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RESEARCH THEMES, AUTHORS AND METHODOLOGIES IN THE SOUTH AFRICAN JOURNAL OF AGRICULTURAL EXTENSION: AN ANALYSIS OF PUBLICATIONS 1999–2014

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ABSTRACT

The South African Journal of Agricultural Extension (SAJAE) is a scientific journal that acts as the mouthpiece for the South African Society of Agricultural Extension (SASAE), which was established in 1966, and through which it publishes articles and disseminates research information. This study examined the primary and secondary research themes and ascertained the prolific authors and the research methods and designs that were prevalent in the SAJAE issues published from 1999 to 2014. A total of 177 articles were reviewed and a total of 33 primary research themes (PRTs) and 36 secondary research themes (SRTs) were identified. The most emerging themes are "diffusion, and adoption of innovation". Two hundred and fifty-six SAJAE authors were identified, with G. H. Düvel being identified as the most prolific author. Moreover, quantitative research methods were the most common, with survey design being most prevalent. It is subsequently recommended that periodic reviews of SAJAE be conducted, as well as comparative reviews with similar journals. A collaborative approach was suggested.

Keywords: Content analysis, primary research themes, secondary research themes, prolific author, quantitative method, survey

1. INTRODUCTION

The goal of agricultural extension journals is, among other things, to serve as a portal for the dissemination of research knowledge as well as to ensure that vital information reaches the many stakeholders in agriculture (farmers, extension practitioners, lecturers, students, policy makers and researchers). Monteiro, Devan, Soans & Jeppu (2012:1) are of the opinion that research is incomplete until published. Accordingly, they indicate that publishing allows researchers to share their original findings, reasoning and come up with suggestions or solutions to several of the challenges encountered by the end-users of research products. In publishing their latest research and discussing developments that are taking place in their field, authors create a platform for peer and institutional recognition, collaboration, career innovation and advancement and promotions (Monteiro *et al.*, 2012:2).

To date, academic researchers in agricultural extension have been pursuing a wide range of themes and methodologies. According to Jordaan, Wiese, Amade & De Clercq (2013:437), stocktaking of the content of journals could act as a compass, which indicates the direction of

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future investigations for publication, in terms of contents and methodologies. Bush & Grant (1994:59) and Phelan, Ferreira & Salvador (2002:1163) maintain that such appraisals could reveal new opportunities and trends in the literature, identify gaps and assist journal editors in developing agendas that could guide future research foci and, ultimately, lead to publishing opportunities.

Over the years, content analysis of academic journals has seen publications scrutinised in terms of authorship, institutional affiliation, methodology used and themes (Biljecki, 2016:1307; Buboltz, Deemer & Hoffmann, 2010:369; Huang, Huang, Ali, Zhai, Bi & Liu, 2016:1548). Other studies have analysed outputs of academic research on the content of an article, its length, research approaches and the theory-building trends (Beaty, Nkomo & Kriek, 2009:4), as well as, sample size, gender composition, ethnicity, number of references and research designs (Buboltz *et al.,* 2010:370).

1.2 Objectives

The main objective of this study is to conduct a content analysis of the articles published in the *SAJAE* over a period of 15 years (1999–2014), with the aim of summarising agricultural extension research trends, by identifying the primary (knowledge-based) and secondary (concept-based) research themes in the journal. Furthermore, assist in identify the prolific authors, and the common research methods and designs employed by the authors, serving as a guide for future research.

