

Risk management in horse keeping

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June 2011

Business Economics
Wageningen UR
Thesis Report

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Course: BEC-80424
Period: January 2011 – June 2011

Preface

This report is a result of my minor thesis at the chair group Business Economics of Wageningen University. The subject of this report is 'Risk management in horse keeping'. I have chosen this subject, because I am interested in risks and risk management in animal production systems. My knowledge about the horse business was little, this has given me a fresh and open view.

Not much research is done about the horse business, especially not about risk management, so there was (and still is) a lot to discover. On the other hand it was difficult to find good literature about the horse business.

I would like to thank everyone who helped and supported me during my thesis. My special thanks goes on the first place to my supervisor Miranda Meuwissen for all her help and supervision. To my supervisors from Interpolis Achmea, John de Hoon, Sander de Roon and Hans Zuiderwijk for their ideas and comments. And to all other people who I have consulted for the design of the questionnaire and who have supported me in another way.

Carlijn de Bruijn

June, 2011

Summary

Problem

The Dutch horse business has grown a lot, but information is lacking. Insight in risks in the horse business is little. Many bodily injuries occur, which could imply high costs, mostly paid by insurance companies.

Objectives

Better insight in risks and risk management in the Dutch horse business is needed. More specifically the objectives are:

1. To identify sources of risk
2. To identify risk management strategies in general
3. To identify risk management strategies for bodily injuries

Materials and methods

A questionnaire was designed for riding schools, studs and farmers with horses as a sideline. A list of 34 events and 41 risk management strategies was included in the questionnaire. Respondents had to indicate on a scale from 1 to 3 the probability and impact of an event and the application of risk management strategies. Also some questions about bodily injuries were included. 239 questionnaires were sent out, 33 were used for analysis: 18 riding schools, 7 studs, 7 pension stables and 1 other horse business. The firms are slightly larger than average and more riding schools are represented compared to studs.

Results

In the horse business risks perceived to be largest include decrease of customers, horse diseases and illness/death of the owner. Risks perceived to be smallest include sexual harassment, loss of cash and unsafely working environment (Table 1). For these risks no differences are shown between business types. Risk management strategies perceived to be most applied include the presence of a fire-extinguisher, qualified persons present at horse riding lessons and to aim for high quality of horses; the lowest application is perceived for spreading the firm over several locations, a connection for a back-up power unit and putting new horses in quarantine (Table 2). Studs have a higher application for spreading the firm over several locations as compared to riding schools. On 64% of the firms an accident occurred. Nevertheless, only 3% of the horse keepers indicates a large probability of liability for bodily injuries by clients and 14% indicates a large probability of liability for bodily injuries by employees.

Conclusion

More insight in risks and risk management strategies is obtained. Not many differences between business types are shown. Many accidents happen in the horse business, but the risk perception of bodily injuries is low.

Table 1. Top 3 most important and top 3 least important events from the perspective of probability of occurring, impact after occurrence, and probability x impact, according to horse keepers perception.

	S ¹ (%)	M ¹ (%)	L ¹ (%)	Mean	Ranking
<i>Probability</i>					
Decrease of customers	34	50	16	1.81	1
Horse diseases	34	53	13	1.78	2
Quality purchased horses	43	43	14	1.71	3
Unsafe working environment	87	13	0	1.13	32
Loss of cash	91	9	0	1.09	33
Sexual harassment	96	4	0	1.04	34
<i>Impact</i>					
Illness/death of owner	18	18	64	2.45	1
Decrease of customers	22	28	50	2.28	2
Horse diseases	23	32	45	2.23	3
Safety device of catering	70	25	5	1.35	32
Safety of treadmill	73	20	7	1.33	33
Sexual harassment	83	13	4	1.21	34
<i>Probability x Impact</i>					
Decrease of customers				4.50	1
Horse diseases				4.26	2
Illness/death of owner				4.18	3
Unsafe working environment				1.73	32
Loss of cash				1.59	33
Sexual harassment				1.29	34

[†] Percentages of respondents per category; S=small; M=moderate; L=large

Table 2. Top 3 most used and top 3 least used risk management strategies according to horse keepers perception.

	N ¹ (%)	S ¹ (%)	A ¹ (%)	Mean	Ranking
<i>Risk management strategies</i>					
Presence fire-extinguisher	0	6	94	2.94	1
Qualified person at riding lessons	3	3	93	2.90	2
Aim for high quality of horses	0	12	88	2.88	3
New horses in quarantine	49	30	21	1.73	39
A connection for a back-up power unit	69	9	22	1.53	40
Firm spread over several locations	79	9	12	1.33	41

[†] Percentages of respondents per category; N=never; S=sometimes; A=always

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1. Introduction

1.1 Background

Horse keeping is a fast growing business in the Netherlands. In contrast to other agricultural sectors, much information is lacking. It is unknown how many horses and horse firms are present in the Netherlands. In 2009 the Netherlands counts about 145,000 horses¹ and 16.000 firms with horses, counted by the agricultural census (landbouwtelling) (CBS, 2010). However, estimates vary from 300,000 to 500,000 horses (Hoogeveen & Jager, 2009), so many horses are not registered. There are also many different firms involved in horse business: riding schools, breeding organisations, studs, farmers with horses as a sideline, stallion handlers, et cetera. Because of lack of clarity, it is difficult to get correct information about the horse business.

Risk management is important for businesses. In the agricultural sector several studies are performed about risks (Baltussen *et al.*, 2006; Meuwissen *et al.*, 2006), but they do not cover the horse business. With regard to risk of bodily injuries, Finnish research shows that the presence of horses on a farm is a risk factor. When horses are the main production, it is a risk factor with an Odds Ratio of 3.08 (Rautiainen *et al.*, 2009). An Odds Ratio is a measure of effect size. It describes an association between two groups, with regard to a risk factor. Bodily injuries are very expensive and mostly paid by insurance companies. In 2001, the branch developed a security certificate to guarantee safety. This certificate, provided by Stichting Veilige Paardensport (SVP), is obligatory for members from the FNRS (Federatie van Nederlandse Ruitersportcentra) and KNHS associations and some education and examination firms. This certificate makes demands about the riding floor, the teachers, the buildings, harnachement maintenance, accident registration, et cetera. About 900 equestrian centres have held this certificate (SVP, 2011).

1.2 Objectives

Little information is known about the risks in the horse business. A better insight in risks and risk factors would provide ways to improve risk management. This seems to be important for the horse business. Improved risk management could lead to a more sustainable business, a better image of the horse business and less insurance payments. In this context the goal of this study is to get more insight into the risks of horse keeping.

¹ With 'horse' is meant horse and/or pony

More specifically the objectives are:

1. To identify sources of risk
2. To identify risk management strategies in general
3. To identify risk management strategies for bodily injuries

This study will focus on Dutch riding schools, pension stables studs and farmers with horses as a sideline.

1.3 Outline

This report contains 6 chapters. Chapter 2 describes the Dutch horse business, its size and activities. Chapter 3 describes the risks in the agricultural sector in general and in the horse business. Also some information about causes of bodily injuries and risk management strategies are discussed. In chapter 4 the materials and methods will be explained. Chapter 5 contains the results. The report finishes with the discussion and conclusions in chapter 6.

2. Horse business in the Netherlands

During the last decades the horse business has grown a lot. Due to this growth, many key figures in this sector are not yet defined.

2.1 Number of animals and employees

The size of the Dutch horse sector is unknown. According to the agricultural census 145,000 horses were present in the Netherlands in 2009 (CBS, 2010). However, estimates vary from 300,000 till 500,000 (Hoogeveen and Jager, 2009). The CBS counts only farms bigger than 3 NGE (a measure to define the economic size of Dutch farms), so small hobby farms are not counted. Given the difference between the agricultural census and the estimates, it is likely some professional businesses (like riding schools, pension stables and studs) are not included in the agricultural census as well (Hoogeveen and Jager, 2009). Table 2.1 shows that the horse business is a small sector in terms of animals, but a big sector in terms of businesses, compared to other species, based on the agricultural census.

Table 2.1 Number of animals and businesses in the Netherlands in 2009 (CBS, 2010)

	Number of animals (x 1000)	Number of businesses (x 1000) ¹
Horses	145	16
Cattle	3,968	33.3
Pigs	12,186	7.6
Poultry	96,859	2.4
Sheep	1,117	12.8
Goats	374	3.9

¹ Farms with an NGE > 3

Table 2.2 shows different estimates about the number of horses in the Netherlands from several researches. Often it is unclear which horses are estimated: the total number of horses or the horses from the recreation and sport business.

