



Original Research

Management Practices and Socio-economic Importance of Cart Equines: The Case of Bako, Sire and Nekemte Towns of Western Oromia, Ethiopia

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Abstract

Article Information

A cross-sectional study was conducted at Bako, Sire, and Nekemte towns in Oromia Regional State, Western Ethiopia, with the aim of assessing management practises and the socio-economic importance of working equines to the owners' livelihood. About 43.3% and 70.8% of people relying on cart driving were young and householders, respectively. The majority (51.7%) of farriers use horses for cart-pulling, while 40.8% use mules and 5.8 farriers use both horses and mules at different times for cart-pulling. With agro-ecologic perspectives, 36 (90%) of farriers use mules for cart pulling in the lowland (hot) weather of Bako, while 29 (72.5%) and 31 (77.5%) of farriers, respectively, use horses at Sire and Nekemte towns, where the environmental temperature is moderate (mid altitude). The mean and standard deviation (in the bracket) of family size dependent on income obtained from cart-equine work were 4.15 (1.76), 4.19 (1.79), and 4.08 (1.73), respectively, at Bako, Sire, and Nekemte towns. The income (in Ethiopian Birr) that farriers were collecting per working day at Bako, Sire, and Nekemte towns was 76.25 (24.41), 92.43 (31.04), and 90.25 (31.25), respectively. This shows that the daily income of people working in the sector was very low. Housing management was poor, where about 46.22, 44.54, 5.88, and 3.32% of cart equines passed the nighttime roaming outside, in separate livestock houses, under open shade, and in an open barn or fence, respectively. Such situations could expose the horses to predation by hyenas. Thus, strategic training on cart-equine handling and cart management was recommended to improve cart-equine productivity and farriers' income.

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INTRODUCTION

Equines are the most important animals in the farming and transport systems of Ethiopia. They are important animals to the resource-poor communities in both rural and urban areas, providing sometimes traction power and mainly transport services at low cost in the remote areas that fill the gap in vehicle

transportation created due to road inaccessibility and high costs (Biffa & Woldemeskel, 2006). Pack animals offer a realistic way of obtaining returns from agriculture above mere existence (Howe & Garba, 1997). For example, Ethiopia is a country with one of the highest donkey populations in the world (Worldmapper, 2016), with a total number of around 7.8 million (CSA,

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2015), and in the Ethiopian Highlands, farmers on average may own two to three donkeys per family (Gebreab et al., 2004).

In developing nations, where 96 percent of all donkeys and 60 percent of horses are found, hundreds of millions of impoverished people depend on equines for their livelihoods (Pritchard et al., 2005; Wilson, 2002). People in most peri-urban centers hire horses, mules, and donkeys for commercial purposes such as carting goods and people and fetching water for a fee. However, Mohammed (1991) reported that in Ethiopia, the per-day hiring charge for pack animals was the same irrespective of the load carried and/or the distance travelled. The majority of working equines are owned by individuals who use them as their sole means of income generation to sustain large families. Nowadays, however, working equines, especially cart-equines, are being hired as per the load they are pulling and the distance they are travelling, particularly in the study areas.

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In rural and peri-urban areas, people rely on cart horses to transport crops, firewood, water, and building materials from farms and/or markets to their homes and vice versa. If equines were not available, mainly in remote rural Ethiopia, women and children often had to do the same work (Mohammed, 1991). In addition, in some parts of Ethiopia, mainly in lowland areas of western Ethiopia, these draught animals are often used for tillage for crop cultivation. Because of skyrocketing draft oxen purchasing costs, farmers require animals that are affordable, well adapted to feed shortages, and easily replaceable during losses. Feed shortages and diseases are the major constraints to the productivity and work performance of equines in the region. Horses involved in pulling carts often work continuously for 6 to 7 hours per day, carrying 3 to 4 people (equivalent to 195–260 kg) in a single trip (Biffa & Woldemeskel, 2006).

The UN predicts that the population of the least developed countries will double from 804 million to 1.7 billion by 2050. Thus, the use of working equines in the contexts referred to above is predicted to continue (Biffa & Woldemeskel, 2006). Sadly, despite their invaluable contributions, equines in Ethiopia are accorded low status and are consequently the most neglected animals. However, scientific information was not yet available on the management and socio-economic values of working equines in general and cart-equines in particular in western Ethiopia. Therefore, this study was conducted with the objectives of identifying management practices, challenges, production opportunities, and the socio-economic impact of working equines on the owners' livelihood.

