

Producer Aspirations and the Payment for the Delivery of Public Extension Visits

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ABSTRACT The paper examined the relationship between the aspirations of crop farmers and payment for the delivery of public extension visits. Using a survey approach, a semi-structured, self-administered questionnaire was used to collect information from 97 medium- and small-scale crop farmers in the Free State province of South Africa, from 1st September to 7th October 2010. Non-probability sampling techniques were employed to select respondents. The problem perception issues investigated were found to be major determinants of farmers' adoption of payment for the delivery of public extension visits. There seemed, however, to be a pattern of consistent significant positive results with need tension associated with the difference between aspired and present situation but inconsistent results for need tension associated with the difference between (perceived optimum and present situation) or (perceived optimum and aspired situation). The payment idea looks promising as a means to generate extra operational funding for extension work.

INTRODUCTION

The funding of public extension services mainly from National Treasury allocations has become problematic worldwide since the mid-1980s (OECD 1989; Howell 1985). Among the options being explored both in developed and developing countries to augment Treasury subventions is user contributions. User contribution towards the cost of public extension services, especially for operational expenses, in many countries has for a long time been confined to some specific services such as dipping and soil sampling. An essential requirement, however, for farmers' increased production is receiving farm management information or service through contact, for example, telephone, radio and television broadcasts and farmers' days with extension agents. For many farmers in many countries, this contact occurs through face-to-face interaction. The literature shows that this mode of service delivery is the most

costly means of delivery of the three major methods for most public extension organizations while mass media, is the cheapest (Harris et al. 2013). For decades users of public extension services in South Africa, however, are not charged for most of the services; nor do recipients of services under the current government program, *Fetsa Tlala* (eradicating poverty) pay for the crop production inputs (E Zwane, pers. comm., 29 April 2015; Botha and Treunicht 1997).

Charges for extension services ensure that beneficiaries meet the cost of providing these services and so take some of the financial pressure off the government (Hone 1991). Other researchers found that charges increase accountability of both individual advisors and the agricultural extension organizations as a whole (Keynan et al. 1997). This improves the standard of service provided because the service becomes more demand-driven.

Despite the numerous studies on user payment for public extension services as a means of improving the financial sustainability of such organizations to enhance their effectiveness, for example, Rivera and Alex (2004), Budak et al. (2010), Texas Agrilife Extension Service (2011), few have been conducted on payment for the delivery of public extension visits for example,

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Holloway and Ehui (2001), Shekara (2001), and Dinar (1996).

The purpose of this study was to determine the influence relationship between the aspirations of medium- and small-scale commercial crop farmers and the adoption of payment for the delivery of public extension visits. This was achieved by testing the following study hypotheses:

1. Farmers' over estimation of their level of adoption of farm management practices negatively influences the acceptance to pay for the delivery of public extension visits.
2. Farmers' level of need tension regarding efficiency of production has a positive influence on the acceptance to pay for the delivery of public extension visits.
3. Farmers' level of unawareness of optimum achievable has a negative influence on the acceptance to pay for the delivery of public extension visits.

Theoretical Framework

In the quest to drastically reduce the large number of intervening factors associated with behavior analysis in the Tolman model (1967) to a manageable and practically, workable number, which is comprehensive enough to account for all causes of behavior, Düvel (1991) built on these earlier theoretical models and proposed the mediating variables concept. The latter comprises needs, perception and knowledge. The assumption though, is that normal human behavior (except for reflex action) is intentional and purposeful (Tolman 1967). The behavior determinants and their influence relationship in the context of behavior change and the results of behavior change are shown in the Düvel (1991) framework.

The Interdependency model (Düvel 1982) distinguishes between three kinds of needs. These are fundamental needs, such as, self-expression—basic needs through which the need for self-expression can be realized and which correspond to Maslow's (1954) hierarchy of needs and operational needs such as aspirations, objectives and problems. The latter type of needs is located in the person's environment (goal object), whereas the basic and fundamental needs are intra-person located.

The proposition to pay attention to the farmers' goals, aspirations and objectives in situation surveys (Düvel 1982) was based on the con-

ceptualization of needs in terms of forces that incite action, sustain or give direction to action. Other considerations were the fact that normal human behavior is all directed toward a goal object as a means for need (internal) satisfaction and the difficulty of reliably measuring the intra-personally located needs. The important operational need variables to be included in situation surveys to analyze the causes of non-adoption are analyzed according to Düvel (1991).