Table 2.2 Number of horses in the Netherlands (x1000)

(Empty cells = data is not available)

	Agricultural census 2009 (CBS, 2010)	CBS (2009)	Rijksen and Visser-Riedstra (2005)	Van Markus (1998)
Total horses	145	400-500		400
Breeding			>160	
Recreation/sport			334-400	
<i>Private</i>			268	
<i>Riding school</i>			66	

In 2004, the Netherlands counted 25.3 horses per 1,000 residents, this is high in comparison with other countries in Europe. Only Denmark and Sweden have a higher rate (Sectorraad Paarden, 2004). In March 2010 10,052 firms were registered in the horse business (KVK, 2011). Besides employees, many volunteers are working in this sector (Van Markus, 1998). Table 2.3 shows these numbers. The KNHS (2008) counted the active riders (aged 8 and over). In 2001 the Netherlands counted 392,000 active riders, in 2006 this number increased to 456,000.

Table 2.3 Employees and volunteers in the horse business in the Netherlands (x1000)
(Empty cells = data is not available)

	Van Markus (1998)	Rijksen and Visser-Riedstra (2005) in 2004
Total employees	12.5	12-15
Direct	10.5	9.9
<i>Breeding</i>	3.5	
<i>Sport</i>	3.1	2.5
<i>Recreation</i>	3.9	
Indirect	2.0	2.1
Volunteers		60

2.2 Activities in the horse business

Many types of horse business can be distinguished in the Netherlands. Several types of breeding businesses exist, but there are also many non-breeding businesses in the horse sector. The following distinction can be made (Sectorraad Paarden, 2009):

- Stallion business (for breeding)
- Mare business (for breeding)
- Raising business: young horses in the age of 4 to 36 months
- Breaking-in business
- Sport business: training of horses for several sports like dressage, jumping, eventing, endurance, trick riding, western riding, trotting, racing and riding for carriages
- Horse stabling: Letting out horses and carriages for weddings, funerals, trips, et cetera.
- Trading stable: training purchased horses before reselling
- Sperm gaining business
- Embryo transfer business
- Milking of horses
- Association's building (no structural stabling of horses)

- Riding school: giving riding lessons in several disciplines to a third party (with horses from the business or horses from the third party itself)
- Pension stable: keeping horses from a third party
- Private stable: all horses are owned by the owner of the stable, they are not used to generate an income. Sizes can vary from 2 hobby horses to 6 sport horses

Combinations of types can exist. For example, a stud is a mare business in combination with a stallion business and/or a raising business and/or a breaking-in business. Also other non-horse businesses can be combined with a horse business. For example catering is a common sideline for riding schools (Sectorraad Paarden, 2009). Combinations with other agricultural businesses exist too. According to the agricultural census of 2007 over 113,000 horses are kept at an agricultural business, of which 36,000 horses on farms with 7 or less horses and 97.000 on farms with more than 7 horses. About 4,000 agricultural businesses have over 7 horses on their farm, with an average of 23.9 horses. From these 4,000 farms, 3,600 are farms with grazing animals (Hoogeveen and Roest, 2009).

2.3 The value of the horse business

The value of a horse depends on the quality and the use of the horse. An average riding school horse has a value of €2,000, a sport horse about €7,500. A breeding stallion is estimated on €30,000, but a big variety in value exists, depending on the quality of the stallion (Vermeij *et al.*, 2009)

Table 2.4 shows the total turnover in the Dutch horse business. Over a period of 20 years the turnover of this sector has increased by 200%. (With the total turnover is meant: the direct turnover from breeding, sport, recreation and trade, and the indirect turnover (veterinarians, farrier, research, insurance et cetera.)). In comparison with other agricultural sectors, in 1997 the horse business was between the bulbs and the poultry business, with a turnover of 0.9 billion Euros. More recent data is not available.

Table 2.4 Total turnover in the horse business in the Netherlands (million Euro)
(Empty cells = data is not available)

	Van Markus (1998) in 1991	Van Markus (1998) in 1997	Rijksen and Visser-Riedstra (2005) in 2004	Hoogeveen and Jager (2009) in 2009
Total turnover	500	900	1,200	1,500
Direct			425	
Indirect			416	
Studbooks & sports			333	

3. Risks in the agricultural sector

3.1 Risks in general

A risk is an uncertain consequence, particularly an unfavourable consequence, caused by imperfect knowledge (uncertainty). Risks can be divided into two types: business risks and financial risks. Business risks are risks which are independent of the way a firm is financed, financial risks are connected with the way a firm is financed. Business risks are distinguished in production risks, price or market risks, institutional risks and human or personal risks. Financial risks are the leverage and increasing interest rates, a bankrupt bank, et cetera. (Hardaker *et al.*, 2004). Risk management is important for all businesses. Operating a business means taking risks. Dutch farmers are on average risk avoiders, so they want to give up a part of their income to avoid negative outcomes (Baltussen *et al.*, 2006). Research conducted by Baltussen *et al.* (2006) shows that several risks with a danger for the continuation of farms are broadly insurable: consequential loss of infectious diseases, weather, international commercial policy, consumer suspensions and price risks for products and input. Several studies were performed about risks in the agricultural businesses in the Netherlands, however the horse business was not included in these analysis.

Baltussen *et al.* (2006) analysed the expert perception for production risks and price or market risks in the dairy, pig and poultry sector. Many epidemic diseases and non-epidemic diseases were indicated as big risks. Animal feed is a risk for all sectors. Price risks are important for the pig and poultry sector: the price for piglets, meat and eggs are risks. Meuwissen *et al.* (2001) and Huirne *et al.* (2007) (cited in Van Asseldonk *et al.*, 2010) analysed the farmers perception for all business and financial risks in livestock farms. Epidemic diseases, meat price, milk price and death of owner are the biggest risks according to Meuwissen *et al.* (2001). Huirne *et al.* (2007) (cited in Van Asseldonk *et al.*, 2010) showed that regulations, variable technical results and death of owner are important risks.

3.2 Risks in the horse business

Horse business is a different kind of business compared to other livestock businesses. The horse business is a services business and therefore other risks are involved. However, it is still a livestock business, so a lot of similarities exist between risks in horse business and other livestock businesses. Looking to other agricultural sectors several risks can be classified as possible risks for the horse business. Production risks could be (infectious) diseases, lameness, feed and water, accidents, power cut, theft, and fire. Price and market risks could be horse meat, price of horses, feed prices, price of riding lessons and disposal

costs. Institutional risks could include legislation with regard to animal welfare, manure disposal, registration of horses and transport. Financial risks could be an increasing interest rate and value decrease of the firm. Liability risks could be contracts (for breeders), injuries for employees and clients. Personal risks could be death, sickness and separation of business partners.

Because the horse business is a services business many people are involved on a horse business, especially on a riding school. There is much physical contact with the animals, which increases the chance on an accident. Bodily injuries are a large problem in the horse business (Silver *et al.*, 1991; Hitchens *et al.*, 2010). Not many accidents with bodily injuries occur, but when an accident happens, the injuries can be severe, which entails high costs. The behaviour of the horse is important for the bodily injury (in 70% of the cases the behaviour of the horse played an attributable role by the accident), but also riding errors, inadequate riding experience and inadequate supervision contribute to an accident with bodily injury (Hitchens *et al.*, 2010).

3.3 Prevention and insurability

In many cases a horse accident leads to bodily injuries, which potentially entails high costs. This makes it unattractive for insurance companies to provide liability insurance for the horse business. In order to reduce the number of accidents and the severity of accidents a safety certificate is developed (SVP, 2011), which makes demands about safety on the firm. This certificate focuses on bodily injuries.

Not only bodily injuries form risks for the horse business. In order to define and reduce other risks a special risk evaluation (RIE) is developed for the horse business. All horse businesses with over 25 employees are obliged to perform a RIE for the Occupational Health and Safety Act. This instrument makes it possible to define risks, in order to reduce them.

The RIE includes the following points (RIE, 2011):

- Health and safety policy and environment policy
- Caring of horses, physical load and personal safety
- Sport technical work and transport
- Harmful substances
- Office work
- Accommodations, buildings and rings
- Maintenance and control of machinery, tools and vehicles
- In case of emergency

- Work and rest times
- Job content and job satisfaction
- (Unwanted) behaviour of employees
- Preventive tasks; advice and supervision; attention for special groups
- Appointments about absence and the Occupational Health and Safety Act
- Accidents
- Progression and plans

4. Materials and methods

4.1 Design

A questionnaire was designed to achieve the objectives of this study. Experts from Interpolis, FNRS and a veterinarian were consulted to design the questionnaire. The risk perception of the horse keepers is explained by the probability and impact of an event. A total of 34 events was divided into 8 categories: supply, product and services, customers, housing/capital equipment, management, employees, administration, and financing. The respondents had to indicate the probability and the impact of these events, on a scale from 1 to 3. After that, the respondents had to compile a top 3 of risks from the list of events.

