Farmers as consumers:

Attitude and benefits perception towards milkers' gloves

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Preface

This thesis gains insight into the attitude and benefit perception of farmers towards milkers' gloves. In this section, I would like to thank the people who have contributed to the writing of this thesis.

First of all, my supervisor Reint Jan Renes. Not only for his advices and criticism, but also for his enthusiasm. Because Reint Jan's enthusiasm for communication science and his lectures were one of the reasons to take more courses in communication science which resulted in a minor during my masters.

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Abstract

Milkers' gloves are always investigated as a tool to reduce mastitis (Huijps et al., 2009; Jansen et al., 2009; Jansen et al., 2010). In this paper consumer research will be conducted to understand the disposition of the farmers toward milkers' gloves Therefore four questions are posed: 1.What is the attitude of the farmer towards milkers' gloves? 2. What is the benefits perception of the farmer towards milkers' gloves? 3. How is the attitude influenced by the benefit perception? 4. How is the utility of milkers' gloves influenced by the attitude, benefit perception and social geographic characteristics? The answers of these questions will create a complete picture of the disposition of farmers towards milkers' gloves, which can contribute towards improvement of the product or in a campaign to increase the use of milkers' gloves. This study consists of a questionnaire, which was conducted on the internet. This survey was divided into 3 sections: attitude, benefits and personal and farm characteristics. A free elicitation method was used to understand the attitude of the consumer, in this case the farmer, towards the product. The words from the free elicitation tasks were ranked into 7 clusters groups: hygiene, mastitis, udder health, materials, users comfort, users discomfort and remaining words. Thereby a 7-point likert scale was used for the benefit section. The benefit section was divided into 5 subsections: behaviour beliefs, performance motivation, environmental constrains, self-image and perceived normative pressure. A descriptive analyses was conducted to get an overall view of the participants and second to determine the overall attitude and benefits. Furthermore regression analyses was used to investigate the influences of the benefits on the attitude and the influence on the utility of milkers' gloves. Based on the results of this study hygienic was the main attitude perception of milkers' gloves and the benefit perception is based on performance motivation and perceived normative pressure. Behaviour beliefs influenced the attitude. Also both the attitude and benefit perception were influenced by the number of cows milked per day. Some recommendation can be done; first to repeat this survey under farmers as a part of a survey from an organization, like the Dutch Udder Health Centre. Also the product milkers' gloves could be improved by the use of thinner and/or biodegradable materials. Finally, it's likely that farmers will use milkers' gloves when milkers' gloves are present on the farm.

Keywords: milkers' gloves, attitude, benefit perception, consumer research

Introduction

In recent years a lot of research is done on the influence of milkers' gloves in mastitis reduction. Mastitis is an important disease in the dairy industry, because it is the most expensive disease with cost rising until a maximum around € 200, - per cow per year (Huijps et al., 2008). Mastitis is transmitted between cows by milking. Therefore mastitis can be reduced by milking as hygienic as possible (Peeler et al, 2000; Verhaeghe and Alasiri, 2008; McDougall et al., 2009). In 2007 a campaign was launched in the Netherlands to improve udder health with the main focus on wearing milkers' gloves (Jansen et al., 2010). Because the use of milkers' gloves reduces 75% of the bacteria load on the hands in comparison to bare hands. However disinfecting bare hands and/or gloves reduces the bacteria load even higher with 85% and 98% respectively (Olde Riekerink et al., 2008). Subsequently milkers' gloves ended at the 4th place of the 18 most cost-efficient measures for improvement of udder health (Huijps et al., 2010). The campaign of the UCGN has led to an increase in the use of the milkers' gloves with 21% (Jansen et al., 2010). Because mastitis is a complex disease not all of the farmers are completely confidenced about the effects or practicality of gloves (Jansen et al., 2010). This is shown in an opinion questionnaire towards the benefits for the farmers, which resulted in 40% of the farmers were satisfied with the gloves and 40% found it inconvenient (Jansen et al., 2010).