Aspirations are a specific type of need that could potentially influence behavior with respect to adoption of innovations; they are analyzed in terms of respondents' problem perception, awareness or lack thereof, concerning the optimum achievable and satisfaction with the present situation (Düvel 1991).

Problem perception has been defined as the perceived discrepancy between the present situation and the desired or aspired situation (Düvel 1982). Düvel (1982) analyzed this phenomenon with respect to production efficiency and practice adoption in the agricultural sector of South Africa. Other possible scenarios of problem perception are the perceived discrepancy between optimal and aspired situations or the optimal and present situations. Studies have shown that accurate problem perception is a key element of behavioral change (for example, Düvel 1986; Koch 1986; Lategan 1994). A distorted problem perception around the objective (factual) situation could lead to irrational decision-making. The latter may include over-adoption, under-adoption or non-adoption.

Respondents' awareness or lack of knowledge of the optimum achievable could influence the adoption of an innovation (Düvel 1991). This situation affects the need tension, a concept, which according to the Cognitive dissonance theory (Festinger 1957), has the potential to impact the adoption of an innovation, in this case, the payment for the delivery of public extension visits.

Respondents' satisfaction with the present situation or lack thereof, also has the potential to generate a need tension and invariably influence the adoption of an innovation as explained by Cognitive dissonance theory (Festinger 1957).

Examination of the influence of respondents' aspirations on the adoption of payment for the delivery of public extension visits is, therefore, essential for the design of farmer support schemes in which behavior change is crucial.

METHODOLOGY

A semi-structured, self-administered questionnaire was used to collect information from 97 medium- and small-scale crop farmers in the Free State province of South Africa, from 1st September to 7th October 2010. Purpose and Convenience Non-probability sampling techniques were employed to select respondents because of a lack of list of farmers from which to draw a sample.

The problem perception issues investigated in this study revolved around general practice adoption and production efficiency (yield). Problem perception regarding farmers' adoption of farm management practices was determined by asking farmer respondents to assess on a 5-point Likert Scale, their levels of practice adoption in the last farming season preceding the study. Field level public extension workers who provided agricultural extension service to these farmers were also asked to objectively rate their farmers on the same 5-point Likert Scale regarding the level of practice adoption for any recommended practices they offered their farmers in the last farming season (twelve months) preceding the study.

Following Koch (1987), the problem perception discrepancy or misperception with regard to practice adoption was determined as the farmer's self-rating minus the extension worker's rating of the farmer. 'Misperception' is used here to indicate the degree of discrepancy between the perceptions of the respondents and, what is accepted to be a more objective or correct assessment; the latter is usually by a specialist, and in this study, the extension officer. Discrepancies, or lack thereof, provide motivation for adoption or non-adoption of the innovation under study.

Producers' unawareness of optimum output per ha achievable was assessed by asking respondents to state on average, the optimum output (tons) they obtained for the crops they produced on their plots of land. Output (ton/ha) was computed based on the respondent's cultivated area. Respondents' awareness or lack thereof, regarding the optimum output/ha achievable was determined by comparing the calculated figure with the average recommended for that crop for the district provided by the extension officer based on research findings for the particular locality. Respondents were also asked to state

what they thought would be on average, the optimum output (tons) they could get for the crops they were producing on same size of plots compared with their present yield by paying for the delivery of public extension visits. Respondents were subsequently grouped as knowledgeable or not knowledgeable about the optimum output (tons/ha) attainable.

Respondents' satisfaction or lack thereof, with their present situation was ascertained by asking them to indicate any improvements in practice adoption envisaged. This assessment was used to determine whether respondents had any desire for improvements in their present situation. It was expected that respondents who were satisfied with their current level of farm management would not be looking for any improvements and as a result would not be motivated to invest in new ideas such as payment for the delivery of public extension visits through which such improvements could be realized. On the other hand, respondents who indicated they wanted to improve their farm management were assumed to have the motivation to adopt innovations such as payment for the delivery of public extension visits that have the potential to expose them to the needed improved management practices. Recognizing that it is not only the level of aspiration that could influence behavior but also the difference between the perceived present level and the aspired level (also called aspiration scope, problem scope or need tension) led to the investigation of the relationship between the need tension and payment for the delivery of public extension visits.