The second part was about possible risk management strategies to reduce risks. A list of 41 risk management strategies is included in the questionnaire. The respondents had to indicate whether they apply these strategies, on a scale from 1 to 3. The last part of the questionnaire contained questions about bodily injuries. The respondents had to describe an accident with bodily injuries on their farm (if one has occurred) and some questions about the causes and possibilities for prevention. Appendix 1 contains the full text of the questionnaire and appendix 2 contains comments from the respondents about bodily injuries and about the questionnaire in general.

4.2 Response

A total of 239 questionnaires was sent, 35 questionnaires were returned. A week after sending out the questionnaire, those who did not return the questionnaire were called. When there was no answer, horse keepers were called for a second time. Two of the returned questionnaires were insufficiently completed, these questionnaires were not analysed. Other questionnaires were completed very well. So 33 questionnaires were used for analysis, this is 13.8% of the total sent questionnaires. From the 33 completed questionnaires, 27 horse keepers gave their address to make a chance on one of the gift vouchers, 25 respondents were interested in the results of this report. Most respondents were interested in the subject.

4.3 Sample

The questionnaire was distributed amongst 150 riding schools, 75 studs and 14 farmers with horses as a sideline. The addresses from the riding schools and studs were gathered from the Yellow Pages (Goudengids, 2011). Microsoft Excel picked randomly 150 numbers out of 1100 (this is the number of riding schools in the Yellow Pages). The riding schools in the

Yellow Pages were sorted alphabetically and numbered. The questionnaire was sent to the 150 addresses, randomly picked by Microsoft Excel. The gathering of the 75 addresses of studs was done at the same way (75 out of 700 studs). The addresses from farmers with horses as a sideline were obtained by asking friends and classmates, because these farms were not in the Yellow pages. The Yellow Pages include addresses from all parts of the Netherlands, so it can be assumed that the chosen studs and riding schools are randomly distributed across the Netherlands. Small firms (riding schools and studs) will probably not register themselves in the Yellow Pages, because it is too expensive. The questionnaire was not sent to this group of horse keepers. The farmers with horses as a sideline are mostly located in the Middle and South part of the Netherlands.

A total of 33 questionnaires was analysed. To clarify the respondents in more detail, a distinction was made into 4 groups: a riding school, a stud and pension stabling and other. This distinction was based on the activities on the sampled firms. All business types were seen as firms. A list of the activities on the sampled firms and the division in business types is shown in table 4.1. A stud was defined as a firm with mare business in combination with at least 1 of these activities: stallion business, raising business, breaking-in business and sperm gaining business (Sectorraad Paarden, 2009). Some studs also provide riding lessons. A riding school was defined as a firm that provides riding lessons (inside and outside) or riding trips, when it cannot be defined as a stud. It was defined as a pension stable, when it was neither a riding school nor a stud, but there was a pension stable. One horse keeper rent out a carriage for weddings and other activities, this firm was defined as other horse business. In table 4.1 also the size of the firms is shown, expressed in number of horse places, number of employees and number of volunteers. On average 35.8 horses were kept on the 33 questioned firms. This is more than the Dutch average of 9.1 in 2009 (CBS, 2010). In 2007, the average number of horses per firm was 8.3. When firms with less than 7 animals were excluded, the average per firm was 23.9 horses (Hoogeveen and Roest, 2009).

Table 4.1 Activities on sampled firms divided over business types; size of the different business types (in horse places, employees and volunteers)

	Riding school (n=18)	Stud (n=7)	Pension stable (n=7)	Other (n=1)	Total (n=33)
Riding school	11	1	0	0	12
Riding lessons inside	15	4	0	0	19
Riding lessons outside	18	3	0	0	21
Riding trips (woods/beach, etc.)	9	1	0	0	10

Events (testing and competitions)	9	2	0	0	11
Holiday groups/ pony camp	9	0	0	0	9
Pension stable	14	4	7	0	25
Stallion business	0	1	0	0	1
Mare business	1	7	1	0	9
Raising business	4	7	2	0	13
Breaking-in business	6	6	2	0	14
Sport business (training of horses)	10	6	2	0	18
Sperm gaining business	1	0	0	0	1
Catering	5	0	0	0	5
Camping site	1	0	1	0	2
Other horse related activities	2	0	0	1	3
Other agricultural business	3	0	1	0	4
Other activities	2	1	0	0	3
Average number of horse places	35.3	47.6	30.0	2.0	35.8
Average number of employees in FTE	1.9	1.6	0.9	0.0	1.5
Average number of volunteers	6.1	2.7	0.3	0.0	3.9

More riding schools had responded in comparison with studs, this is shown in table 4.2. Firms with less than 20% income generated from the horse business are defined as farms with horses as a sideline, these are 5 firms, of which 4 pension stables and one other horse business. Summarizing, it can be concluded that the responded firms were slightly larger and more professional than the Dutch average and a larger amount of riding schools were represented as compared to studs.

Table 4.2 Number of respondents compared with number of firms in the Yellow Pages

	Respondents	Yellow Pages
Riding school	18	1100
Stud	7	700
Horses as a sideline	5	-

4.4 Analysis

Because of the exploratory nature of the study, analyses will mainly be descriptive. To compare business types an ANOVA was used. To find correlations between risk perception and the application of risk management strategies an ANOVA was used.

5. Results

This chapter contains the results of the questionnaire. The risk perception of the horse keeper will be explained, followed by the application of risk management strategies. A comparison between business types is made. Correlations between risk perception and the application of risk management strategies are shown. The last part of the results is about horse accidents with bodily injuries.

5.1 Risk perception

With regard to probability, decrease of customers, horse diseases and quality of purchased horses are perceived as events with the largest probability. Sexual harassment, loss of cash and unsafe working environment are seen as events with the smallest probability (Table 5.1).

Table 5.1 Horse keepers perception of the probability on several events

	S ¹ (%)	M ¹ (%)	L ¹ (%)	Mean	Ranking ²	N
<i>Supply</i>						
Food quality	79	15	6	1.27	25	33
Supply agreement of food	81	16	3	1.22	27	32
Quality of purchased horses³	43	43	14	1.71	3	28
Supply agreement of horses	67	26	8	1.41	16	27
Power/water supply failure	85	9	6	1.21	29	33
<i>Business process and logistics</i>						
Damage/loose of vehicles	61	30	9	1.48	13	33
Safety of treadmill	73	20	7	1.33	22	15
Loss of employees	71	25	4	1.33	21	24
<i>Product and services</i>						
Fire, lightning, storm (animals)	75	19	6	1.31	23	32
Horse diseases³	34	53	13	1.78	2	32
Lameness	39	55	6	1.67	5	33
Accident (with regard to the horses)	52	42	6	1.55	8	33
Break out of horses	67	30	3	1.36	20	33
<i>Customers</i>						
Decrease of customers³	34	50	16	1.81	1	32
Credit risk	42	49	9	1.67	4	33
Liability by bodily injuries of clients	58	39	3	1.45	15	33
Supervisor risk (taking care for horses from a third party)	73	27	0	1.27	24	33
<i>Housing/capital equipment</i>						
Fire, lightning, storm (housing)	85	12	3	1.18	31	33
Theft	67	27	6	1.39	18	33
Safety device of catering	85	10	5	1.20	30	20
Animal welfare regulations	69	16	16	1.47	14	32
Environment regulations	63	22	16	1.53	9	32

Regulations with regard to expanding of buildings and new buildings	60	23	17	1.57	7	30
Maintenance	79	18	3	1.24	26	33
<i>Management</i>						
Illness/death of owner	52	36	12	1.61	6	33
<i>Employees</i>						
Unsafe working environment	87	13	0	1.13	32	30
Replaceable employees (knowledge shared by more persons)	67	30	4	1.37	19	27
Continuing paying by illness employee	65	20	15	1.50	12	20
Liability by bodily injuries of employees	64	23	14	1.50	11	22
Sexual harassment	96	4	0	1.04	34	24
<i>Administration</i>						
Loss of data (administration)	79	21	0	1.21	28	33
Loss of cash	91	9	0	1.09	33	32
<i>Financing</i>						
Increase of interest of loans	55	39	7	1.52	10	31
Value decrease of business	61	39	0	1.39	17	31

¹ S=small, M=moderate, and L=large; horse keepers had to indicate the size of a probability on a certain event.