MATERIALS AND METHODS

Description of the Study Areas

The study was conducted at Bako town in the west Shoa zone, Sire and Nekemte towns in

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the east Wollega zone, and their suburb vicinities in western Ethiopia. Bako, Sire, and Nekemte are towns found on the main road from Addis Ababa, the capital city of Ethiopia, to Assosa city, at 250km, 280 km, and 330km, respectively. Bako and its surroundings, geographically located at 9.12⁰ N latitude and 37.05⁰ E longitudes, represent a hot-humid environment, while Sire and Nekemte towns represent moderate weather and are located within the altitudinal range of 1,200 to 2,342 meters above sea level. Sire and Bako have relatively flat topography, which was convenient for cart-equines' work, while Nekemte has mainly terrain topography.

Study Design and Sampling

Techniques draft

The type of study employed was a cross-sectional survey on management practices and the social and economic contribution of cart equines (donkeys, horses, and mules) at Bako, Sire, and Nekemte towns and their surroundings. The study towns were purposefully selected based on their experience with cart equine utilization and routine equine transport services undertaken. Within the towns, the equids and farriers were randomly selected regardless of their work type, animal body condition, age, or species. Three enumerators and three veterinary professionals were invited from respective study areas to fill out questionnaires mainly on aspects of social characteristics, management practises, challenges, future prospects, and the socio-economic scenario of working equines.

Socio-economic Data Collection

The socio-economic data was collected by directly interviewing cart and equine owners and farriers, as well as from the administrative and agricultural offices of respective towns and district administrations. Farrier's age, marital status, family size, and cart-equine ownership data were collected. Feed resources, feed input, supplementary feed costs, veterinary services and medication costs, daily income,

Sci. Technol. Arts Res. J., April-June 2018, 7(2), 09-16 and job opportunities created due to cart horses were the socio-economic data collected.

Statistical Analysis

The raw data collected was summarised using Microsoft Excel, and then descriptive statistics were used to analyse qualitative data. The fixed effects of this study were Farriers' age and marital status, animal species, study towns, and cart-equine ownership, where the response variables were animal housing, feeding and health care practices, and daily income and daily feed and veterinary service expenditure. The data collected on the above parameters were analysed with descriptive statistics in SPSS version 20.

RESULTS AND DISCUSSION

Working Equine Management and the Socio-Economic Status of Farriers

Farriers are people who work with or are drivers of cart horses. Table 1 shows that 51.7% of farriers use horses for cart pulling and 40.8% use mules, while 5.8% use both horses and mules for cart pulling. However, farriers who use donkeys were only 1.7%, which might be due to the fact that donkeys have lower pulling power and speed compared to horses and mules. People engaging in cart equine driving were those who had no job and/or those who had a low economic background. In agreement with the report of other researchers (Pritchard et al., 2005; Wilson, 2002), cart driving in the current study was either their sole means of livelihood or they drove cart equines in addition to other works such as agricultural activities, daily labor, and other little trade works.

The study revealed that most farriers were young: 43.3% of these people lie between the age ranges of 21 and 30 years; 21.7% are under 20 years; 19.2% are between 31 and 40 years old; and the remaining 16.3% are above 40 years old (Table 1). Concerning the marital and social status of the farriers, 70.8% were married and householders, while only 29.2% were found single. The result of this study

therefore agrees with the report by Pritchard et al. (2005) and Wilson (2002), where most of the farriers were householders who used driving cart equines as their sole source of

income to support their families or used cart equines as their sole means of income to sustain often large and extended families (Table 1).

Table 1. Social characteristics and preference of cart equine species by Farriers

Farriers' Age Range			Marital status of farriers		
Age of Farriers	No of Farriers	Frequency	Marital status	No of farriers	Frequency
< 20 years	26	21.7	Married	85	70.8
21-30years	52	43.7	Single	35	29.2
31-40 years	23	19.2	Species of cart equines used		
41-50years	10	8.3	Horse	62	51.7
> 51years	9	7.5	Mule	49	40.8
			Donkey	2	1.7
			Horse & mule	7	5.8

Cart Equine Distribution and Ownership

The study identified that the distribution of cart equines, mainly mules, was mostly in the hot and humid area of Bako town, where 36 (90%) farriers use them and only 4 (10%) farriers use both horses and donkeys (Table 2). On the other hand, in the mid-altitude agro-ecology of Sire and Nekemte towns, farriers use mainly horses for cart pulling. According to this study, 29 (72.5%) and 31 (77.5%) farriers at mid-altitude areas of Sire and Nekemte towns and their surroundings, respectively, use horses for cart pulling, while only a few farriers at Nekemte (17.5%) and at Sire (15%) use mules for the same purpose. The larger preference of horses over mules at mid-altitude might be because of the large population of horses in the study area (CSA, 2015), and the higher purchasing cost that mules may demand compared to horses. The more expensive cost of mules than horses was in line with the

principles of supply and demand for commodities in that when the availability of commodities is abundant, their demand is low, and hence they are less expensive, like in the case of horses in the current study (Eivind, 2015).

