RESEARCH ARTICLE

Navigating Challenges in Piggery Enterprises: Insights from Pashu Vigyan Incubator

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Abstract

Piggery enterprises are integral to the global agricultural sector, contributing significantly to protein supply, food security, and rural economic development. However, these enterprises face numerous challenges that hinder their growth and sustainability. This study explores the multifaceted constraints affecting piggery enterprises, with a specific focus on the barriers encountered by pig farmer trainees who participated in the Entrepreneurship Development Program (EDP) on pig farming, organized by the ICAR-IVRI *Pashu-Vigyan Incubator*. Through a systematic review of literature and empirical data analysis, this research categorizes the key challenges into personal, socioeconomic, technological, and institutional domains. Notable constraints include financial limitations, disease management complexities, environmental regulations, restricted market access, and technological deficiencies. Institutional barriers, such as limited awareness and accessibility to government schemes, inadequate training facilities, and ineffective extension services emerged as significant impediments. Marketing challenges, including low pig market prices, difficulties in securing buyers, and the lack of cold storage facilities, further exacerbate these constraints. An evaluation of the EDP highlighted concerns such as insufficient outreach and an overemphasis on lecture-based instruction. However, strengths of the program included expert guidance, the approachable nature of trainers, and a conducive learning environment. By integrating participant feedback and addressing key challenges, this study provides critical insights and strategic recommendations to enhance the sustainability and resilience of piggery enterprises.

Key words: Constraints, Financial limitations, Market access, Piggery entrepreneurship, Pig farming.

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Introduction

India's livestock sector plays a crucial role in supporting the livelihoods of resource-poor farmers, particularly through pig farming as India has a pig population of approximately 9.06 million, making it the second-largest pig producer in the world's piggery sector. Despite this considerable number, pigs represent only about 1.7% of the total livestock population in the country (DAHD, 2019). The pig farming sector in India faces various challenges, including limited infrastructure and uneven distribution of resources. The exotic and crossbred pig population stands at around 1.9 million, while indigenous and non-descript breeds make up about 7.16 million. There has been a 12.03% decline in the total pig population over the past five years, reflecting some of the sector's ongoing difficulties. India's contribution to global piggery is notable but still modest. The country ranks second in the production of bristles, a by-product of the pig industry, and exported live swine worth Rs 11 million and swine meat (fresh, chilled, or frozen) worth Rs 119 million in 2018. However, pork production constitutes only 9% of India's total animal protein sources, indicating significant room for growth. It holds a prominent position in global piggery, the sector's potential remains underutilized due to infrastructural and resource-related challenges. Addressing these issues could enhance India's role in the global pig farming industry and contribute to meeting the increasing demand for pig products.

Piggery due to high feed conversion efficiency, early maturity, and minimal space requirements is best suitable for starting an enterprise but avenues remain underdeveloped. The sector faces significant challenges, including a declining pig population, limited production, and inadequate infrastructure. The Indian government has taken steps to address these issues and harness the potential of the livestock sector through initiatives such as *"Atma-Nirbhar*

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Bharat" and the RKVY-RAFTAAR program of the Ministry of Agriculture and Farmers Welfare. These initiatives aim to foster entrepreneurship and innovation in livestock and animal husbandry, with a focus on alleviating youth unemployment and promoting self-employment. The ICAR-Indian Veterinary Research Institute's *Pashu-Vigyan Incubator* (Agribusiness Incubation Center-ABIC) plays a pivotal role in this regard. The ABIC offers training and mentorship to aspiring piggery entrepreneurs, helping to bridge the gap between potential and practical implementation. One of the key programs offered by the *Pashu-Vigyan Incubator* is the Entrepreneurship Development Programme (EDP) on Piggery farming, which provides comprehensive knowledge on theoretical and practical aspects of piggery, including production techniques, project financing, disease management, and hands-on training through farm visits and expert interactions while aiming to address barriers by providing comprehensive training on pig farming practices constraints and actionable strategies to enhance the success and resilience of piggery enterprises. From 2018 to 2020, the EDP successfully trained 233 individuals. However, despite the program's success, there is a need for a detailed assessment of the constraints faced by these trainees during their entrepreneurial journey and also their feedback regarding the EDP. The present research article aims to explore and analyze the barriers and constraints encountered by piggery entrepreneurs, by evaluating and identifying the real-world challenges that hinder the establishment and growth of pig farming ventures, and to provide valuable insights to refine future trainings in India.

