



# Content Analysis of Farm Magazine 'Vigyanik Pashu Palan': A Study

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## Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

The present study was conducted to quantitatively analyze the contents published in Vigyanak Pashu Palan (VPP), the monthly Punjabi magazine of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, during Time Period I (2008-2010), Time Period II (2014-2016) and Time Period III (2020-2022). A total of 105 monthly issues were selected. The study revealed that the mean number of articles per issue stood at  $11.65 \pm 1.98$ , occupying an average space of  $25.93 \pm 5.04$  pages (72.03%). The average number of advertisements per issue was  $3.77 \pm 2.37$ , encompassing  $2.28 \pm 1.91$  pages (6.33%). The articles published in VPP were mostly related to

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animal health (25.3%), their format being essay type (92%), authored by two experts (75.6%) mostly designated as Teachers (58.9%). The majority of articles (77.7%) focused on a single species, while 18.5 percent did not cover any livestock species. A major focus was on bovine species, appearing in 46.8 percent of articles. The average article length was  $2.23 \pm 0.84$  pages. Articles typically comprised of  $8.29 \pm 4.20$  paragraphs,  $127.77 \pm 65.18$  lines,  $49.37 \pm 24.10$  sentences, and  $890.27 \pm 687.22$  words, with an average of  $2.66 \pm 1.56$  technical words in each article. Additionally, articles included an average of  $2.26 \pm 3.29$  pictures, figures, or illustrations. The average readability index of VPP was  $9.26 \pm 10.37$  suggesting that 9<sup>th</sup> or 10<sup>th</sup> standard students can read it with fair understanding. The present study suggests that Vigyanak Pashu Palan magazine has consistently served as a crucial medium for transferring veterinary extension education and innovative agricultural technologies to livestock farmers in Punjab and adjacent area.

**Keywords:** *Vigyanak Pashu Palan (VPP); content analysis; farm magazine; Punjab; readability index; veterinary university.*

## 1. INTRODUCTION

In the current landscape, there is a noticeable increase in the educational level of livestock farmers especially among the newer generation. These farmers are actively seeking out knowledge and skills related to livestock farming, often through various training programmes or by accessing instructional material provided by veterinary universities, such as monthly magazines. Media, including print media, plays a crucial role in disseminating information about livestock farming practices and innovative technologies to farmers, thereby contributing to the advancement of the sector. Despite the modernization of farming practices, a significant portion of Indian farmers still reside in rural areas, where forward-thinking individuals actively seek knowledge to enhance their agricultural output. In the hierarchy of information sources, print media holds the third position, following fellow farmers and television [1]. India boasts a diverse array of channels facilitating the efficient transmission of information, including periodicals, from scientists to farmers. These channels encompass community projects, extension services, government initiatives, Agri-clinics, networks, non-governmental organizations, and libraries. Through this multifaceted network, crucial agricultural knowledge is effectively disseminated to benefit the farming community [2]. Mass media channels, such as magazines, newspapers, radio, television, and online platforms, serve as effective communication channels to convey ideas, information, and opinions to a wider audience, including literate farmers. Farm publications and newspapers, in particular, facilitate the sharing of farming expertise among literate farmers, helping them to bridge the gap between traditional and modern farming practices. The effectiveness of any

media depends on its ability to disseminate the message properly so that it is understood, and readily accepted and, thus, facilitates the adoption of the [3]. Government initiatives, as well as publications by universities/ institutions like Guru Angad Dev Veterinary and Animal Sciences University's monthly magazine, Vigyanak Pashu Palan (VPP), contribute to the dissemination of essential information to farmers. VPP, for example, provides basic information on animal husbandry, fisheries, and fodder plants, catering to the informational needs of farmers. While the magazine predominantly features articles on disease prevention and scientific management practices, there remains scope for further research and critical analysis to evaluate its effectiveness and address gaps in content or readership patterns. Content analysis is a research tool used to determine the presence of certain words/themes/concepts within some given qualitative data (i.e. text). With this information in mind, the present study was planned to critically analyse the contents of VPP along with assessment of ease of its readability.

## 2. MATERIALS AND METHODS

The study was conducted on the contents of the farm magazine, Vigyanak Pashu Palan, published by Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. A total of 108 monthly issues of VPP from three time periods (2008-2010, 2014-2016, and 2020-2022) were collected. The publications of this magazine started in 2007. The issues were selected from three different time periods just to avoid skewness in results cropping up due to time period bias. The analysis of contents was conducted quantitatively, focusing on entire article and its paragraphs as units of analysis.