² Ranking of the events on probability, 1 is the biggest, 34 the smallest.

³ Top 3 events are in bold.

With regard to impact illness/death of owner, decrease of customer and horse diseases can be perceived as events with the largest impact, sexual harassment, safety of treadmill and safety of catering device are perceived as events with the smallest impact (Table 5.2).

Table 5.2 Horse keepers perception of the impact on several events.

	S ¹ (%)	M ¹ (%)	L ¹ (%)	Mean	Ranking ²	N
<i>Supply</i>						
Food quality	67	21	12	1.45	26	33
Supply agreement of food	75	13	13	1.38	30	32
Quality purchased horses	41	33	26	1.85	13	27
Supply agreement of horses	62	27	12	1.50	24	26
Power/water supply failure	63	19	19	1.56	23	32
<i>Business process and logistics</i>						
Damage/loose of vehicles	47	31	22	1.75	15	32
Safety of treadmill	73	20	7	1.33	33	32
Loss of employees	70	17	13	1.43	28	15
<i>Product and services</i>						
Fire, lightning, storm (animals)	47	6	47	2.00	8	23
Horse diseases³	23	32	45	2.23	3	32
Lameness	24	52	24	2.00	7	31
Accident (with regard to the horses)	30	42	27	1.97	9	33
Break out of horses	36	39	26	1.90	11	33
<i>Customers</i>						
Decrease of customers³	22	28	50	2.28	2	31
Credit risk	33	42	24	1.91	10	32

Liability by bodily injuries of clients	39	21	39	2.00	6	33
Supervisor risk (taking care for horses from a third party)	61	18	21	1.61	21	33
<i>Housing/capital equipment</i>						
Fire, lightning, storm (housing)	42	0	58	2.15	4	33
Theft	39	36	24	1.85	12	33
Safety device of catering	70	25	5	1.35	32	20
Animal welfare regulations	53	28	19	1.66	19	32
Environment regulations	50	28	22	1.72	16	32
Regulations expanding buildings and new buildings	53	27	20	1.67	18	30
Maintenance	70	24	6	1.36	31	33
<i>Management</i>						
Illness/death of owner³	18	18	64	2.45	1	33
<i>Employees</i>						
Unsafe working environment	70	17	13	1.43	27	30
Replaceable employees (knowledge shared by more persons)	52	37	11	1.59	22	27
Continue paying of pay by illness employee	55	15	30	1.75	14	20
Liability by bodily injuries of employees	32	27	41	2.09	5	22
Sexual harassment	83	13	4	1.21	34	24
<i>Administration</i>						
Loss of data (administration)	67	21	12	1.45	25	33
Loss of cash	72	19	9	1.38	29	32
<i>Financing</i>						
Increase of interest of loans	52	26	23	1.71	17	31
Value decrease of business	52	32	16	1.65	20	31

¹ S=small, M=moderate, and L=large; horse keepers had to indicate the size of the impact on a certain event.

² Ranking of the events on impact, 1 is the biggest, 34 the smallest.

³ Top 3 events are in bold.

Probability times impact gives an indication of the perceived risk. Decrease of customers, horse diseases and illness/death of owner are perceived as the largest risks. Sexual harassment, loss of cash and unsafe working environment are perceived as the smallest risks (Table 5.3).

Table 5.3 Horse keepers perception of the probability, impact, and probability x impact of several events

	Probability		Impact		Probability x Impact	
	Mean	Ranking ¹	Mean	Ranking ¹	Mean	Ranking ¹
<i>Supply</i>						
Food quality	1.27	25	1.45	26	1.97	27
Supply agreement of food	1.22	27	1.38	30	1.84	31
Quality purchased horses²	1.71	3	1.85	13	3.74	4
Supply agreement of horses	1.41	16	1.50	24	2.50	20
Power/water supply failure	1.21	29	1.56	23	2.13	26
<i>Business process and logistics</i>						

Damage/loose of vehicles	1.48	13	1.75	15	2.91	14
Safety of treadmill	1.33	22	1.33	33	2.13	24
Loss of employees	1.33	21	1.43	28	2.13	25
<i>Product and services</i>						
Fire, lightning, storm (animals)	1.31	23	2.00	8	2.78	16
Horse diseases²	1.78	2	2.23	3	4.26	2
Lameness	1.67	5	2.00	7	3.52	6
Accident (with regard to the horses)	1.55	8	1.97	9	3.18	8
Break out of horses	1.36	20	1.90	11	2.77	17
<i>Customers</i>						
Decrease of customers²	1.81	1	2.28	2	4.50	1
Credit risk	1.67	4	1.91	10	3.63	5
Liability by bodily injuries of clients	1.45	15	2.00	6	2.97	12
Supervisor risk (taking care for horses from a third party)	1.27	24	1.61	21	2.27	23
<i>Housing/capital equipment</i>						
Fire, lightning, storm (housing)	1.18	31	2.15	4	2.70	19
Theft	1.39	18	1.85	12	2.70	18
Safety device of catering	1.20	30	1.35	32	1.85	30
Animal welfare regulations	1.47	14	1.66	19	2.91	13
Environment regulations	1.53	9	1.72	16	3.06	10
Regulations with regard to expanding of buildings and new buildings	1.57	7	1.67	18	3.17	9
Maintenance	1.24	26	1.36	31	1.91	29
<i>Management</i>						
Illness/death of owner²	1.61	6	2.45	1	4.18	3
<i>Employees</i>						
Unsafe working environment	1.13	32	1.43	27	1.73	32
Replaceable employees (knowledge shared by more persons)	1.37	19	1.59	22	2.44	22
Continue paying of pay by illness employee	1.50	12	1.75	14	2.90	15
Liability by bodily injuries employees	1.50	11	2.09	5	3.41	7
Sexual harassment	1.04	34	1.21	34	1.29	34
<i>Administration</i>						
Loss of data (administration)	1.21	28	1.45	25	1.94	28
Loss of cash	1.09	33	1.38	29	1.59	33
<i>Financing</i>						
Increase of interest of loans	1.52	10	1.71	17	3.03	11
Value decrease of business	1.39	17	1.65	20	2.45	21

¹ Ranking of the events 1 is the biggest, 34 the smallest.

² Top 3 risks are in bold.

The respondents had to compile a top 3 of the largest risks out of the list of 34 events. The results are shown in table 5.4. The 3 largest risks are perceived as illness/death of owner, horse diseases and decrease of customers. Horse diseases are primarily mentioned 7 times, illness/death of owner and decrease of customers only 3 times. Illness/death of owner is in total 11 times mentioned, decrease of customers and horse diseases only 9 times. With

regard to the results of table 5.3, decrease of customers was expected at first in the compiled top 3. Nevertheless this risk is placed on the third place. One respondent mentioned feed costs as a risk, this risk was not included in the list of the questionnaire.

Table 5.4 Results of the top 3 compiled by horse keepers

	# top 3 ¹	# number 1 ²
Illness/death of owner	11	3
Horse diseases	9	7
Decrease of customers	9	3
Damage/loose of vehicles	6	2
Fire, lightning, storm (housing)	4	2
Lameness	3	2
Animal welfare regulations	3	2
Quality of purchased horses	3	1
Environmental regulations	3	0
Value decrease of the business	3	0
Break out of horses	2	1
Liability bodily injuries clients	2	1
Credit risk	2	0
Regulations expanding of buildings and new buildings	2	0
Continue paying of pay by illness employee	2	0
Loss of employees	1	1
Feed costs	1	0
Fire, lightning, storm (animals)	1	0
Supervisor risk (taking care for horses from a third party)	1	0
Liability bodily injuries employees	1	0

¹ The number of times that an event is mentioned in the top 3 events from the respondents.

² The number of times that an event is mentioned at first in the top 3 risks from the respondents.

Some risks which were expected by experts to be very important, like liability of bodily injuries by clients and employees and theft are perceived as relatively less important risks. However, in the results of the compiled top 3, liability of bodily injuries by clients is only mentioned 2 times.

5.2 Application of risk management strategies

In order to decrease the probability and impact of a certain event, risk management strategies can be applied. The following strategies are perceived as the highest application: the presence of a fire-extinguisher, qualified persons present at lessons and the aim for high quality of horses. Spreading the firm over more locations, a connection for a back-up power unit and putting new horses in quarantine are perceived as risk management strategies with

the lowest application. The perceived application of risk management strategies is high, the overall mean is 2.41 (Table 5.5).

