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Thought and action

Mobach, M.P.

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Chapter 5 Survey[23]

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

[23] 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).[24] The selected sample group of VNA/SAL pharmacies was labelled with case numbers 1001-1033 (**table 5.1.**).

sequence of sending	***case***
action before **profile & thought**	case 1-164
profile & thought before **action**	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 2nd 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

[24] 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 11th 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 16th 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.

[25] k relates to the number of possible options.

[26] 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.**).[27]

5.3.2. Thought method

In the data-collection method used to study ***thought*** of the pharmacy manager, 26 questions[28] 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.

[27] 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*.

[28] 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.[29] 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* α*=.05. The Friedman test takes dependence* ***within*** *each case between 1, 2 and 3 into account with the calculation of the mean ranking. However,* ***in****dependence* ***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* ***in****dependence 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* ***in****dependence 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*

[29] 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**[30], 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 *in*dependence within one case was presupposed in order to be able to use

[30] 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.	***product-process-customer***	case 22, 28, 49, 62, 64, 74, 104, 192, 204, 259, 265, 283, 299 **13**	case 1012 **1**
2.	***product-customer-process***	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 **76**	case 1003, 1005, 1009, 1017, 1030, 1031 **6**
3.	***process-product-customer***	case 90 **1**	case 1014, 1026 **2**
4.	***process-customer-product***	case 157, 276 **2**	case 1019 **1**
5.	***customer-product-process***	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 **46**	case 1001, 1002, 1004, 1006, 1007, 1010, 1015, 1016, 1022, 1024, 1029, 1032, 1033 **13**
6.	***customer-process-product***	case 27, 55, 89, 123, 220, 297 **6**	case 1008, 1021, 1023, 1025, 1027, 1028 **6**
7.	***product=process=customer***	case 241, 254 **2**	
	total cases thought	**146**	**29**

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 α=.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≥.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 ≥.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 **in**significant 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.[31]

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 ≥.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

[31] *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.

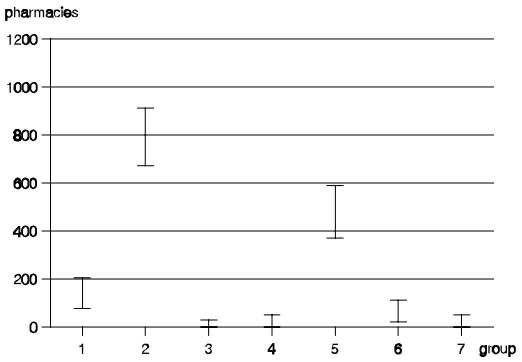

Figure 5.1. The estimated confidence bounds per group for *thought* in the population.

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

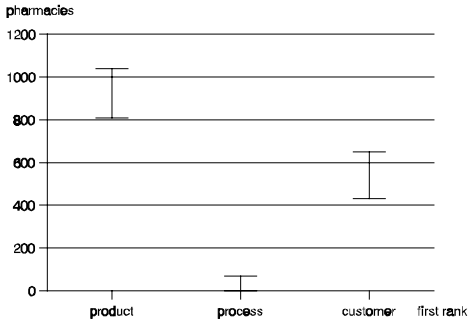

Figure 5.2. The estimated confidence bounds for the first rank per mix for *thought* in the population.

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≈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≥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≈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[32]	**ranking**[33]	**case** (random sample n=150)	**case** (selected sample n=27)
1.	***product>process>customer***	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.	***product>process≥customer***	case 33, 52, 73, 82, 101, 102, 118, 123, 160, 162, 177, 185, 201, 215, 296	case 1005, 1015, 1023, 1030
3.	***(product≈process)>customer***	case 1, 7, 28, 43, 49, 67, 71, **76**, 78, 105, 107, 126, 194, 214, 221, 226, 271	case 1001, **1014**, 1022, **1032**
4.	***product>customer>process***	case 8, 51, 61, 69, 99, 116, 143, 165, 167, 189, 196, 218, 223, 228, 246, 260, 291	
5.	***product>customer≥process***	case 30, **48**, 62, 80, 91, 104, **122**, 130, 164, 184, 187, 191, 263, 265, 278, 295	case 1002
6.	***(product≈customer)>process***	case 57, 96, 176	
7.	***(customer≈product)>process***	case 45, 74, 163	
8.	***process>product>customer***	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.	***(process≈product)>customer***	case 5, 42, 53, 60, 89, 110, 114, 133, 147, 210, 239, 256, 283	case 1007, 1021, 1026, 1033
10.	***process>(product≈customer)***	case 3, 41, **79**, **115**, 179, 188, 241, 294	case 1006, 1027
11.	***process≈product≈customer***	case 87, 213, 297	case 1012
12.	***customer≥(product=process)***	case 9, 36, 50, 207	
13.	***customer>(product≈process)***	case 139, 231	
14.	***customer>(process≈product)***	case 251	
15.	***customer≈process≈product***	case 186	case 1031
16.	***customer>process>product***	case 276	
total cases *action*		**150 cases**	**27 cases**

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

[32] *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.*

[33] *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 **61**	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 **34**	case 1002 **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 **43**	case 1003, 1004, 1006, 1007, 1008, 1010, 1012, 1014, 1021, 1024, 1026, 1027, 1029, 1032, 1033 **15**
4.	***customer-product-process***	case 9, 36, 45, 50, 74, 139, 163, 207, 231 **9**	
5.	***customer-process-product***	case 186, 251, 276 **3**	case 1031 **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.