1.3 Literature

Historically, agricultural research and extension programmes were established in most of the world's economies (Evenson, 2000). As noted by Wesley & Faminow (2014), the challenge for the research community is to develop resilient agricultural systems using rational and, affordable strategies that not only increase production but also achieve food security for households and individuals. Hawkins, Heemskerk, Booth, Daane, Maatman & Adekunle (2009:4) reported that agricultural research has generated several kinds of technology with a high potential for impact; nevertheless, the expected impact on farmers' productivity, livelihoods and quality of life has not been realised. Likewise, Seck, Agboh-Noameshie, Diagne & Bamba (2013:36) reported that research in developing countries has often bypassed the most needy farmers, offering solutions that are beyond their reach or simply inappropriate to their livelihoods. Consequently, concerns have been voiced as to whether future agricultural extension will be actively engaged in research that is both needed and futuristic. According to Edgar, Edgar, Briers & Rutherford (2008:3), scholarship in this field has varied in terms of importance, need, content, superiority and capacity; nevertheless, the research conducted in the discipline influences the future efforts in the field. Ball & Knobloch (2005:49) found that it is critical for practitioners to examine the research base of the practice in order to allow the profession to reflect and ultimately improve the discipline. Doerfert (2003:39), and Podsakoff, Podsakoff, MacKenzie, Maynes & Spoelma, (2014:93), have called on researchers to examine their discipline, focus research, create cohesion and develop goal-oriented visions. Baker, Shinn & Briers (2007) highlighted the need to examine core knowledge objects and knowledge domains. Knowledge is not static and should be disseminated among scholars with a view to addressing social and economic challenges. The need to determine the direction of disciplines, examine their knowledge base and review their literature is aimed at repositioning the focus of research so that it addresses complex and emerging issues in the field of study. Such critical examination will ensure that we know

where we are heading with research, ensure that the direction is adequate and appropriate and, if we are unclear as to where we are heading, we will stop to examine our past with the intention of crafting a better future for society.

1.4 Research methods and procedures

The *South African Journal of Agricultural Extension* (*SAJAE*) is the scientific mouthpiece of the South African Society of Agricultural Extension (SASAE), established in 1966, in which the Society publishes research articles. The society represents agricultural extensionists involved in agricultural development, mainly from South Africa, but it now has a membership that is spread across the globe. Among its objectives are "to advance and apply the science and practice of agricultural extension within the research development as a scientific discipline by stimulating through study, research, discussion and publication and exchange of knowledge both nationally and internationally" (SASAE website, 2015). The *SAJAE* is listed as an accredited journal with the South African Department of Higher Education and Training (DHET) and as a refereed scientific journal in the field of agricultural extension with the Scientific Electronic Library Online (SciELO) SA.

Content analysis is a flexible, systematic, replicable technique for compressing many words of text into a few content categories based on explicit rules of coding (Palvia & Pinjani, 2007:4). It has been used as a method for analysing written, verbal and visual communication messages within mixed methods approaches (Elo & Kyngäs, 2008:110). For the purpose of this study, specific journal investigation (West, 2007:549), aspects of methodological investigation were included and employed. Firstly, a pilot study of the research themes in the SAJAE was carried out. Research theme categories were created on the basis of previous content analyses of the *SAJAE* published between 1999 and 2014. These categories were used in the pilot study, although the respondents were also given an opportunity to compress or expound on these research theme areas. The pilot study identified 68 research theme areas for agricultural extension. An expert opinion poll was then conducted by sending questionnaires to 136 corresponding authors identified in the SAJAE from 1994 to 2014 (20 years) via email. Their purpose was to validate, and add to, the research themes identified in the field of agricultural extension. Thirty-six emails bounced back undelivered and 11 electronic out-of-office replies were received. Ultimately, only 28 authors (31.5%; n = 89) responded to the expert opinion poll. Content validity was maintained using the study of Edgar *et al.* (2008) as a guide in order to focus the research.

1.5 Sample

Research articles published by the *SAJAE* from 1999 to 2014 were used as the units of analysis. The theme area and classification schema that was used was based on the study by Edgar *et al.* (2008:5), this theme schema was adopted owing to its rigour, which results from the fact that it is based on the views of experts in the field of agricultural extension education. The main focus of each article (knowledge base) was coded as the primary research theme area, while the most prevalent supporting theme (conceptual base) was identified as the secondary theme of each article (Edgar *et al.*, 2008:6).

Working separately, the three researchers used a drawn checklist to review each journal and a meta-analysis was done. Despite disagreement on the coding of the knowledge-based and concept-based themes, consensus was reached with the intervention of an expert in the field of agricultural extension and rural development. The agreed upon checklist was then used to

apply the coding independently. Themes of all captured data were identified and coded for both standardisation and consistency (Palvia *et al.*, 2003:4).

The 177 articles that were reviewed were identified from all titles articles published between 1999 and 2014 (N = 177). The journal had no published editorials, book reviews, interviews, technical notes. Furthermore, no articles were published in 2010.