Following Stockburger (1998), in which categorical variables with two levels may be directly entered as predictors or predicted variables in a multiple regression model, a multiple regression model was specified to study the relationship between the study variables and payment for the delivery of public extension visits. The prediction of Y is accomplished by the following equation:

$$\hat{Y}_i = b_0 + b_1 X_i + \epsilon_i \quad (i = 1, 2, 3 \dots n) \quad (1)$$

Where \hat{Y}_i is the predicted value on the dependent variable, payment for the delivery of public extension visits, the b values are the regression coefficients of the predictor variables, the X represent the various predictor variables (mediating variables), ϵ_i is the error term and n is the number of observations.

The data was analyzed using SPSS. The main data analysis comprised descriptive statistics.

Chi-square (χ^2) tests of independence were used to test whether any observed differences were statistically significant.

RESULTS

Misperception: Practice Adoption

The degree to which respondents misperceive their level of general practice adoption and its relationship with the adoption of payment for the delivery of extension visits was investigated to test study hypothesis 1. The results are presented in Table 1.

The results show that most respondents (81.8%) who overrated their level of farm management declared their intention not to pay for the delivery of public extension visits ($p=.000$).

Desired Improvements in Present Situation: Farm Management Practice Adoption

Respondents' intentions concerning farm management practice improvements were assessed by asking them to indicate the improvements in overall adoption of recommended farm practices they were looking for compared with their present level of farm management. Farmers' opinions on improvements in general farm

management practice adoption are summarized in Table 2.

Table 2: Distribution of respondents' aspiration concerning practice adoption (N=97)

Aspiration level	Respondents	
	n	%
Very good	64	66.0
Good	31	32.0
Average	2	2.0
Total	97	100.0

Most respondents (98%) indicated they would like to improve upon their present level of farm management practice to be either good or very good.

Need tension was hypothesized in this study (hypothesis 2) as having a positive influence on payment for the delivery of public extension visits. The findings from testing this hypothesis, involving the relationship between need tension (resulting from the difference between respondents' present and aspired level of farm management practice adoption) and payment for the delivery of public extension visits are presented in Table 3.

The findings indicate that most respondents (92.9%) who had a need tension were prepared

Table 1: Distributions of respondents according to the degree of misperception of general practice adoption and payment for the delivery of public extension visits (N=97)

Decision to pay	Respondents per misperception category							
	Under-rate		No discrepancy		Over-rate		Total	
	n	%	n	%	n	%	n	%
No	7	15.6	5	17.2	18	81.8	30	31.3
Yes	38	84.4	24	82.8	4	18.2	66	68.8
Total	45	100	29	100	22	100	96	100

Table 3: Distribution of respondents according to need tension and payment for the delivery of public extension visits (N=97)

Decision to pay	Respondents per need tension category					
	No need tension		Need tension		Total	
	n	%	n	%	n	%
No	25	96.2	5	7.1	30	31.3
Yes	1	3.8	65	92.9	66	68.8
Total	26	100	70	100	96	100

Missing= 1 $\chi^2 = 69.914$, $df= 1$, $p=.000$ Significant = .01

to pay for the delivery of public extension visits ($p=.000$).

Another dimension of need tension (hypothesis 2) investigated the relationship between the need tension (resulting from the difference between the perceived optimum and present level of practice adoption) and payment for the delivery of public extension visits. The results are presented in Table 4.

The finding was that this dimension of need tension also has a positive influence on payment for public extension visits ($p=.000$). This was indicated by the fact that ninety point three percent of respondents with a need tension opted to support the payment idea.

An investigation of the need tension (hypothesis 2) (arising from the difference between the perceived optimum and aspired level of practice adoption) and payment for the delivery of public extension visits did not, however, yield significant results, ($p=.618$).

Desired Improvements in Present Situation: Production Efficiency

The respondents' desire to improve production efficiency, expressed in terms of output per hectare, was determined with the same reasoning as for desire on practice adoption improvement and its determination served to confirm or

reject the research hypothesis (hypothesis 2). A summary result of respondents' production efficiency need tension with regard to the difference between the aspired and present outputs per hectare for the crops cultivated and payment for the delivery of public extension visits is presented in Table 5.

The results reveal that all the respondents (10 %) who had a need tension also had intention to pay for the delivery of farm visits ($p=.000$).

The study hypothesis (hypothesis 2), was again supported by this finding. However, unlike practice adoption, crop production efficiency need tension (difference between perceived optimum yield and present yield) and payment for the delivery of public extension visits did not yield significant results ($p=.831$).

Optimum Achievable: Production Efficiency

The summary result of the test concerning respondents' knowledge or lack thereof, with regard to the perceived optimum output (tons/ha) achievable and its influence on the payment for the delivery of public extension visits (hypothesis 3) are provided in Table 6.