Table 5.5 Application of risk management strategies by horse keepers

	N ¹ (%)	S ¹ (%)	A ¹ (%)	Mean ²	Ranking ³	N
<i>Supply</i>						
Control on terms of delivery	33	33	33	2.00	32	33
Conclude supply agreements	42	36	21	1.79	36	33
Aim for high quality of horses⁴	0	12	88	2.88	3	33
<i>Business process and logistics</i>						
Periodic maintenance of vehicles	3	12	85	2.82	4	33
Use of safety precaution	0	24	76	2.76	10	33
Specific knowledge by more persons	9	44	47	2.37	29	32
<i>Product and services</i>						
New horses in quarantine	49	30	21	1.73	39	33
Isolate sick animals	6	42	52	2.45	25	33
Clean stables and other facilities	0	21	79	2.79	7	33
Insect/vermin control	6	21	73	2.67	16	33
A connection for a back-up power unit	69	9	22	1.53	40	32
<i>Housing/capital equipment</i>						
Presence fire-extinguisher⁴	0	6	94	2.94	1	33
Presence fire-extinguishing water	12	9	79	2.67	15	33
Compartmentalizing of stables	19	26	55	2.35	30	31
Accessibility in case of emergency	3	18	79	2.76	9	33
Safe storage of materials	0	22	78	2.78	8	32
Control on hay heating	7	20	73	2.67	14	30
Maintenance heating system	6	25	69	2.63	17	32
Constructional prevention of burglary	9	30	61	2.52	20	33
Electronic prevention of burglary	45	19	36	1.90	34	31
Key management	16	19	66	2.50	23	32
Architectural advice by (re)building plans	13	25	63	2.50	22	32
<i>Management and employees</i>						
Membership of farm relief agency	56	13	31	1.75	38	32
Specific knowledge by more persons	9	39	52	2.42	26	33
Risk evaluation for employees (RIE)	38	28	35	1.97	33	29
Safety instructions for employees	19	23	58	2.38	28	26
Presence of emergency response officer	6	16	78	2.72	12	32
Instruction/procedures in case of emergency	19	16	65	2.45	24	31
<i>Administration</i>						
Make back-ups	9	42	49	2.39	27	33
Secure cash	3	15	82	2.79	6	33
<i>Bodily injuries</i>						
No obstacles in corridors	12	24	64	2.52	19	33

Qualified person present in stables	3	13	83	2.80	5	30
Qualified person present at lessons⁴	3	3	93	2.90	2	29
Horse and rider are geared to each other	0	29	71	2.71	13	31
Risky tasks done by several persons	3	22	75	2.72	11	32
Riding outside the firm with traffic safe horses	17	8	75	2.58	18	24
Accompany by riding outside the firm	17	17	67	2.50	21	24
<i>Other risk management strategies</i>						
Producing by lowest cost	6	58	36	2.30	31	33
Firm spread over several locations	79	9	12	1.33	41	33
Invest in other sectors than horse business	52	18	30	1.79	37	33
Work outside the firm	47	25	28	1.81	35	32

¹ N=never (1); S=sometimes (2); A=always (3)

² Ranking of application of strategy, 1 is the biggest, 41 the smallest.

³ Top 3 prevention strategies are in bold.

When risk management strategies are not sufficient to reduce the impact of an event, insurances can be used. Table 5.6 shows the insurances on the sampled firms. Almost all firms insured their inventory, liability, buildings and vehicles (n≥30).

Table 5.6 Insurances on sampled firms (n=33)

	Number of firms
Inventory	32
Liability (for businesses)	32
Buildings	30
Vehicles	30
Horses (death caused by fire, storm, or lighting)	25
Legal aid	24
Stock	23
Environmental damage	21
Disability owner	16
Loss of profits	15
Accident employees	10
Accidents clients	7
Continuing paying by illness employee	7
Horses (sickness, lameness)	5
Horses (accidents)	5

5.3 Comparison of business types

It is likely that some differences in risk perception exist between business types. The 3 business types (riding school, stud and pension stable) are compared for all risks, risk management strategies and insurances. No differences between business types are shown for the 3 most and least important risks, risks management strategies and insurances. For

some other risks and risk management strategies differences in perception are shown. Table 5.7 shows the significant differences between the business types.

Studs perceive the probability for damage/loss of vehicles, break out of horses, and the impact of lameness larger compared to riding schools. Spreading the firm over more locations is perceived as a more important risk management strategy for studs, compared to riding schools. A lame horse causes problems by shows, this is probably why lameness is perceived as an high impact by studs. Studs are probably more travelling with the horses compared to with riding schools, this explains the perceived higher probability for damage/loss of vehicles.

Riding schools perceive a higher application of having no obstacles in the corridors and qualified persons present in the stables in comparison with pension stables. Also the presence of an emergency response officer is perceived as more applied compared to studs and pension stables. From the respondents, only riding schools have an insurance for accidents of clients. Riding schools compared to studs and pension stables combined, gives a significant difference for the insurance for accidents of clients. In comparison with pension stables, more riding schools are insured for accidents of employees. Pension stables have on average less employees compared to riding schools, this could be an explanation.

Pension stables perceive the probability for fire, lighting, storm for animals and break out of horses higher compared to riding schools. Also the impact of quality of purchased horses is perceived as higher by pension stables. Pension stables perceive a higher impact of supply agreements of horses compared to studs. It is striking that pension stables perceive a higher impact of quality of purchased horses compared to riding schools and a higher impact of supply agreements of horses compared to studs. Pension stables only have horses from a third party, so they do not purchase horses at all. Although it is an significant difference, it is based on the perception of 3 pension stables. Possibly the other pension stables did not answer this question because they perceived that this question was not applicable for their firm. More pension stables could give an different view.

Table 5.7 Significant differences ($p < 0.05$) between riding schools, studs and pension stables for probability of an event, impact of an event, application of risk management strategies and insurances

	Riding school		Stud		Pension stable	
	Mean	N	Mean	N	Mean	N
<i>Probability</i>						
Damage/loss of vehicles	1.22 ^a	18	2.00 ^a	7	1.57	7
Break out of horses	1.17 ^{ab}	18	1.57 ^a	7	1.71 ^b	7

Fire, lightning, storm (animals)	1.11 ^b	18	1.50	6	1.71 ^b	7
<i>Impact</i>						
Lameness	1.89 ^a	18	2.57 ^{ac}	7	1.57 ^c	7
Quality of purchased horses	1.63 ^b	16	2.00	7	2.67 ^b	3
Supply agreements horses	1.40	15	1.29 ^c	7	2.33 ^c	3
<i>Risk management strategies</i>						
Presence of emergency response officer	2.94 ^{ab}	17	2.43 ^a	7	2.43 ^b	7
No obstacles in corridors	2.67 ^b	18	2.71	7	1.86 ^b	7
Qualified person in stables	2.94 ^b	18	2.86	7	2.20 ^b	5
Farm on several locations	1.11 ^a	18	1.86 ^a	7	1.29	7
<i>Insurance</i>						
Accident employees	0.44 ^b	18	0.29	7	0.00 ^b	7

^a Significant difference between riding school and stud

^b Significant difference between riding school and pension stable

^c Significant difference between stud and pension stable

Some differences in the perceived application of risk management strategies and insurances exist between horse keepers who have a high risk perception versus horse keepers who have a low risk perception. The 33 respondents are divided into 2 groups: a low risk perception group (n=17) and a high risk perception group (n=16). All respondents are ranked for their average risk perception and split up in 2 groups. Respondents with a high risk perception have higher scores for the perceived application of accompany by riding outside the firm and riding outside the with traffic safe horses, but a lower application of safe storage of materials compared to respondents with a low risk perception (Table 5.8). Accompany by riding outside the firm and riding outside the firm with traffic safe horses are management strategies for preventing accidents and bodily injuries. When many accident occur on a firm, this could be bad for its image. Safe storage of materials has especially direct consequences: when something is stolen or damaged, it will cost money, but it will not damage the image of your firm. So horse keepers with a high risk perception are probably more aware of risks that play a role for the firm on the long term, whereas horse keepers with a low risk perception are probably more aware of direct risks and they are probably less thinking about the long term.