1.6 Inter-coder reliability

The reliability of the coded items was ascertained using an inter-coder reliability test (Lombard, Snyder-Dutch & Bracken, 2010). In carrying out the test, 10% of the total articles were sampled. These were selected using systematic sampling with a random start. The first article, *n* was randomly selected and every *n+10th* article selected as the sample. Inter-coder reliability test was carried out using Krippendorff's alpha. Krippendorff's alpha inter-coder agreement is considered to be "the most general agreement measure with appropriate reliability interpretations" (Krippendorff, 2004:221). Accordingly, the reliabilities achieved from the test met or exceeded the minimum standard of 0.67 and 0.80 (Krippendorff, 2004), falling between 0.69 and 0.83 and thus within the acceptable values. Following the content analysis, the findings were reported using descriptive analysis.

2. RESULTS

The following results summarise the outcome of the study.

2.1 Primary research themes (PRTs)

The first objective was to identify the PRTs in the *SAJAE*. Table 1 indicates the most common PRTs. Thirty-three PRTs were identified, with the most frequent PRT being the diffusion and adoption of innovation (11.3%); followed by agricultural extension, approaches and models (9.60%), and agricultural extension programme evaluation (9.04%).

Table 1: Primary research themes identified in the *SAJAE*, 1999–2014 (n = 177)

Primary research themes (PRTs)	(f)	%
Diffusion and adoption of innovation	20	11.30
Agricultural extension approaches, models	17	9.60
Agricultural extension programme evaluation	16	9.04
Agricultural extension management	14	7.91
Poverty reduction	13	7.34
Agricultural communication	12	6.78
Land reform	9	5.08
Capacity building, Human Resource Management	7	3.95
Mentorship, skills development	7	3.95
Organisational behaviour	6	3.40
Agricultural extension, agricultural development	6	3.40
Farm management, farming system	6	3.40
Production marketing	5	2.82
Farmers group	5	2.82
Food security	5	2.82

2.2 Secondary research themes (SRTs)

Some of the SRTs identified in the *SAJAE* are displayed in Table 2. Thirty-six SRTs areas were identified. The most frequently identified theme was extension, personnel management, service delivery, organisation, and motivation (11.86%). This was followed by adoption, innovation and technology (10.73%).

Table 2: Secondary research themes identified in the *SAJAE*, 1999–2014 (n = 177)

Secondary research themes (SRTs)	(f)	%
Extension, personnel management, service delivery, organisation, motivation	21	11.86
Adoption, innovation, technology	19	10.73
Extension approach, planning, training, models,	11	6.21
Communal farming, group dynamics, communal land use	10	5.65
Farm families, farm workers, adaptation, behaviour, support, households, linkage (small-scale and commercial farmers), transformational behaviour	10	5.65
Smallholders, skills, emerging farmers	9	5.08
Farm management, farm viability, practices	9	5.08
Planning and implementation	3	1.70
Agricultural production, agricultural development	3	1.70
Women in agriculture	3	1.70
Continuous professional development (CPD) models, experience	3	1.70
Institutional factors, institutional innovations	3	1.70

2.3 Expert opinion

The result of the expert opinion conducted indicates that of the 68 themes extracted from the articles published between 1999-2014, 14 (20.58%) themes were regarded as non-agricultural extension field *per se* (Table 3). However, the expert opinions suggested among other themes not listed in the questionnaires to include development ethnography, rural anthropology, agrarian reform, and multiple livelihoods.

Table 3: Themes from the questionnaires regarded as non-agricultural extension themes by expert opinions

Biodiversity	Environmental policy	HIV/AIDS	Job performance
Job satisfaction	Marketing	Private sector	Risk
Simulation	Storage	Women	Households
Health	Roads		

2.4 Prolific authors

Table 4is a representation of the authors of the 177 journal articles analysed in the SAJAE. No discrimination occurred in ascribing the number of published article(s) to both lead and supporting authorship. They were also counted on the assumption that every author contributed to the published article. Consequently, 256 authors were identified, with 50 (25.24%) being published by sole authors, as shown in table 5.