Materials and Methods

The study was conducted in the 'Division of Extension Education' ICAR-Indian Veterinary Research Institute, Izatnagar (UP, India), on the piggery entrepreneurs belonging to various states of India who had attended the piggery 'Entrepreneurship Development Programme (EDP)' at Agribusiness Incubation Center of ICAR-IVRI. An *ex-post facto* design was applied, and purposive sampling technique was used on the list of attendees of the Piggery EDP during 2018-19, 2019-20 and 2020-21. A final sample size of 80 (who responded positively about starting their piggery enterprises) was selected for the study. The data were collected by e-questionnaire and followed up telephonically. In the present research, constraints were operationalized the problems or bottlenecks that come in the way, such as the problems encountered by the farmers in pig farming, reasons for non-adoption and discontinuance of piggery. The constraints were documented through a mailed questionnaire. Based on the frequency and percentage of the responses, constraints were analysed and ranking was done. The problems perceived by trainees during the entrepreneurship programme at Agribusiness Incubation Center ICAR-IVRI were also studied using Constraint index developed by Meena *et al.* (2013). Trainees were asked to rank the constraints in decreasing order of their seriousness, and they are presented in rank order by using Garrett ranking method.

Results and Discussion

The constraints involved in starting and running a piggery enterprise are multifaceted encompassing personal, socioeconomic, technological and institutional barriers.

Personal Constraints

'Family situation' was the most serious constraint in piggery enterprises. 'Illiteracy' with a mean percent score of 41.25 was ranked 2nd while 'Non availability of time' was ranked 4th with least MPS of 5. 'Other factors' like personal disability diseases or no support from spouse or parents etc. was ranked 3rd (Table 1). The rationality may be that piggery farming still being in nascent phase in most parts of India is still looked down upon by majority of the families. Rural traditional families don't encourage piggery as a respectable source of occupation. Also, risk associated with piggery makes families sceptical to venture into it.

Table 1: Distribution of respondents according to the perceived personal constraints and their ranking

Constraints	Level	Trainees (n=80)	MPS	Rank
Family situations	Most serious	30 (37.50)	62.50	I
	Serious	40 (50.00)		
	Less serious	12 (15.00)		
Illiteracy	Most serious	12 (15.00)	41.25	II
	Serious	42 (52.50)		
	Less serious	26 (32.50)		
Non-availability sufficient time	Most serious	0 (0.00)	5.00	IV
	Serious	8 (10.00)		
	Less serious	72 (90.00)		
Others (Disability, diseases etc.)	Most serious	2 (02.50)	19.37	III
	Serious	27 (33.75)		
	Less serious	51 (63.75)		

Figures in the parentheses indicate the percentage

Among the 80, half of the piggery entrepreneurs (n=40, 50.0%) perceived medium level (scale 3-4) of personal constraints in piggery farming, followed by low (<3 scale, n=34, 42.50%) and high (>4 scale, n=6, 7.50%) level, with a mean of 2.53±0.16, which show that on personal level the constraints were possibly manageable on their ends.

Socio-Economic Constraints

'Higher cost of feed' for the pigs was the major socio-economic constraint with cent percent mean score which is also reflected in the fact that in pig farming over 70 % of the cost comes from feed. Low prevailing market price for pig meat didn't commensurate with the high expenses they undertake to procure feed, was also found in agreement with that of Anand (2016), Anand *et al.* (2017) and Khode *et al.*

(2018). 'Inadequate or non-availability of credit' and 'higher capital investment' were the next issues with high mean scores. About half of them considered piggery to be 'Less prestigious businesses perceived by the society adding to the socio-economic barriers faced by the entrepreneurs. 'Non-availability of labour' was the least serious socio-economic constraint as per Table 2.