Articles were classified based on subject matter, number and type of authors, species covered, length of the article, type/format of the article, and inclusion of tables, figures, illustrations, etc. Paragraph-level analysis included calculating average sentence length, average paragraph length, number of sentences per paragraph, number of words per paragraph, and number of technical words used in the entire article.

The readability index of each article was determined by using the Coleman-Liau Index (CLI) and then, averages were worked out. The formula for CLI [4] is as follows:

$$CLI = 5.89 \times \left( \frac{\text{Characters}}{\text{Words}} \right) + 29.5 \left( \frac{\text{Sentences}}{\text{Words}} \right) - 15.8$$

## 2.1 Statistical Analysis

The data were transferred to a Master Sheet in Microsoft Excel Programme as well as in the Access Programme. It was, then, subjected to descriptive analysis using SPSS statistical software (SPSS, Version 16).

## 3. RESULTS AND DISCUSSION

Vigiyank Pashu Palan is a monthly magazine published by Guru Angad Dev Veterinary and Animal Sciences University in vernacular language of Punjabi scripted in Gurmukhi. This magazine caters to the informational needs of Punjabi speaking farmers residing in Punjab and other states. It offers in depth coverage of diverse topics relevant to rearing practices of various livestock species [5]. In the inaugural year of 2007, only 1150 copies were posted to subscribers which in 2021 rose to 55331 copies, depicting an annual growth rate of 314.1 percent [5]. This shows its increasing popularity among farming community over the years.

Each monthly issue of the magazine has a fixed number of 36 pages. The later measures 26.5cm in length and 20.5cm in breadth. The text is set in two equal columns on both sides of each page. In 105 issues studies, a total of 1222 articles and 222 advertisements got published. The mean number of articles per issue stood at  $11.65 \pm 1.98$ , occupying an average space of  $25.93 \pm 5.04$  pages. There was an average of  $3.77 \pm 2.37$  advertisements per issue, covering approximately  $2.28 \pm 1.91$  pages. The number of articles in each issue remained almost constant, however, the number of advertisements were quite variable in different time periods. The advertisement usually belonged to privately

owned businesses and cooperative societies but some space was also provided to university related news items, slogans, important events etc. The variable number of advertisements in different time periods could be attributed to ups and downs witnessed in dairy farming business in Punjab. These results are comparable to those obtained by Akila et al. [6] for the farm magazine "Kalnadai Kathir" published by Tamil Nadu Veterinary and Animal Sciences University. They reported 13.37 articles and 3.13 advertisements published in each issue of this magazine.

Kaur and Kaur, [7] reported similar results of 75.63 percent space being occupied by various articles in Changi Kheti. Nain and Trikha [8] also reported similar results (73.50% space for articles) for Haryana Kheti. However, lower space (61.72%) was devoted to articles in English language from magazines, Progressive Farming [9]. It was because of greater coverage of advertisements (14.68%).

### 3.1 Evaluation Based on Subject Matter of the Article

Based on subject, the article could belong to animal breeding, shelter management, health management, nutrition, fodder cultivation, value addition, livestock economics and miscellaneous as mentioned in Table 2. Majority of the articles published in VPP belonged to health management (25.3%) followed by shelter management (21.4%). The coverage of articles related to breeding, nutrition and fodder cultivation was quite low (5-7%). The results clearly showed that animal health received considerable attention. It could be due to high proportion of writers belonging to clinical and para-clinical subjects. Moreover, the interest of livestock farmers lie in the well-being of their animals. The readers of VPP on most of the occasions demand articles related to animal diseases including preventive and treatment aspects [5]. Akila et al. [6] also reported 44.89 percent articles published in "Kalnadai Kathir" belonging to diseases of livestock and pet animals. In farm magazine published by agricultural universities in the country, the contents related to animal husbandry ranked fourth after agriculture, its allied activities and horticulture [10,11].

### 3.2 Evaluation of Articles Based on their Format

Vigiyank Pashu Palan magazine publishes popular articles in essay type mode, articles in

question-answer style, success stories articles in drama style and miscellaneous formats. Majority of the articles published in VPP were of essay type (92%). The number of articles in other formats was quite low. These results clearly depict the preference of university experts in writing essay-type articles, though farmers prefer success stories and articles in question-answer style [12] or information presented in a story form [13].

