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Comparative study of organized and unorganized pig sector in Jaipur and Alwar district of Rajasthan

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Abstract
The purpose of this study is to look into the social standing and husbandry practices of pig farmers in Rajasthan's Jaipur and Alwar districts, where 20 unorganized farms and 10 organized farms were considered. Pig population and production trends in India and around the world found that although global trends showed an increase from 830.37 million to 969.89 million, India's pig population had a steady dropping tendency from 13.29 million in 1997 to 10.29 million in 2012. Regarding socio-personal variables, the present study showed that the majority of respondents (75%) in the organized sector were middle-aged and had graduate degrees (80%), whereas the majority of respondents (65%) in the unorganized sector were middle-aged and illiterate (65 percent). Regarding housing practises, respondents' housing systems were either semi-intensive with a flat roof in unstructured farms (100%) or intense (65%) in organized farms with a single slope roof (100 percent). In concerns of feeding practises, respondents in organized farms followed the stall feeding technique (100%) whereas those in unstructured farms (72.5%) followed the scavenging feeding practice. Regarding breeding procedures, 100% of respondents from organized farms indicated that their animals were crossbred and that they had two litters per year, but only 92.5 percent of the respondents from unorganized farms reported having two litters per year. Regarding healthcare practises, gastroenteritis was the most common disease reported by (45%) respondents in organized farms, where deworming was infrequently conducted by (80%) respondents, whereas gastroenteritis was the most common disease reported by (77.5%) respondents in unorganized farms, where deworming was never conducted. The market weight of 100 kg was reported by (75%) respondents of organized farms, the market age of 10–12 months by (80%) respondents at the very most, and pigs were mainly marketed in North Eastern regions of India (55%). In contrast, the market weight of 50–60 kg and the market age of 5-7 months were reported by (100%) respondents of unorganized farms, and the main marketing area was local market.

Introduction
Animal products plays an important part in food security for their contribution as a source of high quality, balanced bioavailable protein and many essential micronutrients, like iron, zinc, and vitamins, animal products play an important role in food security. Thus, a nutritionally balanced diet, especially in underdeveloped countries, depends on the moderate consumption of food derived from animals. When compared to other red meat animals such cattle, sheep, and goats, pigs excel in converting feed into meat. Pigs have been called one of the most prolific and quickly expanding livestock species. (Vicente *et al.*, 2011).
The districts of Jaipur and Alwar in the state of Rajasthan had the highest populations at 21.2 thousand and 15.1 thousand, respectively. There hasn't been a systematic study done yet in the area regarding marketing strategies and husbandry methods in the state of Rajasthan's pig industry. Given the significance of pig rearing, the current study was carried out to determine the current management methods and key challenges in pig farming in the selected regions.

Research Methodology
The study was conducted in the Rajasthan, districts of Alwar and Jaipur. For the study, a total of 10 organized farms and 20 unorganized pig farms were chosen randomly from each district. In accordance with their methods for raising pigs, the pig farms were divided into organized and unorganized farms. In this study, organized pig farms were described as those that met the following criteria: they raised more than 100 pigs and had a housing system. Unorganized farmers were chosen regardless of the number of pigs they raised. A questionnaire incorporating all the variables were designed in consultation with animal husbandry experts, to study the breeds of animals possessed by the respondents, variety of management practices

under which pigs are reared had been incorporated in the questionnaire.

Result and Discussion
Salient observations of production and management practices followed by the farmers are presented in the Tables.

Table 1: Distribution of respondents according to their personal attributes

Personal attributes		Organized (N=20) Per cent	Unorganized (N=40) Per cent
Age	Young (Up to 30 years)	10	20
	Middle (31 to 50 years)	75	65
	Old (Above 50 years)	15	15
Education	Illiterate	0	65
	Upto Primary level	0	7.5
	Upto Middle level	0	17.5
	Upto High school level	0	10
	Upto Intermediate level	20	0
	Graduate & above	80	0
Occupation	Agriculture	45	0
	Service in government sector	20	0
	Trade & commerce	35	45
	Labour	0	55
Family Size	Small (< 5 members)	20	7.5
	Medium (6- 9 members)	50	67.5
	Large (> 9 members)	30	25
Herd Size	Small (upto 150)	40	-
	Medium (150 – 250)	45	-
	High (more than 250)	15	-
	Small (upto 3)	-	25
	Medium (3 – 8)	-	52.5
	High (more than 8)	-	22.5