Kleef et al (2005) stated that "Even though consumers may not always be able to express their wants, it is important to understand how they perceive products". However in the study of Jansen et al. (2009) the human factor of the farmers is mentioned as: "his management style and accompanying disposition and beliefs" (cited form Jansen et al., 2009). Thus, farmers are seen as mediators to reduce mastitis, but not as consumers of the product milkers' gloves (Jansen et al, 2010; Jansen et al, 2009). When farmers can be seen as consumers and milkers' gloves as a product, a consumer research can be done. Hereby the first stage for new product development can be used which includes "understanding of consumers needs" (cited Kleef et al, 2005) to get an understanding of the farmer's attitude towards milkers' gloves and with that information a step forward can be taken. Also Nyman et al. (2007) suggested that the attitude towards treatment influenced the incident rate of mastitis. Thereby it was concluded that veterinarians are the most influenced actors in mastitis control practice (Kuiper et al., 2005). But also colleagues, peers and

farm magazines are an important information source (Jansen et al., 2010) Environmental constrains are also important, because constrains can ensure that the behaviour can't be performed (Fishbein et al., 2001).

Milkers' gloves are always investigated as a tool to reduce mastitis (Huijps et al., 2009; Jansen et al., 2009; Jansen et al., 2010). In this paper consumer research will be conducted to understand the disposition of the farmers toward milkers' gloves. Therefore four questions are posed: 1.What is the attitude of the farmer towards milkers' gloves? 2. What is the benefits perception of the farmer towards milkers' gloves? 3. How is the attitude influenced by the benefit perception? 4. How is the utility of milkers' gloves influenced by the attitude, benefit perception and social geographic characteristics? The answers of these questions will create a complete picture of the disposition of farmers towards milkers' gloves, which can contribute towards improvement of the product or in a campaign to increase the use of milkers' gloves.

Materials & Methods

Participants

While farmers were the target group of this study, the survey was distributed to students of an agricultural study who helped on a farm. Students were chosen because of their accessibility and most of the agricultural students who helped on a farm are the next generation farmers. Thereby snowballing sampling was used in this study. The survey was send to students of an agricultural study at Wageningen University and an agricultural HBO. Thereby the survey was placed in the week mail of different study associations and placed on a forum of one of the study association. Also the survey was advertised by mouth to mouth and by forwarding the survey to friends and family. Furthermore while the questionnaire was first intended for students who helped on a farm, after two weeks the survey was opened for all students with the knowledge of the concept milkers' gloves.

Procedure

A questionnaire was conducted on the internet with the use of Google survey tools. This survey was divided into 3 section: attitude, benefits and personal and farm characteristics (Appendix A).

Attitude

A free elicitation method was used to understand the attitude of the consumer, in this case the farmer, towards the product. Free elicitation task is a technique that was used to reveal the important association of the product, here milkers' gloves (Kleef et al., 2005; Breivik & Supphellen, 2003; Schmitt, 1998). The words from the free elicitation tasks were ranked into 7 clusters groups: hygiene, mastitis, udder health, materials, users comfort, users discomfort and remaining words (Appendix B). Then the responses were ranked with a 0 or 1 per cluster; 1 when the word was associated with that cluster and 0 when not. After this the sum per participant and cluster was calculated. Also a positive, neutral or negative charge was given to a cluster group. This was then ranked the same as the response and summed up.

Benefits

Fishbein et al. (2001) was used in the survey for the benefits question. In the paper it was stated that "performance of a behaviour is a function of the persons intention to perform, the attitude towards performing, habits and social influence" (cited Fishbein et al., 2001). Therefore the benefits section was divided into five subsections: behaviour beliefs, performance motivation, environmental constrains, self-image and perceived normative pressure. A 7-point likert scale was used for the benefits section with a range given of 1 and 7 with an exception for the behaviour beliefs and self-image where a range between -3 to 3is used (Fishbein et al., 2001; De Vries et al., 2007). For perceived normative pressure both scales were used. Also a detailed description of procedure for the subsections was defined. *Behaviour beliefs:* a bipolar adjective scale (hygienic-unhygienic) was conducted with indicators for the behaviour beliefs towards the usage of milkers' gloves. In this part the sum of a number of bipolar adjective scales are calculated to obtain a preliminary attitude score. This score was calculated by taking the sum of all the scores. This can result in an overall score per participant between -18 and + 18. *Performance motivation:* this part consisted of two questions for performance motivation. One question for behavioural