Table 4: Distribution of articles by number of authors

Authors	1	2	3	4	5	6	11
Number of articles	50	76	34	6	8	2	1
Percentage	28.2	42.9	19	3.4	4.5	1.13	0.56

Table 5: Authorship in the *SAJAE* 1999–2014 (No. of authors = 256; No. of articles = 177)

SAJAE authors	(f)	% of authors	% of articles
G. H. Düvel	26	10.15	14.70
S. E. Terblanche	21	8.20	11.86
J. B. Stevens	14	5.47	7.90
F. S. Lategan	7	2.73	3.95

2.5 Research methods

A review of the articles revealed that quantitative research methods were the most common at 54.8%, followed by mixed methods (30.50%) and qualitative methods (14.7%). Most (70.3%) of the mixed methods involved a combination of two methods (quantitative and qualitative), although a few made use of more than two. Authors used a variety of research designs, as outlined in Table 6.

Table 6: Research designs used in the *SAJAE*, 1999–2014 (N = 177)

Design	**(f)**	**%**
Survey	101	57.06
Narrative	28	15.82
Case study	10	5.65
Ethnographical	8	4.52
Mixed design	8	4.52
Experimental	6	3.40
Action research	6	3.40
Delphi	2	1.13
Ex-post facto	1	0.56
Exploratory	1	0.56
Others	4	2.30

3. DISCUSSION

The most common research theme emanating from both the PRTs and SRTs was on "diffusion and adoption of innovation" targeting the smallholder farmers within the examined period. Several of the articles' themes are reflections of the critical issues supported by a government White Paper on Agriculture released in 1995, titled Broadening Access to Agriculture Thrust (BATAT), which encapsulates strategic transformation in the agricultural sector (Department of Agriculture, 2005). In addition, this indicates how policy has the potential to drive research. Most of the research themes identified (PRTs and SRTs) are also in tandem with the concepts argued by Terblanche (2008:74-76) as being strategic in improving agricultural extension in South Africa.

The findings identified an average of 11.8 articles published by SAJAE per year. ASSAf (2010) observed the low number of articles in a "Report on peer review of scholarly journals in the agricultural and related basic life sciences". The organisation indicates that the trend could probably be the result of strict quality standards or reflection of the very small research community in the discipline. However, if the total number of Universities and Universities of Technology's offering agricultural extension and rural development as a course in South Africa, and coupled with other institutions like Agricultural Research Council, Department of Agriculture, Forestry and Fisheries, and Colleges of Agriculture, are considered, it could be argued that the research output is in fact low. Furthermore, the fact that authors may be publishing in other journals both local and international should be considered before any conclusive judgment. In addition, if foreign authors' contributions are taken into cognisance, output from the journal may be classified as low per year. The majority of the articles (61.58%; n=177) focused on the smallholder farmers while 20.34% of the articles discussed issues that could affect both commercial and smallholder farmers. The findings were in line with the report of ASSAf (2010) that the majority (84%) of articles are on local problems affecting the resource-poor farmers.

Future research could be directed by identifying the gaps in the various thematic areas (primary and secondary). Research focused on skills development and in-service training seem inadequate. The discussion paper of Liebenberg (2015) on "Agricultural advisory services in South Africa" affirmed the limited exposures of extension personnel to skills capacity development in various categories. Liebenberg (2015) indicates that the objectives of the Extension Recovery Programme formulated in 2011 by the National Department of

Agriculture towards revitalising and capacitating extension services in SA are still far from realised. Therefore, further research on the best practices could be used to close the gap. The findings observed articles published in the field of technological innovations and diffusion from both PRTs (11.3%; n=177) and SRTs (10.73%; n=177) to be the most common themes in both categories. The findings portray the process of agricultural development, which according to Feder, Just & Zilberman (1985:258), say that technological innovation and diffusion were parts of the factors contributing to Asia's transformation of agriculture to green revolution. Diao, Hazell & Thurlow (2010:1378) indicate that research on agricultural development is considered to be the most effective strategy for boosting economic growth in Africa. Serumaga-Zake & Arnab (2012:63), argued that research targeting rural development could reduce rural urban migration, create rural jobs and energise local economic growth. There were fewer articles on land reform and communal land use from both the PRTs and SRTs respectively. The South African government programme on land reform since 1994 is still a critical and volatile issue that is generating renewed vigour and political divide. According to Walker (2003: 115), land issues are at the "heart of the South Africans' quest for liberation from political oppression, rural poverty and underdevelopment". Furthermore, research focus on public-private partnership is very limited. However, this area has been generating public interest since the government machinery and implementation of service delivery has been lacking, including the adequate financing of public extension services.