Table 2: Distribution of respondents according to the perceived socio-economic constraints and their ranking

Constraints	Level	Trainees (n=80)	MPS	Rank
Less prestigious business	Most serious	30 (37.50)	62.50	IV
	Serious	40 (50.00)		
	Less serious	10 (12.50)		
More competition in piggery farming	Most serious	0 (0.00)	4.37	VII
	Serious	7 (8.75)		
	Less serious	73 (91.25)		
Non-availability of labour	Most serious	0 (0.00)	0.62	IX
	Serious	1 (1.25)		
	Less serious	79 (98.75)		
Inadequate or non-availability of credit	Most serious	72 (90.00)	95.00	II
	Serious	8 (10.00)		
	Less serious	0 (0.00)		
Higher capital Investment	Most serious	36 (45.00)	67.50	III
	Serious	36 (45.00)		
	Less serious	8 (10.00)		
Higher cost of Animals	Most serious	16 (20.00)	36.25	VI
	Serious	26 (32.50)		
	Less serious	38 (47.50)		
Higher labour cost	Most serious	1 (1.25)	1.87	VIII
	Serious	1 (1.25)		
	Less serious	78 (97.50)		
Higher cost of feed	Most serious	80 (100.0)	100.00	I
	Serious	0 (0.00)		
	Less serious	0 (0.00)		
Higher medicine cost	Most serious	12 (15.00)	50.00	V
	Serious	56 (70.00)		
	Less serious	12 (15.00)		

Figures in the parentheses indicate the percentage

Among the 80 entrepreneurs, majority of the trainees elicited (n=34, 42.50%) medium level of socio-economic constraints (scale 8-10) in piggery followed by low (scale <8, n=33, 41.25%) and high (scale >10, n=13, 16.25%) level, with a mean score of 8.33±0.22. The possible reasons behind higher perception of socio-economic constraints might be due to their input and labour-intensive piggery farming as well as higher economic motivation due to the entrepreneurship training, they attended at IVRI.

Technological Constraints

'Non-availability of vaccines' was viewed as the most serious technological constraint by about 57.50 % of them. The pig farmers' awareness about the vaccines and their benefits, learnt during the training made them realize their need. It was followed by 'Difficulty in getting the input or raw materials' and 'complexity involved in maintaining high yielding dairy animal' among trainees as the second and third constraints in order. Lack of knowledge was perceived 4th in the order with score of 51.25 (Table 3). 'Inadequate or unsatisfactory results of technology' and 'low productivity' and 'non-availability of high quality of meat breed' were perceived as the least serious technological constraints by maximum proportion of respondents and were ranked 5th, 6th and 7th respectively. 'Low productivity' is seldom a problem in piggery farming as litter size is always high in pig owing to high fecundity in swine.

Table 3: Distribution of respondents in according to the perceived technological constraints and their ranking

Constraints	Level	Trainees (n=80)	MPS	Rank
Lack of knowledge	Most serious	16 (20.00)	51.25	IV
	Serious	50 (62.50)		
	Less serious	14 (17.50)		
Inadequate or unsatisfactory results of technology	Most serious	11 (13.75)	32.50	V
	Serious	30 (37.50)		
	Less serious	39 (48.75)		
Non-availability of high quality meat breeds	Most serious	4 (5.00)	19.37	VII
	Serious	23 (28.75)		
	Less serious	53 (66.25)		
Low productivity	Most serious	7 (8.75)	29.37	VI
	Serious	33 (41.25)		
	Less serious	40 (50.00)		
Complexity in maintaining cross-bred animals	Most serious	22 (27.50)	56.25	III
	Serious	46 (57.50)		
	Less serious	12 (15.00)		
Difficulty in getting the input or raw materials	Most serious	27 (33.75)	58.12	II
	Serious	39 (48.75)		
	Less serious	14 (17.50)		
Non-availability of vaccines	Most serious	46 (57.50)	73.12	I
	Serious	25 (31.25)		
	Less serious	9 (11.25)		

Figures in the parentheses indicate the percentage

More than half of the piggery trainees discerned technological constraints at medium level (scale 5-8, n=41, 51.25%), followed by low level (scale <5, n=20, 25.00%) and high level (scale >8, n=19, 23.75%) with an overall mean of 6.35±0.28. This differs from the findings of Khode *et al.* (2018) where majority of the respondents fell under low

technological constraints category. Lack of technology percolation to the grass-root levels and incompetence of the government institutions in proper and timely dissemination of technological interventions among the stakeholders might be the major reason for the high institutional constraints perceived by the trainee respondents.