The results represented in Table 1 revealed that the majority of respondents in both organized and unorganized farms were in the middle age category (75 and 65%, respectively), followed by the older (15 and 15%) and younger (10 and 20%) age groups. Kumar *et al.* (2004) [5] also reported similar results. In organized farms, it was found that 80% of the respondents had graduate degrees or higher, with 20% having completed their intermediate degrees, while in unorganized farms, the respondents' educational levels were as follows: illiterate (65%), primary level (7.5%), middle level (17.5%), and high school (10%), as shown in table 1. These findings disagree with those of Fualefac *et al.* (2014) [4] and Sasikala *et al.* (2012) [9].

Table 2: Percentage of housing practices in the area

Variables		Organized Per cent	Unorganized Per cent
Type of house	Intensive	65	0
	Semi- Intensive	35	100
Floor	Kutcha	0	20
	Pacca	100	80
Type of Roof	Flat	30	100
	Single slope	70	0
Roof Material	R.C.C	30	0
	Tin Shad	70	37.5
	Stone Slab	0	62.5
Material used in walls	Brick with lime/ cement	100	67.5
	Brick with mud	0	32.5
Manger Feeding	Yes	100	27.5
	No	0	72.5
Ventilation	Low	20	100
	Optimum	80	0
Bedding material	Yes	35	0
	No	65	100
Light in farm	Low	35	65
	Optimum	65	35
Presence of guard rail	Yes	0	0
	No	100	100
Drainage system	Efficient	90	27.5
	Non – efficient	10	72.5

In terms of housing practises, it was observed that pigs were housed in separate pens according to their age group under the intensive system, which made up 65% of housing types in organized farms. In organized farms, only 35% of respondents followed the semi-intensive type of housing system, but in unorganized farms, 100% of respondents did (table 4.4). The results presented above agreed with those of Machebe *et al*

(2009) [6]. In both organized and unorganized farms, concrete (Pacca) made up 100% and 80%, respectively, of the floors. In farms that were not organized, all of the roofs were flat, while only 70% of respondents mentioned single slopes. These results were in line with the findings of Ajala *et al* (2007) [1].

Table 3: Percentage of breeding Practices in the area

Variables		Organized Per cent	Unorganized Per cent
Breed of swine	Yorkshire	100	7.5
	Non- descript	0	92.5
Service of sow	Natural service with boars	100	100
	Artificial insemination	0	0
Heat detection	Yes	80	65
	No	20	35
Castration	Yes	100	42.5
	No	0	57.5
Sow farrowed in a year	Twice	100	82.5
	More than twice	0	17.5
Litter size (in numbers)	4-6	55	72.5
	6-8	45	27.5
Time of weaning	in 1 month	35	-
	in 1-2 month	65	-

While the majority of respondents (92.5%) in the unorganized sector were raising native or desi breeds, the majority (100%) of respondents in the organized sector were raising exotic and crossbred (Middle white Yorkshire) animals (Table 3). It was established that neither the organized nor the unorganized sectors used artificial insemination for breeding; instead, only

natural services were used. The results of Fualefac *et al*. (2014) [4] and Deka *et al*. (2007) [2] were also used to support the current study (2007). Only 65% of respondents in the unorganized sector could detect the heat, compared to 80% of respondents in the organized sector (Table 3).

Table 4: Percentage of Feeding Practices in the area

Variables		Organized Per cent	Unorganized Per cent
Feeding of animal	Stall feeding	100	0
	Scavenging feeding	0	72.5
	Scavenging with morning and evening ration	0	27.5
Type of feed	Kitchen waste	0	27.5
	Hotel waste	35	-
	Hostel waste	40	-
	Mix. Of Hotel and Hostel waste	25	-
Process of purchasing	Direct Purchasing	45	-
	Presence of middleman	55	-
Quantity of feed provided (kg)/day	20 -30	35	-
	40-50	55	-
	50-70	10	-
Additional Feeding	Vegetables	50	-
	Cereal grain	5	-
	Mill by products	25	-
	Mixture of all	20	-
Frequency of feeding	Once	0	-
	Twice	100	-

