

Original Research Article

A content analysis of farm information and infographics in *Pasumai Vikatan* Tamil magazine

Abstract

Content analysis is an effective research tool to study the extent of information covered in farm magazines, which act as a comprehensive guide for farmers. The focus of the study is to analyse the coverage, readability ease, mode of presentation and type and level of infographics published in Tamil bimonthly magazine *Pasumai Vikatan*. The magazine was purposefully selected based upon the regional preferences and popularity. A total of 619 articles covered across 64 editions across three years from 2019 to 2021 were considered for sample study to analyse the basic objective of extent of farm information, readability ease and also the infographics covered. The research revealed that 64.63 per cent of the articles covered in the magazine was based on economics of returns in the past three years followed by articles related to organic farming (35.83 per cent) and crop production aspects (35.13 per cent). Further, the Flesch Kincaid reading ease was analysed and the results indicated that the ease of articles ranged between very easy and standard and could be understood easily even by young readers. With respect to format, the articles were presented predominantly in series format (70.24 per cent) followed by current news items pertaining to agricultural sector at (66.31 per cent). The study also identified that the usage of infographics was sparse without much textual information. The authors recommend usage of modern e-data tools for news gathering during the pandemic period and also suggests deeper coverage of other recent areas in agriculture and allied sectors.

Keywords: *Pasumai Vikatan*, content analysis, Flesch Kincaid reading ease, infographics

1. INTRODUCTION

Farm magazines have become one of the important sources of information for farmers and thereby play an important role in technology transfer. Especially new-age farmers and literate farmers usually depend upon various kinds of media in knowledge acquisition. Among them, farm magazines and newspapers play a prominent role in the dissemination of information and serve as a reliable

platform for knowledge acquisition and sharing. They act as a comprehensive guide by bringing to its readers the latest techniques of crop production and protection, new-age technologies, sustainable agriculture and other guidelines necessary for farming. In short they act on par with the extension functionaries in technology transfer.

However, there are only handful of farm magazines that cater to the needs of the farmers and meet their demands. Hence it is imperative to analyse whether the data or information covered in them meets the expectations of the farm community. In order to fulfill this demand, content analysis can be used as an effective tool for research. It can be used with a variety of data sources, including textual data, visual and audio data. The methodology is also highly flexible and hence can be analysed both empirically and theoretically. Given the massive explosion in archived linguistic, photographic, video, and audio data arising from the proliferation of technology, the technique of content analysis appears to be on the verge of a renaissance. (Steven E.Stemler, (2015). Using content analysis, we can determine the extent to which changes should be made in the textual and visual presentation so that it could help in effective information dissemination.

Considering the above parameters, for the purpose of research study, *Pasumai Vikatan*, a Tamil bimonthly magazine was purposefully selected based upon the regional preference of the audience and popularity among the masses. The magazine is one of the sub editions of the Vikatan groups and is immensely popular among farmers for its diverse content of farming and allied activities. Founded in 1926 by late Budalur Vaidhyanadhaiyar and later in 1928 S.S Vasan bought the rights and relaunched the publication. Though it has online edition only the print edition of the magazine was purposefully selected for the research. The research intends to analyse the text-based and graphic-based content covered in the magazine. This paper focuses on the following objectives.

1. To study the extent of coverage of farm information in the magazine
2. To study the readability ease
3. To identify the level and type of infographics used.

2.MATERIALS AND METHODS

This research is based on quantitative study carried out using the content analysis method. Quantitative content analysis involves systematic assignment of content to categories and the analysis of those categories using statistical

methods. (Riffe et al, 2014). Data was collected from the contents published in the magazine for a three-year period between January 2019 and August 2021. The popularity of the magazine among the farmers and their regional representation was considered while selecting the magazine. A total of 619 articles covered across 64 editions were analysed for knowing the extent of farm information covered, mode of presentation, readability and the level and type of infographics. In order to conduct the content analysis, after careful study of the farm magazine under study, the data were categorized based on the various areas covered in agriculture and allied sectors. Similarly the format of presentation was categorized as interviews, series, current agricultural news, Q and A section.

Percentage analysis was carried out to perform the basis of content analysis and the frequency and percentage was calculated for every categories.