Table 5.8 The level of risk perception in comparison with the application of risk management strategies (p<0.05)

	Low ¹		High ²		P-value
	Mean	N	Mean	N	
Accompany by riding outside the firm	2.15	13	2.91	11	0.01
Riding outside the firm with traffic safe horses	2.31	13	2.91	11	0.03
Safe storage of materials	2.94	16	2.63	16	0.02

¹ Group of 17 respondents with lowest mean scores for probability x impact

² Group of 16 respondents with highest scores for probability x impact

5.4 Correlations between most important risks and risk management strategies

Risk management strategies are used to reduce the probability and impact of an event. For the most important risks (horse diseases, decrease of customers, and illness/death of owner) is investigated whether differences exist in the application of risk management strategies between different risk perceptions. For each event, respondents who scored low (1) and respondents who scored high (3) (for probability and impact, separately) are compared for related risk management strategies.

Risk management strategies, that can be used to reduce probability and impact of diseases are putting new horses in quarantine, isolate sick animals, cleaning stables and other facilities and insect/vermin control. Horse keepers who perceive the impact of horse diseases as small, score higher for the application of isolating sick animals ($p=0.03$). This indicated that horse keepers who perceive the impact of horse diseases high are less focussed on reducing the impact of horse diseases. For the other risk management strategies no differences are shown.

A risk management strategy which can reduce the risk of decrease of customers is aim for high quality of horses. This is an strategy with a high overall application. No differences are found between horse keepers with a low and high risk perception with regard to decrease of customers. Membership of a farm relief agency and having specific knowledge by more persons are some possible risk management strategies to reduce the impact of illness and death of the owner. However, no differences are found between horse keepers with a low and high risk perception with regard to decrease of customers.

5.5 Bodily injuries

Bodily injuries are an issue in the Dutch horse business. In order to reduce the number of accidents a security certificate has been developed (see paragraph 3.3). 46% of the responded firms has a certificate and 24% of the horse keepers indicates to have the certificate not yet. To get better insight in the causes of bodily injuries, the horse keepers were asked to indicate whether they experienced an accident on their firm. When an accident occurred, they had to answer some questions about the accident and their opinion about the accident. On 64% of the firms an accident with bodily injuries occurred. Table 5.9 describes the opinion of the horse keepers with regard to the experienced accidents. Afterwards, only 5% thinks the accident on their firm was preventable. There are no significant differences between business types for the number of accidents. It is striking that 64% of the horse keepers remembers an accident on their firm, but only 3% indicates the

probability of liability of bodily injuries for clients as large and only 14% for employees. This possibly indicates that horse keepers experience accidents not as a big issue.

Table 5.9 Horse keepers perception about the causes of an accident (n=21)

	Yes (%)	No (%)	Unknown (%)
Caused by behaviour of horse	67	33	0
With hindsight preventable	5	86	10
Similar accidents occurred before	57	24	19
Change of procedures	29	71	0

The firms that experienced an accident with bodily injuries versus firms which did not experienced such an accident are compared for risk management strategies which can be used to reduce the probability of bodily injuries. No significant differences are found (Table 5.10). Significant differences about the perceived application of risk management strategies are shown for horse keepers who changed and did not change procedures after an accident. Horse keepers who did not change procedures after the accident, score higher for risk evaluation for employees (RIE) and risky tasks done by several persons in comparison with horse keepers who did change procedures (Table 5.11). Risk evaluation for employees is not a risk management strategy which is directly used to reduce the probability of an accident, but it says something about the way of evaluating risks and the application of management strategies in general.

Table 5.10 The perceived importance of risk management strategies with regard to prevention of bodily injuries for firms who experienced no accident with bodily injuries versus firms who did experience such an accident.

	No accident		Accident		P-value
	Mean	N	Mean	N	
No obstacles in corridors	2.58	12	2.48	21	0.69
Qualified person in stables	2.91	11	2.74	19	0.36
Qualified person at lessons	3.00	11	2.83	18	0.30
Horse and rider are geared to each other	2.91	11	2.60	20	0.07
Risky tasks done by several persons	2.92	12	2.60	20	0.10
Riding outside the firm with traffic safe horses	2.67	9	2.53	15	0.18
Accompany by riding outside the firm	2.78	9	2.33	15	0.49
Safety certificate	0.92	12	0.95	21	0.90

Table 5.11 The perceived importance of risk management strategies for firms who changed procedures after an accident with bodily injuries versus firms who did not changed procedures after such an accident.

	No procedure changed		Procedures changed		P-value
	Mean	N	Mean	N	
Risk evaluation for employees (RIE)	2.29	14	1.20	6	0.01
Risky tasks done by several persons	2.79	14	2.17	6	0.03

6. Discussion and conclusion

6.1 Conclusions

Insight in risks and risk management strategies in the horse business is obtained. Sources of risk are identified. The risks perceived to be largest include:

- Decrease of customers
- Horse diseases
- Illness/death of owner

The risks perceived to be smallest include:

- Sexual harassment
- Loss of cash
- Unsafe working environment

For the most and least important risks no differences are found between business types (riding school, stud, pension stable). The perceived probability of damage/loss of vehicles, breaking out of horses and fire, storm and lightning with regard to animals differs between business types. Differences between business types are also shown for the perceived impact of lameness, quality of purchased horses and supply agreements of horses.

The most and least applied risk management strategies are identified. Risk management strategies which are perceived as most important are:

- Presence of a fire-extinguisher
- Qualified persons present at riding lessons
- Aim for high quality of horses

Risk management strategies which are perceived as least important are:

- Firm spread over several locations
- A connection for a back-up power unit
- Putting new horses in quarantine

A difference between business types is found for spreading the firm over several locations. For the other most and least important risk management strategies no differences are found between business types. For other risk management strategies differences between business types are shown for the perceived application of presence of an emergency response officer, having no obstacles in corridors and qualified persons present in stables. Differences between business types with regard to insurances are found for accidents of employees and clients.

21 of the 33 respondents have experienced an accident with bodily injuries on their firm. No differences are shown between firms who experienced an accident with bodily injuries versus firms who did not experience such an accident for the application of risk management strategies, which probably can reduce bodily injuries. Despite the fact that 64% of the respondents have experienced an accident with bodily injuries, the perceived probability of liability by bodily injuries is low (3% of the respondents scored large (3) for the probability of bodily injuries by clients, and 14% for the probability of bodily injuries by employees). This is possibly an indication that the awareness of horse keepers with regard to bodily injuries is low.

6.2 Discussion

A questionnaire is used to identify risks and risk management strategies. The results are based on the perception of the horse keeper. This gives a different view than for example an analysis of insurance data. A questionnaire helps to model a view about risks in the horse business based on horse keepers perception. This can be used for further research. The questionnaire was a good method to achieve the goal of this study. More insight in the risks of horse business is obtained.

33 questionnaires were used for the analyses. 13.8% of the sent questionnaires are completed and returned. It is not a large sample, but still insight has been obtained in the largest and smallest risks and risk management strategies in the horse business. Farmers, with horses as a sideline are hardly represented in the sample, although many horses are kept on this farms. Different business types could have a different risk perception. In this sample, several business types are represented. Only 7 studs and 7 pension stables are represented. Due to this low number, it is difficult to show differences between business types. With this small and diverse sample, it is difficult to show correlations between risk perceptions and the application of risk management strategies. A larger sample could possibly lead to more significant differences between business types and to more significant correlations.

The respondents have completed the questionnaire very well. They were consistent in answering the questions: The 3 most important risks which are estimated with the perceived probability times impact are quite consistent with the top 3 compiled by the horse keepers themselves. According to the perceived risks, decrease of customers is the most important risk, however according to the compiled top 3 of the horse keepers decrease of customers is placed on a third place. Despite some differences, similarity is present in the answers of the

horse keepers. The horse keepers are considerably consist in answering questions, this indicates that the questions are probably asked in a univocal way. 21 of the 33 horse keepers have indicated that they experienced an accident at their firm. An accidents is not something to be proud of. When 21 of the 33 horse keepers indicate an accident has occurred on their farm, this possibly indicates that they felt free to answer and they did not answered on a social desirable way.

It is notable that decrease of customers is perceived to be one of the biggest risks. This is an entrepreneurial risk. An entrepreneur should see decrease of customers as a challenge. He would like to perform better than other firms in order to get more clients and to make money. Nevertheless, the horse business suffers from the economic crisis. Horse riding is expensive, so the economic situation could possibly have a big influence on the demand for horses and riding lessons.

Another issue in the sector is the awareness of bodily injuries. The costs for bodily injuries can be very high, especially when someone is disabled for the rest of his life. Horse keepers are nearly always liable. As the most horse keepers are insured for liability, the insurance company has to pay. At this moment the expenditures are higher than the receipts for the insurance company with regard to liability. The number of bodily injuries has to be reduced, as well as the impact of bodily injuries. It is not only a problem about money, but also about image. Bodily injuries could be bad for the image of the horse business. However, the awareness of bodily injuries seems to be low in the sector.