Institutional Constraints

As presented in Table 4, 'no awareness and access to government schemes' was the major institutional constraint (rank I, MPS 96.25) in piggery farming. 'Poor extension services' (73.75), 'lack of training facilities (66.75)', and 'lack of accessible veterinary services' (40.62) were ranked 2nd, 3rd and 4th. The perception of majority trainees was found less serious towards 'favouritism of extension agency or bank officials. This might be due to higher awareness of respondent trainees about research and training institutes like IVRI and extension programmes organized by different extension agencies, as well as they might be knowing about better services within time about veterinary and health either from local para-vets or livestock supervisor.

Table 4: Distribution of respondents according to the perceived institutional constraints and their ranking

Constraints	Level	Trainees (n=80)	MPS	Rank
Lack of training facilities	Most serious	27 (33.75)	66.25	III
	Serious	52 (65.00)		
	Less serious	1 (1.25)		
Poor extension services	Most serious	40 (50.00)	73.75	II
	Serious	38 (47.50)		
	Less serious	2 (2.50)		
No awareness and access to govt schemes	Most serious	74 (92.50)	96.25	I
	Serious	6 (7.50)		
	Less serious	0 (0.00)		
Lack of accessible veterinary services	Most Serious	7 (8.75)	40.62	IV
	Serious	51 (63.75)		
	Less Serious	22 (27.50)		
Favouritism of extension agency and bank officials	Most Serious	0 (0.00)	18.12	V
	Serious	29 (26.25)		
	Less Serious	51 (63.75)		

Figures in the parentheses indicate the percentage

More than half of the trainees perceived medium level of institutional constraints in piggery farming (scale 5-6, n=49, 61.25%), followed by high (scale >7, n=23, 28.75%) and low (scale <5, m=8, 10.0%) level of institutional constraints, with an overall mean of 6.91±0.12. This was in consonance with the findings of Khode *et al*. (2018), who also found that majority of the trainees fell under the medium institutional constraints category.

Marketing Constraints

'Low market price for pig meat' was the marketing constraint (rank I, MPS 83.12) in piggery farming. 'Difficulty in finding market for sale of meat and piglets' was the second most important marketing constraint followed by 'Lack of cold storage facilities for meat and meat products' However, the majority the respondents had perceived 'Irregular or delayed payment of sold piglets and meat' as a less serious marketing constraint and was ranked 5th (Table 5). This led to the realization of need of such facilities among respondents might be due to their higher piglet production and need to sell it by carrying it twice a day to nearby city/ town.

Table 5: Distribution of respondents according to the perceived marketing constraints and their ranking

Constraints	Level	Trainees (n=80)	MPS	Rank
Low market price of pigs	Most serious	57 (71.25)	83.12	I
	Serious	19 (23.75)		
	Less serious	4 (5.00)		
Difficulty in finding market for sale of meat and piglets	Most serious	27 (33.75)	61.87	II
	Serious	45 (56.25)		
	Less serious	8 (10.00)		
Irregular or delayed payment of sold piglets and meat	Most serious	10 (12.50)	25.62	V
	Serious	21 (26.25)		
	Less serious	49 (61.25)		
Lack of cold storage facilities for slaughtered animals	Most serious	26 (32.50)	56.25	III
	Serious	38 (47.50)		
	Less serious	16 (20.00)		
Lack of transport facilities to market	Most serious	9 (11.25)	42.50	IV
	Serious	50 (62.50)		
	Less serious	21 (26.25)		

Figures in the parentheses indicate the percentage

The distribution of the marketing constraints in piggery farming saw that majority of the farmers had perceived medium level of marketing constraints (scale 4-6, n=46 57.50%), followed by 26.25 % of them who reported high level of marketing constraints (scale >7, n=21), and 16.25% of them perceived low level of constraint (scale <4, n=13), with an overall mean of 5.41±0.21. More meat production is associated with stronger desire to earn more profit through piggery production and subsequent higher realization of transport and bulk storage facilities in addition to their doubt towards finding proper market to sell off their produce. These findings were in the line with those of Jini (2008), who found that majority of the respondents fell under medium level of marketing constraints.