performance belief (a) and an outcome evaluation (b). The performance motivation was divided in 5 topics: mastitis, allergies, efficient milking, increasing waste and hand care. For example: a. Always use of milkers' gloves during milking will prevent mastitis: disagree - agree; b. prevention of mastitis is: not important - very important. The behavioural performance belief and outcome evaluation were multiplied for all the questions and this outcome was than summed. This could give a result between 5 and 245. *Environmental constrains:* the questions here were related to the constrains of the farm or management to use milkers' gloves; e.g. milkers' gloves are not present on the farm: disagree-agree. The scores of the questions were added up and the sum served as the degree of the environmental constrains. The degree could get a score with a minimum of 5 and a maximum of 25. *Self-image:* three questions were asked about their image about the use of milkers' gloves. The score was summed up to give a degree of their image towards milkers' gloves with a score between -9 and + 9. *Perceived normative pressure:* this part of the benefits survey was about the influence of social pressure towards the opinion about the use of milkers' gloves. Here three questions were asked twice, but first about the social pressure of the colleagues and the second about the pressure of friends, e.g. most of my colleagues on the farm wear milkers' gloves during milking: disagree-agree. The first two questions from the three are scored with a range between -3 and +3 and the third question with a range between 1 and 7. All the scores of the questions were summed up per participant which gave an index of the perceived normative pressure. The score had a range between -10 and +26. For the benefits the scores were first measured for all the subparts per participant and then summed up to calculate the overall score for the benefits.

Analyses

All the analyses, descriptive as analytic were done with the use of SPSS 17. A descriptive analyses was examined for all the sections of the survey. First of all to get an overall view of the participants and second to determine the overall attitude and benefits. Furthermore an in-depth analyses were conducted by regression analyses for two purposes; to investigate the influences of the benefit perception on the attitude and the influences of the attitude, benefit perception and social geographic characteristics on utility of milkers' gloves. For all two purposes, a linear regression analyses was conducted with as well stepwise as backward selection. Thereby were the

5 subsection: behaviour beliefs, performance motivation, environmental constrains, self-image and perceived normative pressure, used for the investigation of the influences of benefits perception on the attitude. Finally a multiple correlation analyses was implemented to explore the influence of the respondents' behaviour and farm characteristics, like milking frequency and number of cows milked, on the constitution of the attitude and benefit perception toward milkers' gloves.

Results

Descriptive results

General

Even though the snowball sampling method was used, 49 people responded on the survey from the hundreds who received the survey. From the 49 participants, 13 participants were female and the average age was around 22 with an exception of one 50 year old participant. The number of cows milked per day was in this survey on average between 50-100 (53%) and had an incidence of mastitis lower than 20%. Thereby most of the respondents had a farm or helped on a farm weekly (46.9%) or daily (28.6%) except for 3 people who don't and 3 participants had a milking robot. Table 1 shows the use of gloves by the participants. 43% of the participants always wear milkers' gloves. Also participants with a milking robot wear gloves. However only 23% of the female participants always wear milkers' gloves against 50% of the males. Also females were less intended to wear milkers' gloves within 6 months (39%). Thereby it was determined that male participants were positive against the utility of milkers' gloves. However when milkers' gloves were used, 37% used them for one milking. However the main reasons for using gloves were management (38%) or hand care (22%). The main reasons for not wearing gloves were that they aren't present on the farm (14%) and that it is inconvenient (20%) (Table 2).

Table 1. The utility of milkers' gloves (%).

	General	Male	Female
Usage during milking:			
Always	43	50	23
Sometimes	18	17	23
No, but tried	18	17	23
No, but would like to try	8	6	15
No and don't intend to	6	6	8
Intention to use within 6 months:			
Definitely	39	47	16
Neutral	16	11	31
No way	8	11	16

Table 2. Main reasons for wearing gloves (%).