Readability is another important dimension of any print material which signifies the acceptability of farm information. For the readability index, a software tool called 'WebFX' was used and 'Flesch Kincaid reading ease' was calculated. The Flesch index can be calculated by the formula:

$$RE = 206.835 - 1.015 \left(\frac{\text{Total words}}{\text{Total sentences}} \right) * 84.6 \left(\frac{\text{Total Syllables}}{\text{Total words}} \right).$$

Reliability test for the process of categorization and subcategorization is essential in content analysis which helps in extent of consistency under study. Krippendorff's Alpha (1997) has been calculated for establishing the reliability. For the purpose, researcher and two other observers were taken and the observed disagreements and expected disagreements were measured. The thumb rule is that if alpha is 0.8 and above the subject under study is considered reliable. The value of alpha calculated as 0.823. Hence the process of categorization and subcategorization was found to be reliable.

To analyse the coverage of infographics, a total of (n=145) infographics was identified using consecutive sampling method. The selected infographics was categorized based on the level and type of infographics. The study modified the parameters of Ghode (2013), Shin (2016) and Welhausen, (2015) into Level 1, which includes tables or bullet points, bar, pie or poll graph, line or fever-line, organisational or procedural flow chart; Level 2 includes themes or graphics or drawings such as conceptual diagrams, maps, typography, and symbolic interpretations and Level 3, is a combination of level 1 and 2 coupled with illustrations, stylistic representation of information.

3. RESULTS AND DISCUSSION

Extent of farm information

Various studies of newspapers and magazines found that each of them had preferential selection for publication of different categories of farm information.

Table 1 Extent of coverage of farm information

| Category | Year 2021 | | Year 2020 | | Year 2019 | | Total | |
|------------------------|-----------|---------|-----------|---------|-----------|---------|----------|---------|
| | No | Percent | No | Percent | No | Percent | Total No | Total % |
| Organic farming | 15 | 11.28 | 26 | 13.26 | 41 | 14.28 | 82 | 35.83 |
| Crop production | 14 | 10.53 | 25 | 12.76 | 34 | 11.85 | 73 | 35.13 |
| Crop protection | 7 | 5.27 | 12 | 6.12 | 19 | 6.62 | 38 | 18.00 |
| Horticulture | 18 | 13.53 | 14 | 7.14 | 32 | 11.14 | 64 | 31.83 |
| Medicinal | 2 | 1.50 | 23 | 11.73 | 21 | 7.32 | 46 | 20.56 |
| Water management | 5 | 3.76 | 14 | 7.14 | 17 | 5.92 | 36 | 16.83 |
| Economics of Returns | 45 | 33.83 | 33 | 15.82 | 43 | 14.98 | 121 | 64.63 |
| Animal husbandry | 10 | 7.52 | 20 | 10.20 | 25 | 8.72 | 55 | 26.43 |
| Apiculture/Sericulture | 1 | 0.76 | 7 | 3.57 | 10 | 3.48 | 18 | 7.80 |
| Agro tourism | 2 | 1.50 | 3 | 1.02 | 3 | 1.04 | 8 | 3.57 |
| ICT | 3 | 2.26 | 8 | 4.08 | 11 | 3.84 | 22 | 10.17 |
| Farm insurance | 5 | 3.76 | 5 | 2.56 | 14 | 4.88 | 24 | 11.19 |
| Farm machinery | 2 | 1.50 | 4 | 2.04 | 5 | 1.75 | 11 | 5.29 |
| Seed technology | 4 | 3.00 | 5 | 2.56 | 12 | 4.18 | 21 | 9.74 |
| Total | 133 | 100.00 | 199 | 100.00 | 287 | 100.00 | 619 | 300.00 |

All aspects of agricultural and allied activities were covered in the magazine. It could be inferred from Table 1 that 64.63 per cent of the articles were regarding economics of returns followed by extensive coverage in organic farming (35.13 per cent). Articles regarding crop production were given more prominence at 35.13 per cent. The study also revealed that less priority was given to emerging areas such as agro tourism (3.57 per cent.) Similarly, articles related to allied sectors such as apiculture and sericulture were not covered adequately (7.80 per cent).