The current study shows that 89 (74.2%) and 82 (68.3%) farriers use their own cart equines and cart equipment, respectively, while 19 (15.2%) and 27 (22.5%) farriers use rented cart equines and cart equipment, respectively. The remaining 9 (7.5%) cart drivers use family property for cart-equine work to either support their family or use it as a source of income to support themselves. The fact that most farriers use their own cart horses indicates that the majority of individuals working on cart horses were more fortunate since they were free of rent, which could have decreased their daily net income (Table 2).

Table 2. Cart equine distribution and Ownership condition

Cart animal spp.	Study towns			Cart animal and Equipment ownership				
	Bako	Sire	Nekemte	Ownership	Cart animal		Cart equipment	
					No	Frequency	No	Frequency
Horse	2	29	31	Own	89	74.2	82	68.3
Mule	36	7	6	Rented	19	15.2	27	22.5
Donkey	2	-	-	Family's	9	7.5	9	7.5
Horse and mule	-	4	3	Add to own				
Total	40	40	40	by renting	3	2.5	2	1.7

Housing and Feeding Practices of Cart-equines in the Study Area

According to the study, the mean and standard deviation of family members dependent on income obtained from cart-equine work were 4.15 (1.76), 4.19 (1.79), and 4.08 (1.73), respectively, for Bako, Sire, and Nekemte towns. The daily income that farriers working in the sector can earn is so low that, the mean and standard deviation of the income they are collecting per working day at Bako, Sire, and Nekemte towns are 76.25 (24.41), 92.43 (31.04), and 90.25 (31.25), respectively (Table 3). The daily income of cart-equine drivers in the current study is much lower than other reports (Biffa & Woldemeskel, 2006), where in Tigray and the Rift Valley area the family income earned was 156 Ethiopian Birr (12 US dollars) to 1404 Ethiopian Birr (112 US dollars) for those who traded only occasionally and for commercial traders of firewood, respectively.

This study also revealed that 64.2 percent of farriers in the study area use cart driving and

cart-equines as their usual job and sole means of income to sustain often large and extended families, whereas only 23.3%, 10.8 percent, and 3.3% of farriers use cart-equines in addition to agricultural works, trade, and daily labor, respectively (Table 4). The result of the study therefore agrees with the report of other researchers (Pritchard *et al.*, 2005; Wilson, 2002), who stated that in developing nations where 96 percent of all donkeys and 60 percent of horses are found, hundreds of millions of impoverished people depend on equines for their livelihoods, from carrying water to transporting tourists. According to this study, the number of families dependent on individual animals is much lower than in the report by (The Brooke, 2007), where up to 20 people were reported to be dependent on each animal for their daily life.

Table 3. Housing, Feeding and Health Management practices for cart equines

Attribute	Label	Study towns				
		Bako	Sire	Nekemte	Total	Percent
Housing management	Housing system					
	open barn/fence	2	1	1	4	3.36
	open shade	1	3	3	7	5.88
	separate house	37	8	8	53	44.54
	free roaming outside	0	27	28	55	46.22
Feed supplements	Feed ingredients used					
	Barley grain	3	39	38	80	66.67
	Maize grain	17	0	0	17	14.17
	Concentrate diet & Salt	20	1	2	23	19.16

Table 4. Regular feed supplementation and vet Service Practices

Attributes	Label	Study Towns			Total	Percent
		Bako	Sire	Nekemte		
If farriers use feed supplements	Yes	40	38	40	118	98.33
	No	0	2	0	2	1.67
If cart-equines get proper medication	Yes	4	4	3	11	9.40
	No	34	35	37	106	90.60

Housing management of cart-equines mainly (46.22%) at Bako, Sire, and Nekemte towns was free roaming outside during the night, where 3.36%, 5.58%, and 44.54% of cart-equine producers' housing management was in an open barn or fence, under open shades,

and in separate (livestock) houses. The majority of equines in the study areas were mainly roaming outside, as opposed to other reports by Solomon *et al.* (2013), where 100% of respondents provided shelter at home, whereas only 35% provided shelters of various

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qualities at the working site in Hawassa, Ethiopia.