Main reasons	
Use gloves:	
Management	38
Better for hands	22
UGCN campaign	12
Recommendation of the vet	8
Allergies	1
Don't use gloves	
Inconvenient/uncomfortable	20
Aren't present on farm	14
Milking cows with mastitis separately	8
Cost too much	4

Attitude

The attitude towards milkers' gloves was mainly associated with hygiene (74%). Furthermore materials and users discomfort scored respectively high in the attitude perception with 41% and 35%. Otherwise mastitis (16%), udder health (12%) and users' comfort (16%) scored relatively low compared with the other clusters. The remaining words were also highly associated with 43%. The results of the descriptive analyses, to determine if the association was overall positive or negative, showed that the association was overall positive with 65%. 16% of the participants had a negative association towards milkers' gloves, all of them are male. 18% of the participants had a neutral association, most of them are woman.

Benefits

Descriptive analyses showed that the benefit perception was based on the performance motivation (69%) and the perceived normative performance (12%). The other benefit subsections had a score lower than 10%. This stated that behaviour performance beliefs with beneficial outcomes and social influence constituted the benefits towards the use of milkers' gloves. Also a descriptive analyses was done for the subsections separately. The participants had mainly positive behaviour beliefs towards milkers' gloves, especially hygienic and good behaviour beliefs. 12% of the participants had negative beliefs, particularly for the beliefs that milkers' gloves were expensive (33%) and uncomfortable (31%). Females had more negative behaviour beliefs than men, especially for the belief: 'milkers' gloves are unpleasant'. Table 3. displays the descriptive results of behavioural performance beliefs, environmental constrains, self-image and perceived normative pressure. The performance motivation for the use of milkers' gloves was generally positive, particularly for the importance of preventing mastitis by wearing milkers' gloves (70%). On the other hand 71% of the respondents found that the use of milkers' gloves results in an increase in waste. Nevertheless 20% of the participant did not found that milkers' gloves will prevent allergies. Furthermore 55% didn't found it inefficient to use milkers' gloves when the number of cows milked increases. Thereby 54% of the farms use milkers' gloves and 69% of the participant stated that they would use milkers' gloves when present on the farm. Therefore it can be stated that environmental constrains are relatively low. Also 80% found that even though cows with mastitis were milked separately the use of milkers' gloves were necessary. Interestingly 93% of

Table 3. Distribution of benefits subsections (%).

	General		Male		Female	
	Disagree	Agree	Disagree	Agree	Disagree	Agree
Performance motivation - *Behavioural performance beliefs:*						
Always using of milkers gloves during milking:						
– prevents mastitis	22.4	51	27.8	41.7	7.7	76.9
– is better for my hands	12.2	77.6	11.1	83.3	15.4	62.8
– causes more waste	14.3	71.4	11.2	75	23.1	62.8
– is preventive against allergies	20.4	51	25	50.1	7.7	53.9
The larger the number of cows milked, how inefficient it is to wear milkers' gloves	55.1	22.4	66.7	14	23.1	46.2
Environmental constrains						
On the farm where I milk are the cows with mastitis milked separately, so milkers' gloves are unnecessary:	79.6	10.2	88.9	5.6	53.9	23.1
On the farm where I milk, milkers' gloves aren't used.	55.1	30.6	59.4	27.8	46.2	38.5
Milkers gloves aren't present on the farm:	73.5	18	80.6	13.9	53.9	30.8
If it was required to wear milkers' gloves on the farm, I would wear them:	6.1	89.8	8.4	88.9	0	92.3
If milkers' gloves are present on the farm I would wear them:	20.4	69.3	16.7	72.2	30.8	61.6
Self-image						
Is for wimps	79.6	10.2	80.5	11.1	76.9	7.7
Is for vain persons	79.6	10.2	80.5	11.2	76.9	7.7
Is only for person with allergic reactions	59.2	18.3	52.7	16.7	61.5	23.1
Perceived normative pressure						
Most of my colleagues find wearing of milkers' gloves ridiculous:	73.5	14.2	80.8	11.1	53.9	23.1
Most of my colleagues find wearing of milkers' gloves practical:	30.6	48.9	27.8	58.3	38.5	23.1
Most of my colleagues on the farm wear milkers' gloves during milking:	28.6	51	27.8	52.8	30.8	46.2
If colleagues on the farm would wear milkers' gloves during milking, I would also wear them:	34.7	44.9	36.1	38.8	30.8	62.6
Most of my friends find wearing of milkers' gloves ridiculous:	67.3	12.2	66.6	11.1	69.3	12.2
Most of my friends find wearing of milkers' gloves practical:	26.5	36.7	30.6	36.2	15.4	38.5
Most of my friends on the farm wear milkers' gloves during milking:	34.7	36.7	38.9	36.1	23.1	38.5