### 3.3 Evaluation of Articles Based on Number of Authors

Insights into the distribution of articles based on number of authors reveal a consistent trend as portrayed in Table 2. Majority of articles (75.6%), were authored by two individuals, indicating a preference for collaborative efforts in crafting content. Single-author articles were fewer (22.9%). Articles with three authors were occasional, accounting for only 1.1 percent of the total. During early years of publications of VPP, the articles with three authors were in good numbers. However, in due course of time, University adopted a policy of publishing articles in VPP with a maximum authorship of two. Scientist in the university often work in teams in various research projects. This is the reason, majority of articles published in VPP had authorship of two experts. Studies conducted by Sondarva et al. [14] on the content analysis of "Gujarat Journal of Extension Education" found majority of articles authored by either two writers (33%) or three authors (56%). This also depicted a team effort in writing research papers.

### 3.4 Evaluation of Articles Based on Designation of First Author

The distribution of articles based on designation of first authors has been given in Table 2. Teachers emerged as the most prominent category, holding the highest proportion of first authorship roles, with an average value of 58.9 percent. Extensionists also contributed 21.8 percent of the articles published in VPP followed by Researchers (18.2%) as first authors. Vatta et al. [11] reported majority of articles published in "Rajasthan Kheti Pratap" were written by extension personnel, accounting for 54.91 percent. They were followed by teaching personnel at 30.06 percent and research scientists at 11.56 percent. These differences in authorship distribution could be attributed to the higher presence of extensionists in Rajasthan, possibly due to a greater number of Krishi Vigyan Kendras (KVKs) in the region.

### 3.5 Evaluation of Articles Based on Number of Species Covered

The distribution of articles based on number of livestock species covered showed single-species coverage as the most common theme, representing 77.7 percent. Coverage of articles with no livestock species accounted for 18.5 percent, indicating a substantial but lesser presence compared to single-species coverage. These articles were mostly related to fodder cultivation. Articles covering multiple species were relatively uncommon, constituting only 3.8%, suggesting a narrower focus on broader discussions across multiple species. Akila et al. [6] also noted that majority of articles published in "Kalnadai Kathir" magazine were related to a single species, accounting for 41.38% of the total. In contrast, articles covering multiple species constituted only 31.11%. The authors suggested that articles focusing on single species could offer more comprehensive information to readers compared to those covering multiple species, as they allow for more in-depth discussion and analysis.

### 3.6 Evaluation of Articles Based on Type of Species Covered

The distribution of articles based on type of species covered, consistently revealed bovine species as the most prominently featured, encompassing 46.8 percent of the total coverage. The articles on subjects other than livestock species were also substantial in number (18.5%) followed by those related to fisheries (9.1%). The other species (goat, pig, dog and poultry) had very less representation in VPP. Similar study conducted by Akila et al. [6] found that out of 802 articles analyzed, the highest number of articles based on single species was published on cattle, accounting for 24.44%, followed closely by goat at 16.94% in the "Kalnadai Kathir" magazine. The authors attributed the emphasis on articles related to cattle to the significance of dairying as the main enterprise of rural farmers.

### 3.7 Characteristic Features of Individual Articles

Statistics shown in Table 3 illustrates the typical composition and length of articles published in the Vigyanak Pashu Palan magazine. On an average, each articles spanned  $2.23 \pm 0.85$  pages, containing approximately  $8.29 \pm 4.20$  paragraphs,  $127.77 \pm 65.18$  lines, and  $49.37 \pm$

24.10 sentences. The average word count per article stood at  $890.27 \pm 687.22$  words. Additionally, each article typically incorporated around  $2.66 \pm 1.56$  technical words and  $2.26 \pm 3.29$  illustrations.

### 3.8 Reading Difficulty Index

Vigiyank Pashu Palan magazine had an average readability index of 9.26 suggesting that students of 9<sup>th</sup> and 10<sup>th</sup> standard can read the

magazine with good understanding. Vatta et al., [11] reported that the majority of articles published in the farm magazines belonged to "very easy" and "fairly easy" readability categories. Average readability index of Changi Kheti a farm magazine of Punjab Agricultural University, Ludhiana was found to be 7.7 [15]. The readability index of VPP being slightly higher than that of Changi Kheti suggests that technical words or lengthy words were more often included in the texts of articles published in VPP.