The findings, which are shown in table 4.5, indicate that all respondents only practiced stall feeding in organized farms, whereas in the unorganized sector, the majority of respondents (72.5%) followed scavenging-type feeding practices and 27.5% followed scavenging with morning and evening rations to pigs, as noted by Njuki *et al* (2010). In the organized sector, feeding of hotel waste, the hostel waste and combination of both were provided as feed by 35%, 40% and

25% respondents respectively and those feeds were consist of damaged vegetables, bread, chapatti, Rice and mixture of leftover food. Regarding the purchasing of the food in organized sector it was carried out by direct purchasing (45%) and by involvement of the middle man (55%). The quantity of the feed provided to the pig were 20 -30 kg, 30-50 kg and 50 – 70 kg / day by 35%, 55% and 10% of respondents, respectively.

Table 5: Percentage of Healthcare Practices in the area

Variables		Organized Per cent	Unorganized Per cent
Deworming	Regular	20	0
	Irregular	80	0
	Never	0	100
Vaccination	Yes	0	0
	No	0	100
Fe injection/ tablet to piglets	Yes	65	0
	No	35	100
Removal of needle teeth	Yes	70	0
	No	30	100
Veterinary Aid available	Satisfactory	15	0
	Poor	85	100
Mortality of pigs	Upto 1 month	60	55
	1-3 month	30	22.5
	Above 3 month	10	22.5
Causes of piglet mortality	Piglet anaemia	45	0
	Crushing of piglets	35	0
	Unknown diseases	20	100
Prevalence of disease	Diarrhea	45	77.5
	Skin disease	25	22.5
	Influenza	30	0
Isolation of sick animal	Yes	100	0
	No	0	100
Cleaning of pig sty	Daily	85	0
	Alternate day	15	25
	Weekly	0	75
Burial of carcass	Yes	100	100
	No	0	0

Regarding healthcare practices, it was found that the respondents only practiced deworming in the organized sector, with only 20% deworming on a regular basis and 80% of respondents having irregular deworming schedules. The respondents from the organized sector also used vaccinations. Only 65% of respondents practiced iron injection supplementation in the organized sector (Table 5). Seventy percent of respondents reported removing needle teeth from animals on organized farms, but no one reported doing so on unorganized farms. Regardless of the organized or unorganized sector, all respondents used the burial method for carcass disposal. The current findings more or less were in support of Roy (2014) [8], Deka *et al*. (2007) [2], Kumar *et al*. (2004) [5], and Ritchil *et al* (2013) [7].

Table 6: Percentage of Marketing Area and pattern

Variables		Organized Percent	Unorganized Percent
Selling weight(kg)	50-60	0	100
	100	75	0
	120	25	0
Selling age (month)	5-7	0	100
	9-10	20	0
	10-12	80	0
Sale price (Rs/kg)	≤100	80	30
	>100	0	70
Quantity of animal in a batch	50	25	0
	100	60	0
	150	15	0
Presence of middle man	Yes	100	0
	No	0	100
Transportation of animal	By Train	55	0
	By Truck	45	0
Marketing Area	North eastern area of India	55	0
	Delhi	30	0
	Gurugram	15	0
	Local Market	0	100

According to the results (Table 6), it was found that the pig's selling weights in organized farms were 100 kg and 120 kg, and that the majority of respondents (75%) sell their pigs at 100 kg body weight while only 25% sell at 120 kg body weight. In contrast, in unorganized farms, all respondents sell their pigs at 50–60 kg body weight, depending on their needs. The marketing age of pig in organized farm were 9-10 months and 10 -12 months. 80% of the respondents were selling their

pig at 10 -12 month of age because of the market weight of pig was achieved at this age (10-12 month) whereas in unorganized sector the market age of the pig was 5-7 month as well as their need.

Conclusion

It is concluded from the present study among various livestock species, pigs are among the livestock species that produce the most meat globally. Pork contributes the most to global meat consumption, accounting for 36.57% of all meat production. India's share of global meat production, at 1.96%, is very small, and piggery's contribution is even negligible. Lack of knowledge of scientific breeding, feeding, and healthcare management, as well as an unorganized marketing infrastructure and other significant challenges faced by farmers despite numerous additional advantages, benefits, and the enormous demand for pork in the nation, the pig industry has not fared well.

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