The females would wear gloves when required and 89% of the males. Self-images were mainly positive. 80% of the participants disagree with the self-images milkers' gloves are for vain persons and are for wimps. Perceived normative pressure was found with 39% of the participants. However 33% of the participants' friends and 15% of the colleagues found milkers' gloves ridiculous. Thereby 51% of the colleagues and 37% of the friends used milkers' gloves. Furthermore 45% of the participants would wear gloves when colleagues wear them. Hereby females displayed more social pressure with 63% than males with 39%.

In-depth analyses

A linear regression analyses displays that the attitude was explained by the behaviour beliefs. When a backward selection was conducted the attitude was also influenced by perceived normative pressure (Table 4.). Table 5. shows the influence of the attitude, benefit perception and social geographic characteristics on utility of milkers' gloves. Benefits influences the three models for the utility of gloves the most, whereby perceived normative pressure influences all the models. However performance motivation has no influence on the use of gloves in comparisons to the intention to use gloves. Interestingly the attitude perception hygienic influence the intention to use gloves while it doesn't influences the use of gloves or length of use of 1 pair of gloves. Thereby social geographic characteristics had no influence on the intention to use gloves. The length of the use of 1pair milkers' gloves was influenced by the gender, numbers of cow milked per day, the attitude perception mastitis and behaviour beliefs (R^2= 0.219). Also a correlation analyses was conducted towards the influence of personal and farm detail on the perceived attitude and benefit perception. The analyses displayed that perceived attitude was not influenced by personal or farm characteristics. However the benefits behaviour beliefs and perceived normative pressure were influenced. Behaviour believes were correlated with the reasons for not wearing gloves (-0.52, P=0) and the intention to use gloves within 6 months (0.69, P=0). Also perceived normative pressure was correlated to the intention to use gloves within 6 months (0.52, P=0). When the correlation analysis was controlled for the benefit perception, behaviour beliefs and the intention to use were correlated. Also there was no association between the use of milkers' gloves and the reasons for wearing gloves, but there was an association between wearing gloves and the reasons for not wearing gloves.

Table 4. attitude explained by the benefits with linear regression analyses

Model	Attitude	
	Stepwise[1]	Backward[1]
Benefits:		
Behaviour beliefs	0.047*	.043*
Performing motivation		
Environmental constrains		
Self-image		
Perceived normative pressure		-.033
Model F	7.522**	5.173**
Df	1	2
R^2	.138	.184
Adjusted R^2	.120	.148

1.For both linear regression method the significant model with highest adjusted R^2 is taken; * P<.05; **P<.01; **P<.001

Table 5. attitude and benefits towards milkers' gloves explained by the personal and farm characteristics

Model	*Use of gloves*		*Length of use of 1 pair milkers' gloves*		*Intention to use gloves within 6 months*	
	Stepwise[1]	Backward[1]	Stepwise[1]	Backward[1]	Stepwise[1]	Backward[1]
Social-geographic:						
Age						
Gender				-.908		
Frequency of milking		.277				
Number of cows milked per day				-.347		
Incidence of mastitis		.306				
Attitude:						
Hygienic						1.584 **
Mastitis		.869*		-1.252		.887
Udder health						
Users comfort		.656				1.323
Users discomfort						
Benefits :						
Behaviour beliefs	-.072**	-.060*		.088*		
Performing motivation					.160 ***	.175***
Environmental constrains		-.404				.015
Self-image	.100**	.383				.551
Perceived normative pressure	.073*	.079*	-.125*	-.125*	-.182 ***	-.144 **
Model F	9.011***	5.449***	5.237*	2.407*	17.834 ***	5.698 ***
Df	3	8	1	5	2	10
R^2	0.375	0.521	.100	.219	.437	.600
Adjusted R^2	0.334	0.426	.081	.128	.412	.495