6.3 Recommendations

For further research a risk profile for bodily injuries could be designed. Bodily injuries causes a large problem in the horse business. Horse keepers do not have sufficient methods to reduce bodily injuries or they are not applied. Some regulations should be developed in order to reduce bodily injuries and make horse keepers more aware of the problem. When there is more insight in causes of an accident, risk management strategies can be developed. In this way bodily injuries can possibly be reduced.

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Appendix

Appendix 1 Questionnaire

Risico's en risicomanagement in de paardenhouderij

1. Kunt u aangeven welke van onderstaande activiteiten deel uit maken van uw bedrijf?
(Meerdere antwoorden mogelijk)

- Manege
- Paardrijles binnen
- Paardrijles buiten (in bak)
- Buitenritten
- Evenementen
(wedstrijden/keuringen)
- Ponykampen/vakantiegroepen
- Pensionstalling
- Hengstenhouderij
- Merriehouderij
- Opfok van paarden
- Zadelmak maken
- Training van paarden (voor sport)
- Spermavangen/Dekkingen
- Horeca
- Kampeerboerderij
- Melkveehouderij
- Varkenshouderij
- Kippenhouderij
- Akkerbouw
- Tuinbouw
- Anders, namelijk.....

2. Wat is de omvang van **de paardentak** van uw bedrijf?

Aantal paardenplaatsen:.....

Aantal medewerkers uitgedrukt in FTE:.....

Aantal vrijwilligers:.....

3. Hoeveel procent van uw inkomen per jaar wordt gemiddeld gegenereerd uit **de paardentak** van uw bedrijf? Kruis 1 antwoord aan.

- < 5%
- 5% - 20%
- 20% - 80%
- > 80%

4. Hieronder staat een lijst met mogelijke gevaren, die een **risico binnen de paardenhouderij** kunnen vormen. Kunt u op een schaal van 1 tot 3 aangeven hoe groot u de kans acht dat **de paardentak** op uw bedrijf met een risico te maken krijgt en hoe groot de financiële gevolgen daarvan zullen zijn, zonder rekening te houden met uitkeringen van eventuele verzekeringen? Omcirkel in beide kolommen het antwoord dat het beste uw mening weergeeft. (1 = kleine kans/kleine financiële impact; 3 = grote kans/grote financiële impact)

		Kans			Financiële impact (zonder evt. schadeloosstelling)		
		klein	groot		klein	groot	
Toeleveranciers							
1	(Slechte) voerkwaliteit	1	2	3	1	2	3
2	Leveringszekerheid en –voorwaarden van toeleverancier van voer	1	2	3	1	2	3
3	Kwaliteit aangekochte paarden	1	2	3	1	2	3
4	Leveringszekerheid en –voorwaarden van toeleverancier van paarden	1	2	3	1	2	3
5	Wegvallen stroom/water	1	2	3	1	2	3
6	Anders, namelijk.....	1	2	3	1	2	3
Bedrijfsprocessen en logistiek							
7	Beschadiging/verlies transportmiddelen (auto, landbouwvoertuigen, trailer)	1	2	3	1	2	3
8	Veiligheid tredmolen	1	2	3	1	2	3
9	Wegvallen personeel	1	2	3	1	2	3
10	Anders, namelijk.....	1	2	3	1	2	3
Product en/of dienst							
11	Brand/bliksem/ontploffing/storm (ten aanzien van de levende have)	1	2	3	1	2	3
12	Dierziekten	1	2	3	1	2	3
13	Kreupelheid	1	2	3	1	2	3
14	Ongeval (van paard)	1	2	3	1	2	3
15	Uitbreken van dieren	1	2	3	1	2	3
16	Anders, namelijk.....	1	2	3	1	2	3
Afnemers/klanten							
17	Aantal klanten/leegstand	1	2	3	1	2	3
18	Betalingsrisico (credit risico)	1	2	3	1	2	3
19	Aansprakelijkheid bij letselschade klant	1	2	3	1	2	3

		Kans			Financiële impact (zonder evt. schadeloosstelling)		
		klein	groot		klein	groot	
20	Opzichtrisiko (bv. letsel aan paard van derden)	1	2	3	1	2	3
21	Anders, namelijk.....	1	2	3	1	2	3
Huisvesting/bedrijfsmiddelen							
22	Brand/bliksem/ontploffing/storm (ten aanzien van gebouwen en inventaris)	1	2	3	1	2	3
23	Inbraak	1	2	3	1	2	3
24	Veiligheid van horeca	1	2	3	1	2	3
25	Wet en regelgeving dierenwelzijn	1	2	3	1	2	3
26	Wet en regelgeving milieu	1	2	3	1	2	3
27	Wet en regelgeving bouw en uitbreiding	1	2	3	1	2	3
28	Slecht onderhoud	1	2	3	1	2	3
29	Anders, namelijk.....	1	2	3	1	2	3
Management							
30	Uitval van eigenaar (ziekte/overlijden)	1	2	3	1	2	3
31	Anders, namelijk.....	1	2	3	1	2	3
Medewerkers							
32	Onveilige werkomgeving	1	2	3	1	2	3
33	Vervangbaarheid personeel (kennis bij meerdere personen)	1	2	3	1	2	3
34	Loondoorbetaling bij uitval personeel	1	2	3	1	2	3
35	Aansprakelijkheid bij letselschade personeel	1	2	3	1	2	3
36	Ongewenste intimiteiten	1	2	3	1	2	3
37	Anders, namelijk.....	1	2	3	1	2	3
Administratie							
38	Verlies data (administratie)	1	2	3	1	2	3
39	Verlies kasgeld	1	2	3	1	2	3
40	Anders, namelijk.....	1	2	3	1	2	3
Financiering							
41	Stijging rentepercentage van leningen	1	2	3	1	2	3
42	Waardedaling van het bedrijf	1	2	3	1	2	3
43	Anders, namelijk.....	1	2	3	1	2	3

5. Bovenstaande risico's zijn genummerd. Kunt u een top 3 samenstellen van de grootste risico's naar uw mening?

- 1.
- 2.
- 3.

6. De volgende vragen hebben betrekking op **preventie** van risico's. Kunt u aangegeven in hoeverre u gebruikt maakt van onderstaande preventiemaatregelen? Omcirkel 1 antwoord, dat het beste uw mening weergeeft. (1 = deze preventiemaatregel gebruik ik nooit; 3 = deze preventiemaatregel gebruik ik altijd.)

		Toepassing		
		nooit	soms	altijd
Toeleveranciers/Afnemers				
1	Controle op leveringsvoorwaarden (beperkte aansprakelijkheid)	1	2	3
2	Leveringsafspraken vastleggen in contracten	1	2	3
3	Hoge kwaliteit nastreven	1	2	3
4	Anders, namelijk.....	1	2	3
Bedrijfsproces/logistiek				
5	Periodiek onderhoud aan auto's en landbouwvoertuigen	1	2	3
6	Gebruik van veiligheidsvoorzieningen	1	2	3
7	Specifieke kennis borgen (personeel scholen)	1	2	3
8	Anders, namelijk.....	1	2	3
Product/dienst				
9	Nieuwe dieren in quarantaine	1	2	3
10	Zieke dieren afzonderen	1	2	3
11	Boxen en andere faciliteiten goed reinigen	1	2	3
12	Insecten- en ongediertebestrijding	1	2	3
13	Aansluiting voor noodstroomaggregaat	1	2	3
14	Anders, namelijk.....	1	2	3
Huisvesting/bedrijfsmiddelen				
15	Aanwezigheid brandblusapparatuur	1	2	3
16	Aanwezigheid bluswater	1	2	3
17	Compartmentering van stallen	1	2	3
18	Toegankelijkheid in geval van calamiteiten	1	2	3
19	Veilige opslag grondstoffen	1	2	3