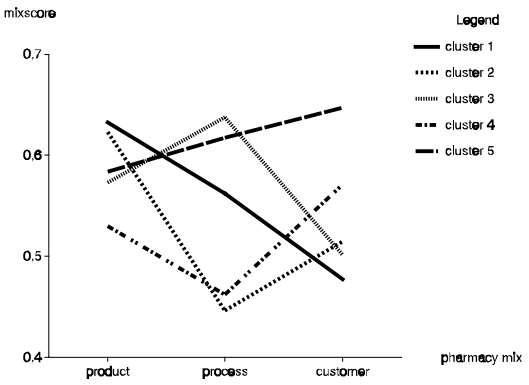

Figure 5.3. The mean score per pharmacy-mix ratio per cluster.

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 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.

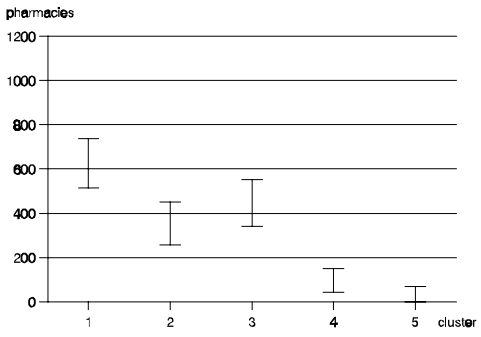

Figure 5.4. The estimated confidence bounds per cluster for *action* in the population.

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.

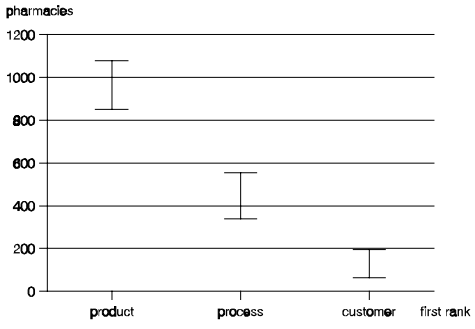

Figure 5.5. The estimated confidence bounds for the first rank per mix for *action* in the population.

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).

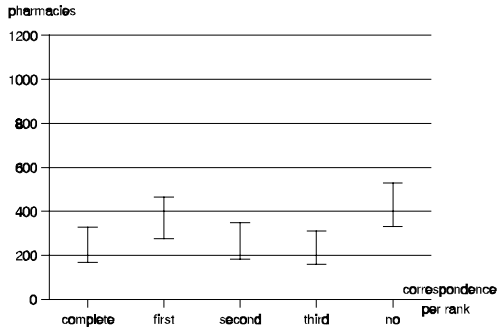

Figure 5.6. The estimated confidence bounds of correspondence between *thought* and *action* in the population.

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.

ranking **method**	***product*** ***process*** ***customer***	***product*** ***customer*** ***process***	***process*** ***product*** ***customer***	***process*** ***customer*** ***product***	***customer*** ***product*** ***process***	***customer*** ***process*** ***product***	***product=*** ***process=*** ***customer***
thought **169**	case 22, 28, 49, 62, 64, 74, 104, 192, 259, 265, 283, 299, 1012 **13**	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 **78**	case 90, 1014, 1026 **3**	case 157, 276, 1019 **3**	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 **58**	case 27, 55, 89, 123, 220, 297, 1008, 1021, 1023, 1025, 1027, 1028 **12**	case 241, 254 **2**
action **169**	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 **67**	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 **35**	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 **54**	**0**	case 9, 36, 45, 50, 74, 139, 163, 207, 231 **9**	case 186, 251, 276, 1031 **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 *in*consistent position (47), have customer in the first ranking for 65% (66) of all (partially) *in*consistent 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 *in*consistently, did this mainly in the customer mix. Out of 47 pharmacy managers who were managing completely *in*consistent, 24 had customer in the first ranking.

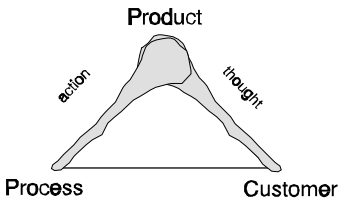

Figure 5.7. The triangle with the main result of the correspondence between *thought* and *action*.

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 *in*consistently (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.

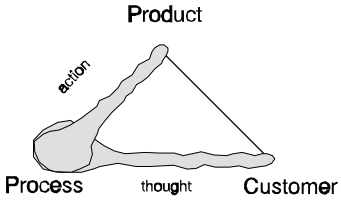

Figure 5.8. An example of a triangle for a supermarket manager in the correspondence between *thought* and *action*.

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

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 *in*consistent 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 *in*consistently. 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 ánd 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 *in*consistent. The ‘travel’ to the customer mix could be rather ‘messy’ for many pharmacy managers; specifically the ones that are *in*consistent 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

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 *in*consistency 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 *in*consistency. 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 *in*consistency in the customer mix would handicap the 'travel' to the customer mix.