1.For both linear regression method the significant model with highest adjusted R^2 is taken
* P≤.05; ** P≤.01; ***P≤.001

Discussion

This study gives an overview of the attitude and benefits perception of the farmers towards milkers' gloves. Participants associated milkers' gloves mainly with hygiene. This is coherent with different research which envisage on good hygienic milking practice (Peeler et al, 2000; Verhaeghe and Alasiri, 2008, McDougall et al., 2009). Thereby was the attitude towards milkers' gloves mostly positive. The attitude of discomfort towards milkers' gloves is consistent with Jansen et al. (2010). Nevertheless it is interesting that even though a campaign by the Dutch Udder Health Centre was conducted towards milkers' gloves as a preventive tool against mastitis, mastitis and udder health weren't highly associated with milkers' gloves in this study (Jansen et al., 2009; Huijps et al., 2008). However prevention of mastitis is the main performance motivation of the benefits perception. Thereby perceived normative pressure of colleagues was relatively high by females. Therefore the statement in the paper of Jansen et al.(2010), that colleagues and peers are important, is true to a certain extend. Also the outcome of self-image is coherent with that of Jansen et al. (2010). Thereby the environmental constrains seems to have a high influence on the use of milkers' gloves, particularly the presents of milkers' gloves on the farm. This is coherent with Fishbein et al., (2001) who stated that constrains can ensure that the behaviour can't be performed. Kuipers et al. (2005) stated that veterinarians are the most influential actors in mastitis control. However in this study veterinarians received 4th place for the reasons to wear milkers' gloves, management decisions and hand care were the main reasons.

Even though a small part of the participants, which received the survey, responded. This study has the same percentage of milkers' gloves users as in Jansen et al. (2010). However the research was opened to all people who knew the concept of milkers' gloves while the research was first intended for students who helped on the farm. Therefore further research should be conducted to give statement about the attitude and benefits perception. Also 3% of the participants have a milking robot and therefore it has no significance and was left out of the study. Thereby nothing can be said about the perceived normative pressure of friends, because in the questionnaire a question is missing in the perceived normative pressure section (appendix A.). Therefore the questionnaire should be re-examined and repeated under Dutch farmers in collaboration with the UGCN, because of errors in the benefit part of the questionnaire. Also some product inefficiencies

of milkers' gloves were found, especially the increase of waste and the loss of feeling. Nevertheless the study shows that when environmental constrains are overcome more farmers will likely use milkers' gloves.

Conclusion

Based on the results of this study, hygiene was the main attitude perception of milkers' gloves and the benefit perception is based on performance motivation and perceived normative pressure. Behaviour beliefs influenced the attitude. Also the utility of milkers' gloves was mainly influenced by perceived normative pressure. Some recommendation can be done; first to repeat this survey under farmers as a part of a survey from an organization, like the Dutch Udder Health Centre. Also the product milkers' gloves could be improved by the use of thinner and/or biodegradable materials. Finally, it's likely that farmers will use milkers' gloves when milkers' gloves are present on the farm.