**Table 1. Issue based parameters of Vigiyank Pashu Palan Magazine**

Period	Average No of Articles per Issue	Average No of Pages under Articles per Issue	Average No of Advertisements per Issue	Average No of Pages under Advertisements per Issue
Period I	$12.82 \pm 2.65^a$	$29.11 \pm 6.66^a$	$3.18 \pm 2.04^a$	$1.42 \pm 1.43^a$
Period II	$10.72 \pm 1.36^b$	$22.64 \pm 3.39^b$	$5.97 \pm 1.48^b$	$4.46 \pm 0.99^b$
Period III	$11.50 \pm 1.11^b$	$26.32 \pm 1.65^c$	$2.11 \pm 1.58^c$	$0.88 \pm 0.63^c$
Overall	$11.65 \pm 1.98$	$25.93 \pm 5.04$	$3.77 \pm 2.37$	$2.28 \pm 1.91$

Figures with different superscripts differ significantly at 0.05 percent level of significance

**Table 2. Issue based parameters of Vigiyank Pashu Palan Magazine**

S.No	Variable	Class of Variable	Value	Percentage %
1	Subject Matter of the article	Animal Breeding	70	5.7
		Shelter Management	262	21.4
		Nutritional Management	86	7.0
		Fodder Cultivation	74	6.1
		Health Management	309	25.3
		Value addition of livestock produce	92	7.5
		Livestock Economics	95	7.8
		Miscellaneous	234	19.1
2	Format of the article	Essay type	1124	92
		Q/A type	44	3.6
		Success story	30	2.5
		Drama type	5	0.4
		Miscellaneous	19	1.6
3	Number of Authors	One Author	280	22.9
		Two Authors	924	75.6
		Three Authors	13	1.1
		>three Authors	5	0.4
4	Designation of First Authors	Extensionist	266	21.8
		Researcher	222	18.2
		Teacher	720	58.9
		Research Assistant	14	1.1
5	Number of Species covered in the article	No species covered	226	18.5
		Single species covered	950	77.7
		Multiple species covered	46	3.8
6	Type of Species covered in the article	No species	226	18.5
		Bovine	572	46.8
		Ovine/Caprine	52	4.2
		Porcine	79	6.1
		Canine or other pets	61	5
		Poultry	83	6.5
		Fishery	112	9.1
		Multiple species	38	3.8

**Table 3. Parameters of articles published in each issue of Vigyanak Pashu Palan Magazine**

<b>Period</b>	<b>Length of article</b>	<b>No of paragraphs</b>	<b>No of lines</b>	<b>No of sentences</b>	<b>No of words</b>	<b>No of technical words</b>	<b>No of pictures/figures/illustrations</b>
<b>Period I</b>	2.28 ± 0.93 <sup>a</sup>	9.70±5.09 <sup>a</sup>	170.20±77.46 <sup>a</sup>	57.46 ±27.67 <sup>a</sup>	1223.97±1006.58 <sup>a</sup>	2.48 ± 1.42 <sup>a</sup>	1.22 ± 2.95 <sup>a</sup>
<b>Period II</b>	2.14 ± 0.79 <sup>b</sup>	7.45 ±3.47 <sup>b</sup>	108.26±43.63 <sup>b</sup>	48±22.42 <sup>b</sup>	727.13 ±311.38 <sup>b</sup>	2.83 ± 1.61 <sup>b</sup>	2.96 ± 3.66 <sup>b</sup>
<b>Period III</b>	2.29 ± 0.80 <sup>a</sup>	7.64 ± 3.39 <sup>b</sup>	102.43±42.69 <sup>b</sup>	42.39±18.73 <sup>c</sup>	692.49 ±298.29 <sup>b</sup>	2.70 ± 1.62 <sup>ab</sup>	2.69 ± 2.99 <sup>b</sup>
<b>Overall</b>	2.23 ± 0.84	8.29 ± 4.20	127.77 ± 65.18	49.37 ± 24.10	890.27 ± 687.22	2.66 ± 1.56	2.26 ± 3.29

*Figures with different superscripts differ significantly at 0.05 percent level of significance*

**Table 4. Readability index of Vigiyanak Pashu Palan Magazine**

Period	Average readability index	Number (N= 1222)
Period I	8.21 <sup>a</sup>	423
Period II	9.88 <sup>b</sup>	385
Period III	9.76 <sup>b</sup>	414
Overall	9.26	1222

*Figures with different superscripts differ significantly at 0.05 percent level of significance*

There is a lot of scope for improvement of contents published in VPP by including more number of success stories or articles in question-answer mode. The authors may be instructed to include less number of technical words in their articles.

#### 4. CONCLUSION

Across the evaluated periods, the magazine consistently served as a crucial medium for transferring veterinary extension education and innovative agricultural technologies to livestock farmers in Punjab and adjacent area. The analysis of the Vigiyanak Pashu Palan (VPP) magazine revealed that majority of articles were written on single species and the species of concern was bovines. Also, the majority of articles (92.0%) are in essay format, indicating a preference among authors for narrative-style writing. This enduring popularity of essay-type articles suggests their perceived effectiveness in conveying detailed information and analysis within the livestock sector.

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Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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