The findings revealed that more prominence was given to stories on economics of returns featuring various success stories. The stories depict the various entrepreneurial opportunities in agriculture and allied sectors and feature success stories of farmers and agripreneurs who managed to earn considerable income and emerged successful in various agripreneurial activities. It was also revealed that organic farming and terrace gardening were given ample coverage

in majority of the issues. Animal husbandry was also given a substantial coverage at 26.43 per cent.

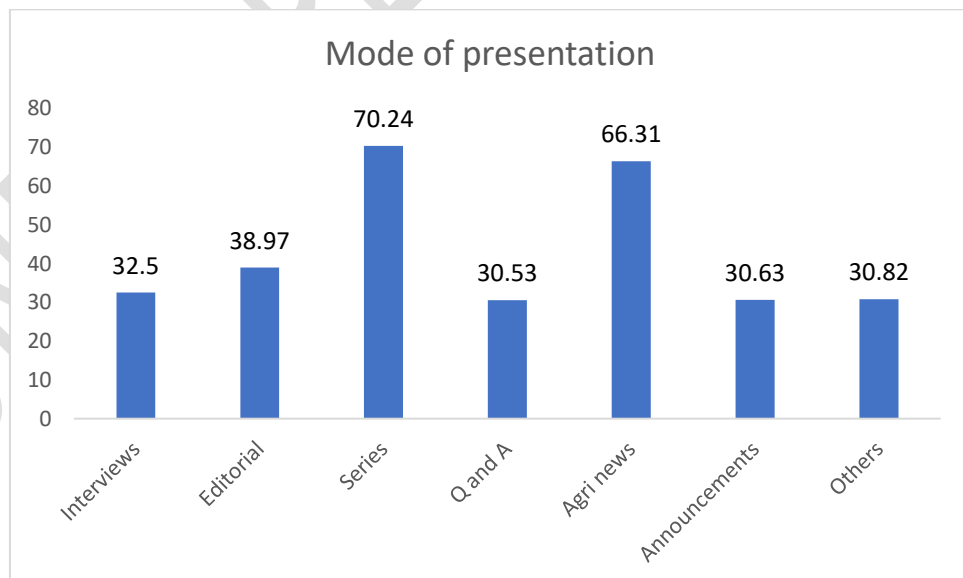
However, the research identified that emerging areas such as Information and Communication technology, agro tourism, water management, farm insurance, nanotechnology and other modern agriculture technologies require more coverage. Agriculture is moving towards an era of technology and embracing many modern methods in crop production and protection. Areas such as artificial intelligence is supporting different sectors to boost productivity and efficiency and assisting to overcome traditional challenges in every field. Focus on data management, market intelligence, market information system, e-marketing require wider awareness among farmers, especially, after the Covid 19 pandemic.

Hence the magazine should concentrate on such areas which have been, hitherto, sparsely covered.

Mode of presentation

Agricultural information was presented in the magazine through different modes to farmers. News story, features story, success story, interviews are some of the formats used by various farm magazines. An attempt has been made to classify the articles according to certain formats and are presented in Fig 1.

Fig 1 Distribution of mode of presentation in the magazine



The magazine has been publishing articles in various formats such as interviews, series etc to cater to the varied interests of the readers. The above figure 1 shows that series format has been used widely at 70.24 per cent

followed by current news items pertaining to agricultural sector at 66.31 per cent. Editorial section occupies a regular coverage in all the editions at 38.97

| Table 2. Readability Scores obtained from the magazine | | | | | |
|--|--------------|--------------------------|----------------------------|-------|--------|
| Article | Flesch Score | Percent of Complex words | Average words per Sentence | Grade | Result |

percent. Various other formats such as Q and A section, interviews on select successful farmers or celebrities too are given wider coverage.

Readability analysis

Readability is an important factor that decides the effectiveness of the publication. As Wilson and Gallop, (1954) has pointed out unless a reading material is easily understood, it cannot be an effective teaching device. Being a farm magazine and as the readers are predominantly farmers, it is imperative to assess the ease of reading for better outreach. Though there are several indices to measure the reading ease, it was decided to use Flesch readability formula (1948). The readability scores obtained from the analysis are explained in detail in Table 2. News articles covering 10 per cent of the issues were randomly selected and analysed.