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Appendix A. Questionnaire milkers' gloves

Attitude

Schrijf de eerste 3 woorden op, in de daarvoor bestemde hokjes, waar je aan denkt wanneer je het woord "melkershandschoenen"ziet:

_____ _____ _____

Benefits

Behavior beliefs

Het gebruiken van melkerhandschoenen tijdens melken is:								
Slecht	O	O	O	O	O	O	O	Goed
Oncomfortabel	O	O	O	O	O	O	O	Comfortabel
Onhygiënisch	O	O	O	O	O	O	O	Hygiënisch
Onhandig	O	O	O	O	O	O	O	Handig
Onnuttig	O	O	O	O	O	O	O	Nuttig
Te duur	O	O	O	O	O	O	O	goedkoop

Performance motivation

Het altijd gebruiken van melkershandschoenen tijdens het melken voorkomt mastitis:

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het voorkomen van mastitis is:

Helemaal niet belangrijk	O	O	O	O	O	O	O	Helemaal belangrijk

Het altijd gebruiken van melkershandschoenen tijdens het melken is beter voor mijn handen

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het beter houden van mijn handen is:

Helemaal niet belangrijk	O	O	O	O	O	O	O	Helemaal belangrijk

Het altijd gebruiken van melkershandschoenen tijdens het melken veroorzaakt meer afval:

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het veroorzaken van meer afval is:

Helemaal niet belangrijk	O	O	O	O	O	O	O	Helemaal belangrijk

Het altijd gebruiken van melkershandschoenen tijdens het melken is goed ter preventie van allergieën:

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het voorkomen van een allergische reactie is:

Helemaal niet belangrijk	O	O	O	O	O	O	O	Helemaal belangrijk

Hoe groter de melkstapel hoe inefficiënt het is om melkershandschoenen te dragen tijdens het melken:

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het efficiënt melken van het melkvee is:

Helemaal niet belangrijk	O	O	O	O	O	O	O	Helemaal belangrijk

Environmental constrains

Op het bedrijf waar ik melk worden de koeien met mastitis apart gemolken, dus melkershandschoenen zijn onnodig:

Helemaal mee oneens	O	O	O	O	O	Helemaal mee eens

Op het bedrijf waar ik melk wordt geen gebruik gemaakt van melkershandschoenen:

Helemaal mee oneens	O	O	O	O	O	Helemaal mee eens

Op het bedrijf zijn geen melkershandschoenen aanwezig:

Helemaal mee oneens	O	O	O	O	O	Helemaal mee eens

Als op het bedrijf verplicht was om melkershandschoenen te dragen zou ik dat doen:

Helemaal mee oneens	O	O	O	O	O	Helemaal mee eens

Als er melkershandschoenen op het bedrijf aanwezig zijn zou ik ze dragen:

Helemaal mee oneens	O	O	O	O	O	Helemaal mee eens

Self-image

Het dragen van melkershandschoen is voor watjes:

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het dragen van melkershandschoenen is voor ijdeltuiten:

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Het dragen van melkershandschoenen is voor mensen met een allergie voor koeien

Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Perceived normative pressure

De meeste van mijn collega's vinden het dragen van melkershandschoenen belachelijk:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

De meeste van mijn collega's vinden het dragen van melkershandschoenen handig:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Veel van mijn collega's op het bedrijf dragen melkershandschoenen tijdens het melken:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Als collega's op het bedrijf melkershandschoenen zouden dragen tijdens het melken zou ik ze ook dragen:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

De meeste van mijn vrienden vinden het dragen van melkershandschoenen belachelijk:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

De meeste van mijn vrienden vinden het dragen van melkershandschoenen handig:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Veel van mijn vrienden die ook melken dragen melkershandschoenen tijdens het melken:								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

Als vrienden op het bedrijf melkershandschoenen zouden dragen tijdens het melken zou ik ze ook dragen: *								
Helemaal mee oneens	O	O	O	O	O	O	O	Helemaal mee eens

* Deze vraag staat niet in de originele vragenlijst, maar zou er wel in moeten staan

Personal and Farm details:

Leeftijd: …

Geslacht: m/v

Aantal koeien dat wordt gemolken per dag:
- ☐ < 50
- ☐ 50-100
- ☐ 100 – 150
- ☐ 150
- ☐ geen

Wat is de incidentie van mastitis (in percentage) op het bedrijf?
- ☐ < 20%
- ☐ 20 – 40 %
- ☐ 40 – 60 %
- ☐ 60 – 80 %
- ☐ 80%
- ☐ Weet ik niet
- ☐ n.v.t.