Nearly all (98.33%) of the respondents provided supplementary feed to their cart-equines; however, others (66.67%, 14.17%, and 19.16% of producers) used barley grain, maize, and concentrates, respectively (Table 3). While only 9.40% of producers used regular medication for their cart horses, 90.60% of respondents disclosed that they did not use veterinary medicines. The feed ingredients supplied to working equines in the current study were in agreement with the report of Solomon *et al.* (2013), who documented that feed mainly consisted of cereal and other plant

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by-products such as wheat bran, chopped maize Stover, chopped sugarcane, and green grass. Poor utilization of veterinary medicine led producers to traditional treatments, which agrees with the report by The Brook (2007), where many owners rely on traditional medicines and treatments that are often inappropriate and cause welfare issues themselves. According to this report, 'firing', which involves burning the skin with hot irons or corrosive substances in the mistaken belief that this will cure underlying problems, is also common in the Middle East, Central America, and Cambodia, where monkey blood is poured on a horse as a cure for colic (Table 5).

Table5. Economic outputs, job opportunities, animal body condition score and losses of cart-equines due to deaths

Solely source of Income		Additional Work to Cart Driving				Economic loss due to death of cart-equines					
Were cart-equines the only source of income?	No	%	Additional jobs		Study towns	Animals Died			Loss in ETB		
	No	%	No	%	No	Mean	Std	Mean	Std		
Yes	77	64.2	Agriculture	28	23.3	Nekemte	19	1.47	0.69	4521.05	2912.15
No	43	35.8	Daily labor	4	3.3	Sire	22	1.5	0.74	4778.26	3664.69
Total	120	100	Trade	13	10.8	Bako	4	1	00	5725.00	1330.10

* No= number of respondents, ETB= Ethiopian Birr

Challenges and Future Prospects of Equine Cart Work

Equine cart work in the study area was constrained by terrain topography, road inconveniences, animal diseases, feed shortages, high feed costs, and insufficient veterinary services (Table 6). The management practises experienced with respect to feeding, housing, harnessing type and materials used, health care, and animal hobbling methods were inconvenient. Table 6 below also shows that the mean and standard deviation of the terrain topography that cart equines were facing per working day were 5.87 (0.8), 5.62 (1.14), and 2.53 (1.20) for Nekemte, Sire, and Bako towns, respectively. In addition, 45%, 10.8%, 26.7%, and 4.2 respondents reported that road inconvenience, animal diseases, feed

shortages, and high feed costs, respectively, were the major problems affecting their jobs. Veterinary services in the study area were neither efficient nor abundant, which was due to the complex nature of cart-equine diseases and injuries, a lack of appropriate veterinary drugs, and sick equines being obliged to work because of the fact that most farriers have no alternative jobs and/or reserve animals for shifting. Lack of animal welfare policy implementation in Ethiopia that may govern cart-equine users on how to implement when animals are under health and injury problems might have contributed to such mishandling of the animals.

Table 6. Major constraints facing Equine cart works

Attributes	Frequency	Percent	Mean and std of terrain topography cart equine faces per working days		
			Working Town	Mean	StD
Road inconvenience	54	45.0	Bako	2.53	1.20
Animal Disease	13	10.8	Sire	5.62	1.14
Feed shortage	32	26.7	Nekemte	5.87	0.80
High feed cost	5	4.2	If animals were stressed due to improper housing		
Lack of Vet services	2	1.7	Attribute	Frequency	Percent
			No	53	44.2
			Yes	66	55.8

Cart-equine housing and housing systems had received so little attention that the majority (55.8%) of respondents to the study did not prepare houses (shades) for their working equines. According to this study, carthorses were left to roam outside, roaming on the shores of rivers, on the road sides where the roads are not asphalt, and in other individuals' and institutions' fences, robbing if they could find some grass or green stage crop stands during the night. They could be exposed to injuries from being bitten by the owner of the grass, crops, or other feeds consumable by equines. Rugged topography was also the major problem that resulted in road inconvenience more at Nekemte and Sire areas than at Bako, however, animals face 3 to 7 days of high hills that worsen cart-equines' work (Table 6). This rugged topography and road inconvenience might have contributed to the use of cart horses only for the transportation of goods while they are used to transport people in other parts of the country and the world in general.

CONCLUSION AND RECOMMENDATIONS

Poor animal management, which included a lack of housing mainly for horses, a poor feeding system, a high cost of feed supplements, inconvenient harnessing equipment, and the use of animals with bare feet, made the reward that cart-equines owners and farriers could have obtained very low. Since it was the sole means of living for

farriers, cart driving made animals bear the burden of an extended working time that shortened their feeding time.

Veterinary services delivered in the study areas did not satisfy cart-equine owners as equine disease prevention systems were not established, equines had been treated by non-professional individuals and assistant veterinarians who had less knowledge of equine health services.

Harnesses, saddles, or other equipment necessary for research and teaching purposes should be properly fitted for each individual animal, such that the equipment does not cause uneven pressure, injury, or rub sores. The use of working animals by shift can also give cart horses the chance to get sufficient time to search for feed. Farriers need to have awareness and training on improving the productivity and health of working animals.

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