| | | | | | |
|---------|--------|------|-------|---|-----------|
| Item 1 | 104.1 | 6.72 | 2.73 | 3 | Easy |
| Item 2 | 98.90 | 6.76 | 2.71 | 3 | Easy |
| Item 3 | 99.90 | 6.38 | 2.79 | 3 | Easy |
| Item 4 | 97.40 | 6.73 | 3.082 | 2 | standard |
| Item 5 | 96.30 | 7.13 | 2.92 | 2 | standard |
| Item 6 | 100.9 | 5.94 | 2.76 | 3 | Easy |
| Item 7 | 100.3 | 6.23 | 2.93 | 3 | Easy |
| Item 8 | 96.30 | 6.62 | 2.76 | 2 | standard |
| Item 9 | 104.2 | 4.59 | 3.15 | 4 | Ext. easy |
| Item 10 | 97.90 | 6.52 | 2.95 | 2 | standard |
| Item 11 | 101.6 | 5.68 | 3.46 | 3 | Easy |
| Item 12 | 94.40 | 8.00 | 4.06 | 2 | standard |
| Item 13 | 98.10 | 6.82 | 2.76 | 2 | standard |
| Item 14 | 100.3 | 6.26 | 2.79 | 3 | Easy |
| Item 15 | 97.60 | 7.05 | 2.63 | 2 | standard |
| Item 16 | 103.1 | 4.71 | 3.71 | 3 | Easy |
| Item 17 | 96.00 | 7.65 | 2.55 | 2 | standard |
| Item 18 | 100.00 | 6.33 | 2.69 | 3 | Easy |
| Item 19 | 98.80 | 7.14 | 2.63 | 3 | Easy |
| Item 20 | 99.20 | 6.62 | 2.65 | 3 | Easy |

It could be seen from the above Table 2, that the published articles can be classified under three categories namely extremely easy, easy and standard. None of the articles were hard to read and written in simple language. The results indicated that the articles were easy to read and interpret.

Level and type of infographics

Since 1980s, the use of infographics became important in journalism. By the year 2000 infographics became a boom in the newsrooms. Since 2009 there has been rise in the use of infographics. The coverage of infographics in newspaper or magazine can enhance the reading experience and brings depth to a story. It is also seen as a replacement to photographs and attracts the readers. Readers tend to read and examine graphics before reading the text, and bigger graphic draw the readers to the story and also enables to highlight fewer important details. (Pasternak & Utt, 1990); (Hollander, 1994); (Dur, et al., 2014); (Siricharoen, 2013)

Table 3 Level and type of infographics covered in the magazine between 2019-2021

| Level | 2021 | 2020 | 2019 |
|-----------------|------|------|------|
| Level 1 | 5 | 10 | 10 |
| Level 2 | 20 | 40 | 30 |
| Level 3 | 5 | 12 | 13 |
| Total count | 30 | 62 | 53 |
| Type | 2021 | 2020 | 2019 |
| Text-centred | 16 | 32 | 30 |
| Graphic-centred | 14 | 30 | 23 |

The magazine had predominantly used level 2 infographics (n=20,40 and 30) in all the three years respectively. Level 2 includes themes or graphics or drawings such as conceptual diagrams, maps, typography, and symbolic interpretations. Most of the graphics were used in series and for the purpose of announcements regarding farming. Unlike its main edition, the infographics are sparsely used without much textual information.

6.CONCLUSION:

The results and data analysis show that being a popular magazine in the state of Tamil Nadu, it should not restrict its focus to only success stories and economics of returns. Some of the areas such as economics of returns are given much coverage whereas the focus on areas such as ICT, Artificial intelligence etc needs improvement. Research and development in recent areas need to be reported more and requisite importance should be given to areas such as nanotechnology, plant breeding and other unexplored divisions in agriculture. Expert talks from renowned scientists will add to the reliability of the articles.

The concept of infographics have been neglected much and the magazine should focus on providing informative infographics that would capture the readers' attention and give in depth analysis to the story. With agriculture given prominent importance now at national level, the content could be revised and updated instead of following a monotonous pattern. A fair proportion of news articles should be given to all areas in agricultural sector.

The study also identified that the coverage of articles was relatively less during the Covid 19 pandemic due to obvious reasons such as lack of access to farmers, insufficient staff among many others. Usage of e-data collection tools in news gathering would help in filling the gaps in news gathering.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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