Wordt er op het bedrijf gemolken met een melkrobot?
- ☐ Ja → ga, naar kopje melkrobot
- ☐ Nee → ga, door met de volgende vraag

Hoe vaak melk je of help je mee met het melken van de koeien?
- ☐ Dagelijks
- ☐ Wekelijks
- ☐ Maandelijks
- ☐ Minder dan 1x per maand
- ☐ n.v.t.

Draag je melkhandschoenen tijdens het melken?
- ☐ Ja, altijd.
- ☐ Ja, af en toe.
- ☐ Nee, maar ik heb het wel geprobeerd.
- ☐ Nee, maar ik wil het wel proberen.
- ☐ Nee, en ik ben het ook niet van plan.
- ☐ n.v.t.

Hoe lang gebruik je 1 paar melkershandschoenen?
- ☐ 1 melkbeurt
- ☐ 1 dag
- ☐ 2 dagen
- ☐ 3 dagen
- ☐ 4 dagen
- ☐ 5 dagen
- ☐ 6 dagen
- ☐ 1 week
- ☐ > 1 week
- ☐ n.v.t.

Ben je van plan in de aankomende 6 maanden melkershandschoenen te dragen tijdens het melken?

Absoluut niet	O	O	O	O	O	O	O	Absoluut wel

Wat is de reden dat je wel melkershandschoenen draagt?
- ☐ Op aanraden van de dierenarts
- ☐ Via de UGCN campagne
- ☐ In verband met allergieën

☐ Ander:_____
☐ n.v.t.

Wat is de reden dat je geen melkershandschoenen draagt?
☐ Melken de koeien met mastitis apart
☐ Zijn niet aanwezig op het bedrijf
☐ Te duur in aanschaf
☐ Ander:_____
☐ n.v.t.

Melkrobot

Heb je in het verleden gebruik gemaakt van melkershandschoenen?
☐ Ja
☐ Nee → einde
☐ n.v.t.

Droeg je in het verleden melkhandschoenen tijdens het melken?
☐ Ja, altijd
☐ Ja, af en toe
☐ Nee, maar ik heb het wel geprobeerd.
☐ Nee, maar ik wil het wel proberen.
☐ Nee, nooit → einde
☐ n.v.t.

Wat is de reden dat je, voordat je een melkrobot had, wel melkershandschoenen draagt?
☐ Op aanraden van de dierenarts
☐ Via de UGCN campagne
☐ In verband met allergieën
☐ Ander:_____
☐ n.v.t.

Wat is de reden dat je, voordat je een melkrobot had, geen melkershandschoenen draagt?
☐ Melken de koeien met mastitis apart
☐ Zijn niet aanwezig op het bedrijf
☐ Te duur in aanschaf
☐ Ander:_____
☐ n.v.t.

Appendix B. Word clusters of the free elicitation task for the attitude (Dutch)

Hygienic	Mastitis	Udder health	Materials	Users comfort	Users discomfort	Remaining words
Hygiëne	Besmetting	UGCN	Blauw	Beter voor je handen	Helpt niet veel	Koe
Hygiënisch(e)	Celgetal	Uiergezondheid	Dun	Gebruikersgemak	Irritant/ irriterend	Koeien
Schoon	Uierontsteking	Bescherming	Glad	Kloven in handen	Jeuken	Melken
Schoon melken	Mastitis	Voorkomen uierontsteking	Blauwe handschoenen	Gewenning	Krap	Kwetsbaar
Schoon werken	Ziekte		Grote	Minder kloven op handen	Lastig	Melkstal
Zuiver			Handschoen(en)	Schone handen	Minder gevoel	Voor de koe
			Kwaliteit	Tegen allergie uitslag	Onhandig melken	Voor jezelf
			Latex	Zachte handen	Schrale handen	Vrouwen
			Stevige		Snel stuk	Uiers
			Wit		Strak (zittend)	Dokter
			Lichtblauw		Zweet/zweten/ zweterig	Droog
			Plastic		zweethanden	Handen
			Rubber		Scheurt snel	
					overdreven	