Overall Constraints Perceived in Piggery Enterprises

Table 6 reveals that 'Institutional' constraint was the major constraint (rank I) perceived by the respondent piggery entrepreneurs, followed by 'Marketing constraint'. This might

be due to high awareness and contact with the extension agency, more labour and input intensive piggery farming in addition to their higher achievement motivation in piggery farming, so they had more perceived institutional and marketing constraints. 'Socio-economic' and 'Technological' constraints were ranked 3rd and 4th, respectively, according to the average mean percent score. The respondents had perceived 'Personal' constraint as least important constraint in piggery farming and ranked last among all other perceived constraints of piggery farming. These findings were in contrast with those of Singh *et al.* (2016), Sahu (2016) and Khode *et al.* (2018), who found that socio-economic constraint was the major constraint perceived by the trainees.

Table 6: Ranking of overall constraints perceived by the respondents in piggery farming

		Trainees (n=80)	
Sr. No.	**Constraints**	**MPS**	**Rank**
1.	Personal	32.03	V
2.	Socioeconomic	46.45	III
3.	Technological	45.71	IV
4.	Institutional	58.99	I
5.	Marketing	53.87	II

Drawbacks in the Training Programme at Agri-Business Incubator Centre - IVRI

As depicted in Table 7 with Garrett ranking score, the 'lack of wide publicity for training course' was the most serious constraint faced by the respondents during the training programme. 'More emphasis on lecture method' and 'no planning for the outside visit and discussion with progressive farmer' were also seen as serious constraint as they were ranked 2nd and 3rd, respectively. 'Lack of unsatisfactory boarding facilities' and 'lack of audio-visual aids' were least important constraints perceived by the respondents as they were ranked 9th and 10th, respectively. At certain extent, the result was in line with that of Shankara *et al.* (2014), Bhise (2015), Singh *et al.* (2016), Sahu (2016), Bhise *et al.* (2018) and Khode *et al.* (2018) about the trainings.

Table 7: Garrett ranking score of the various constraints perceived by the respondents during the piggery entrepreneurship development training programme by ABIC ICAR-IVRI

Constraints perceived during the training	**Average score**	**Rank**
More emphasis on lecture method	69.15	II
Lack of trained, field oriented staff	41.41	VII
Lack of adequate facilities for practical demonstration	58.26	IV
Lack of wide publicity for training course	78.71	I
Lack of transport facilities to reach training centre	45.82	VI
Unsatisfactory boarding facilities	30.78	IX
Course Content Finalized without ascertain the needs	51.63	V
Lack of coordination in the management of the course	37.22	VIII
No planning for the outside visit and discussion with progressive farmers	62.05	III
Lack of AV Aids	22.93	X

Most Likable Feature about the EDP

Almost half (n=38, 47.50%) of the 80 respondent piggery entrepreneurs liked the quality expertise of the experts the most. Further, 20 % of the trainees (n=16) considered the 'friendly nature of the expert' as most agreeable feature whereas 'Comfortable class environment' was liked the most by 18.75 % (n=15) of them. Only 8.75 % (n=7) of the respondents liked 'Good practical exposure' of the training programme.

Conclusions

This research paper highlights that 'family situations' and 'illiteracy' were the most significant personal constraints in piggery farming, while 'non-availability of time' was considered less critical. Socio-economic challenges, notably 'higher cost of feed' and 'inadequate credit,' were perceived as major obstacles, with a majority of respondents experiencing medium to low levels of these constraints. Technological constraints such as 'non-availability of vaccines' and 'difficulty in obtaining inputs' were deemed serious, whereas the lack of high-quality meat breeds was viewed as less critical. Institutional constraints, particularly 'lack of awareness and access to government schemes' and 'poor extension services,' were seen as the most severe, followed by marketing constraints like 'low market prices' and 'difficulty in finding markets.' Institutional and marketing constraints were discerned as most serious among the pig trainees whereas personal and technological constraints were regarded as less serious. The key lacunae in piggery entrepreneurship training were also identified including the 'lack of wide publicity,' 'overemphasis on lectures,' and 'insufficient practical demonstrations.' Despite these issues, respondents valued 'quality expertise' and the 'friendly nature of experts.' Thus, it can be culminated that increasing the visibility of training programs, addressing community perceptions of pig farming, incorporating field trips into training, and enhancing practical solutions and documentation will enhance the overall effectiveness of the training program. A shift towards a more hands-on training approach is suggested to improve the effectiveness of the entrepreneurship development program offered by ICAR-IVRI.

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