		Toepassing		
		nooit	soms	altijd
20	Hooibroei controle	1	2	3
21	Onderhoud verwarmingsinstallaties	1	2	3
22	Bouwkundige inbraakpreventie (hang- en sluitwerk)	1	2	3
23	Elektronische inbraakpreventie (alarminstallatie)	1	2	3
24	Sleutelbeheer	1	2	3
25	Bouwadvies bij bouw/verbouwingsplannen	1	2	3
26	Anders, namelijk.....	1	2	3
Management & medewerkers				
27	Lidmaatschap bedrijfshulp	1	2	3
28	Specifieke kennis bij meerdere mensen	1	2	3
29	Risico-inventarisatie en Evaluatie (RI&E) (voor risico's rond personeel)	1	2	3
30	Veiligheidsinstructies voor personeel	1	2	3
31	Bedrijfshulpverlener aanwezig	1	2	3
32	Instructies/procedures calamiteitenplan	1	2	3
33	Anders, namelijk.....	1	2	3
Administratie				
34	Back-ups maken	1	2	3
35	Veilig opbergen kasgeld	1	2	3
36	Anders, namelijk.....	1	2	3
Preventie letselschade				
37	Geen obstakels op de gangen	1	2	3
38	Bevoegd personeel aanwezig in stal	1	2	3
39	Bevoegd personeel aanwezig bij lessen	1	2	3
40	Paard en ruiter op elkaar afgestemd	1	2	3
41	Risicovolle taken uitgevoerd door meerdere mensen	1	2	3
42	Buitenritten met verkeersmakke paarden	1	2	3
43	Begeleiding tijdens buitenritten	1	2	3
44	Anders, namelijk.....	1	2	3

7. Bent u in het bezit van een veiligheidscertificaat van Stichting Veilige Paardensport? (Kruis 1 antwoord aan)

- Ja
- Nee
- Nog niet

8. De volgende vragen hebben betrekking op **andere risicomanagementstrategieën dan preventie** om (de impact van) risico's te verkleinen. Kunt u aangegeven in hoeverre u gebruikt maakt van onderstaande managementstrategieën? Omcirkel 1 antwoord dat het beste uw mening weergeeft. (1 = deze strategie gebruik ik nooit; 3 = deze strategie gebruik ik altijd)

		Toepassing		
		nooit	soms	altijd
45	Produceren met de laagst mogelijke kosten	1	2	3
46	Bedrijf verspreid over meerdere locaties	1	2	3
47	Investeren in andere takken dan de paardenhouderij	1	2	3
48	Buiten het bedrijf werken	1	2	3
49	Anders, namelijk.....	1	2	3

9. De volgende vragen hebben betrekking op ongevallen die voorgevallen zijn op uw bedrijf. Deze vragen zullen worden gebruikt om de oorzaken van ongevallen beter in kaart te kunnen brengen.

a. Heeft op uw bedrijf ooit een ongeval met een paard plaatsgevonden?

- Ja
- Nee
- Weet ik niet

Indien nog nooit een ongeval met een paard op uw bedrijf heeft plaatsgevonden kunt u verder gaan met vraag 10.

b. Kunt u het ongeval beschrijven? (Indien meerdere ongevallen plaats hebben gevonden, kunt u het recentste beschrijven?)

c. Werd dit ongeval veroorzaakt door de gedragingen van het paard?

- Ja
- Nee
- Weet ik niet

d. Had u achteraf gezien het ongeval kunnen voorkomen?

- Ja
- Nee
- Weet ik niet

Kunt u een toelichting geven op uw antwoord?

e. Zijn soortgelijke incidenten gebeurd, zonder dat het tot een ongeval is gekomen?

- Ja
- Nee
- Weet ik niet
-

f. Hebt u procedures/werkwijze aangepast na het ongeval?

- Ja
- Nee
- Weet ik niet

Zo ja, kunt u toelichten wat u veranderd heeft?

10. Voor welke risico's is uw bedrijf **verzekerd**? (Meerdere antwoorden mogelijk)

- Gebouwen
- Inventaris
- Voorraad (voer/stro)
- Bedrijfsschade (winst)
- Aansprakelijkheid (voor bedrijven)
- Rechtsbijstand
- Milieuschade
- Motorrijtuigen/werkmaterieel
- Paarden brand/storm/diefstal
- Paarden ziektekosten/kreupelheid
- Paarden ongevallen
- Verzuimverzekering personeel
- Ongevallenverzekering personeel
- Ongevallenverzekering klanten
- Arbeidsongeschiktheid ondernemer
- Anders, namelijk.....

11. Wat zou u graag verzekerd willen hebben, waar u op dit moment niet voor verzekerd bent?

Zijn er nog andere zaken van belang, die u gemist heeft in de enquête?

Heeft u nog andere vragen of opmerkingen?

Bedankt voor het invullen van de vragenlijst!
De vragenlijst zal anoniem behandeld worden.

Appendix 2 Comments from respondents

Algemene opmerkingen

- Ik heb al mijn zaakjes prima op orde, ik acht alle risico's klein.
- Klanten tekenen een contract dat zij zelf verantwoordelijk zijn voor het paard en spullen
- Ik verzeker zo min mogelijk: je betaalt veel en ziet er weinig van terug als er iets gebeurt.
- Werkwijze van gemeenten bij vergunningen vormen ook een groot risico.
- Het opstellen van een bedrijfsplan had ook in de enquête gemogen

Over ongelukken:

- Een oude man met de auto tegen een paard aan gereden, bestuurder was fout
- Tijdens het rijden is het paard gevallen, ruiter had een gebroken enkel. Paard struikelde op een effen ondergrond, dus was niet te voorkomen.
- Paarden zijn uitgedoken en op de weg tegen een auto opgelopen.
- Bij een paard in de paddock zetten, kreeg een meisje een trap van het paard tegen haar hoofd. Nu wordt er meer gewezen op de gevaren.
- Een niet zadelmak paard proberen te rijden, ruiter heeft een botbreuk opgelopen.
- Val van een paard, omdat het paard schrok van een vallende tak vlak langs haar hoofd.
- Val van een paard, maar niks ernstigs. Een ongeval ligt voor 90% aan de ruiter. Ongelukken zijn te voorkomen door ruiters betere aanwijzingen te geven.
- Een medewerker van het paard gevallen bij het zadelmak maken. Er had eerder rustpauze genomen moeten worden, dan was dit niet gebeurd. De betreffende ruiter rijdt niet meer op jonge paarden.
- Mensen vallen wel eens van een paard, maar niks ernstigs. Ongelukken zijn niet te voorkomen; het blijven beesten, en die kunnen onverwacht reageren.
- Een paard in paniek geraakt voor de koets en over iemand (eigenaar) heen gelopen. Een leerling maakte een fout, waardoor het paard in paniek raakte. Het was echter niet te voorkomen, want het lag aan de gemoedstoestand van het paard.
- Val het paard gevallen en arm gebroken, omdat het paard schrok.
- Medewerker omver gelopen en werd op de keel getrapt door een paard. Het paard is afgemaakt.
- Ruiter van een paard gevallen, heeft gebroken pols. De ruiter was nog niet heel capabel.

- Een val van paard of een trap van een paard krijgen. Wanneer je niet van een paard willen vallen, moet je er niet op gaan zitten. Iedereen valt er wel eens van af, of krijgt een keer een trap.
- Ongeval van pensionklant met paard en koets; ongeval pensionklant, kwam onder het zadel; uitbreken van een paard. Dit is een pensionstal, dus iedereen is verantwoordelijk voor zijn eigen paard. Wij kunnen alleen maar waarschuwen, maar niet verbieden.
- Vrouw reed op een stram paard waarmee ze al 4x was gevallen, ze heeft 3 weken in coma gelegen. De les werd gegeven door een vereniging, en was dus niet onder verantwoordelijkheid van de onze manege.
- Van een paard gevallen door te hard aan te teugel te trekken, waardoor deze brak. Rug letsel opgelopen. Onervaren mensen gebruiken te teugels te veel en luisteren niet goed naar de instructeur
- Een gehandicapte viel van een paard, geen ernstig letsel. Gehandicapten reageren soms anders, en hebben een ander postuur. Er valt hier niet zo veel aan te veranderen, gehandicapten hebben altijd begeleiding, soms zelfs 3 begeleiders per cliënt.
- Val van paard, verstuurde rug. Het was winter en fris weer, het blijven dieren.
- Pony heeft een kind afgegooid, gebroken schouder. In de winter zijn de pony's wat onstuimiger. De dieren worden nu nog beter losgegooid in de winter.

Wat zou u willen verzekeren, maar is niet verzekerd?

- Arbeidsongeschiktheid
- Dierziekten in combinatie met bedrijfsschade
- Dierziekten als Afrikaanse paardenpest
- Arbeidsongeschiktheid (is te duur)
- Uitbreken van besmettelijke ziekte; jacobs kruiskruid
- Asbestverzekering is uit het pakket gegoooid, maar wij hebben een bedrijf waar veel asbest aanwezig is.