesting to study how managers within health care manage their relationships, especially in terms of the ongoing change within health care. I believe that the process of changing the cost of health care for society is one which will never end and is hard to manage. It appears quite certain that pharmacy managers, as well as other managers within health care, will have to learn how deal with a changing environment. Structural changes are now again being proposed by the authorities. Further study could possibly support these managers and improve the structure of these 'messes' of relationships in which they seem to be involved in. Moreover, with respect to SSM, I would suggest to study the usability of the term 'emergent properties' in practice for analyzing data. The layered structure itself and the link between several layers would be the subject of such a study. I believe that the purposefulness of activities of individuals, departments and/or organizations will be an intriguing future subject of study.

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