Private sector participation in extension in South Africa was dated back to the founding years of the SASAE (Koch &Terblanché, 2013:110). At that time, the sector participation focused on the supply (and after-sale service) of seed, fertilizer and lime, animal feed, plant-protection chemicals, tractors, farm implements, vehicles, packing materials, fuel and lubricants and financial services to the farmers (Luus, 1987 cited in Koch &Terblanché, 2013). Liebenberg (2015) opined that the efforts of the private sector participation in critical areas that could reduce poverty are still lacking. The author argued that provision of credit availability to the poor farmers that could enhance their capacity would require the support and involvement of the private sector credit institutions. Likewise, is the provision of infrastructure and encouraging local people participation in the process. An argument by Poulton & Macartney (2012:104) indicates that state failures can undermine the effectiveness of public–private partnerships (PPP) in agricultural extension. The authors opined that evidence base is still limited, while calling on organisations promoting innovative PPPs to disclose more information that could promote efficiency and effectiveness. Extension research is a key in leveraging smallholder farmers' competitive position in the face of globalization. Articles focusing on globalisation were limited, observed only within SRTs. Globalization is a threat to the development of local small-scale farmers participation in production, processing and the market shares (Farrington, 2002). According to the FAO (2013), globalization is coming in with a lot of dynamism that makes small-scale farmers less competitive. The changes in industrial organisation and procurement could create costs and technical requirements that may be out of reach for small farmers to access modern market channels. Therefore, further research is required to address this as a trending theme.

Other themes not covered, but suggested as being important by the expert opinions are development ethnography, rural anthropology, agrarian reform and multiple livelihoods. In the post apartheid era of South Africa, gaps still exist between epistemic cultures and knowledge culture for the analysis of rural transition. The concept of Epistemic Cultures asks the question of "how does science create knowledge?" According to Certina (2009:363), the Epistemic Cultures "are sets of practices, arrangements and mechanisms bound together by necessity, affinity and historical coincidence which, in a given area of professional expertise,

make up how we know what we know". On the other hand, "knowledge-cultures are the ways by which knowledge is produced, distributed, accumulated and collectively approached within a profession which serve to construct work-based learning in specific ways" (Nerland, 2008:49). A peep into the evolution of South Africa pre and post apartheid era revealed the wide disparity existing between the white commercial farmers and the black farmers, who are mostly smallholder and resource-poor. There have been efforts by the government to reconstruct the extension system that would promote rapid development of the black farmers. However, the gap between the epistemic and knowledge cultures still require further investigation.

According to Van Assche, Hornidge, Shtaltovna & Boboyorov (2013), a clear understanding of these cultures could lead to unique modes of interpretation, recombination and implementation of new and pre-existing models of extension system that could serve the people better. As pointed out by Crane, (2014:45) "technologists are urged to use farmers' knowledge and practices as both the starting point for technological innovations as well as the ultimate measure of the value of innovation". The author argued that the approach was premised upon close ethnographic study of farmers' livelihoods: especially how technical agricultural practices interacted with household dynamics, community structures, and cultural values.

The findings of this study indicate that a majority of research in agricultural extension is survey research. The trend was in line with the findings of ASSAf (2010) that the majority of articles present survey-type results with descriptive statistics. This was also the finding of Davies, Howell and Petrie's (2010) in their study of trends in research and scholarship between 1998 and 2007. Although Johnson & Onwuegbuzie (2004:18) suggests mixed methods to be superior in research methodology as compared to mono-method research, the use of mixed methods by authors in the published articles examined was low.

4. RECOMMENDATIONS

The field of agricultural extension as a discipline requires a paradigm shift from its current focus in order to remain relevant in the future. Several competing professions are currently engaging in extension activities. For there to be confidence in the agricultural extension being a catalyst for the realisation of Vision 2030, in South Africa, rigorous approaches to research that will impact the community are required. Therefore, this study recommends that a periodic content analysis of published articles takes place every ten years in order to ascertain topics are being discussed, the methodologies used and the impact these have on society. This will assist in determining future research focus areas. A collaborative approach was suggested rather than sole authorship.

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