According to the results (Table 6), most respondents (63.6%; $n=44$) who were not knowledgeable said they would not support the payment idea ($p=.000$).

Table 4: Distribution of respondents' need tension and payment for the delivery of public extension visits (N=97)

Decision to pay	Respondents per need tension category					
	No need tension		Need tension		Total	
	n	%	n	%	n	%
No	23	95.8	7	9.7	30	31.3
Yes	1	4.2	65	90.3	66	68.8
Total	24	100	72	100	96	100

Missing=1 $\chi^2 = 62.125$, $df=1$, $p=.000$ Significant =.01

Table 5: Distribution of respondents production need tension and payment for the delivery of public extension visits (N=97)

Decision to pay	Respondents per need tension category					
	No need tension		Need tension		Total	
	n	%	n	%	n	%
No	30	85.7	0	0.0	30	31.2
Yes	5	14.3	61	100.0	66	68.8
Total	35	100	61	100	96	100

Missing=1 $\chi^2 = 76.052$, $df=1$, $p=.000$ Significant =.01

Table 6: Distribution of respondents knowledge of perceived optimum yield per hectare attainable and payment for the delivery of public extension visits (N=97)

<i>Decision to pay</i>	<i>Respondents knowledge of perceived optimum yield per hectare attainable</i>					
	<i>Not knowledgeable</i>		<i>Knowledgeable</i>		<i>Total</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
No	28	63.6	2	3.8	30	30.9
Yes	16	36.4	51	96.2	67	69.1
Total	44	100	53	100	97	100

$\chi^2= 37.575$, $df=1$, $p=.000$ Significant $=.01$

DISCUSSION

In discussing the findings of this paper, it is fair to state that perception studies in the discipline of agricultural extension abound in the literature. A large majority of the work however, deals with determining factors that influence farmers’ perceptions in relation whatever the researcher is interested in, for example, willingness to pay for extension services or perception of innovation characteristics in relation to the adoption (Ozor et al. 2013; Siddiqui and Mirani, 2012; Tabaraee et al. 2011; Onoh et al. 2012). Current studies in the literature, on the influence relationship between farmers’ misperception of practice adoption and efficiency of management and the adoption of innovations, especially in agricultural extension, are very limited. The misperception findings discussed in this paper, however, are consistent with conclusions in some of the fine work on the influence of perception and misperception in decision-making as in psychology and politics (Jervis 1976; Laloux 2014).

Misperception Regarding Practice Adoption

The evidence in Table 1 shows that the research hypothesis (hypothesis 1) is supported by the findings of this study. A reason for the behavior exhibited by survey respondents might be that these respondents obviously thought they knew enough and were already doing well and had no need to pay for public extension visits. This finding is consistent with past studies (Habtemariam 2004; Msuya and Düvel 2007). Düvel and Scholtz (1986) for example, found that eighty percent and ninety percent of respondents who over-estimated their veld condition and the efficiency of veld management respect-

fully, did not adopt recommended veld management practices.

Need Tension and Adoption Behavior

High desire or aspirations for improvements generate a need tension. The latter serves as a springboard for the adoption of new ideas, such as payment for the delivery of extension visits through which they are exposed to new and more management practices to improve production, and ultimately, profits.

The hypothesized positive relationships between acceptance to pay for farm visits and various dimensions of need tension were investigated (hypothesis 2). The hypothesis is confirmed in relation to the need tension dimensions arising from a difference between respondents aspired and present level of practice adoption (farm management); perceived optimum and present level of practice adoption (farm management); aspired and present production efficiency. These findings are consistent with past studies (Msuya 2007; Habtemariam 2004) and in accordance with Festinger’s (1957) Cognitive dissonance theory. Pannell et al.’s (2006) finding that adoption occurs when the landholder perceives that the innovation in question will enhance the achievement of their personal goals further corroborate the results of this paper.

The hypothesis is however, not supported with regard to the difference resulting from perceived optimum and aspired level of practice adoption; perceived optimum and present production efficiency. These aberrant findings seem to be caused by respondents’ lack of agreement with what is optimum; or perhaps respondents equated the optimum with their perceived aspired level, possibly, because of a lack of awareness of the optimum achievable. In other words,

respondents did not see any difference between their aspired yields or adoption level and what is perceived as the optimum and, thus, yielding little perceptual difference. The literature review does not show studies on these latter two dimensions of need tension and they are therefore, difficult to compare.

Knowledge of Perceived Optimum and Adoption of Farm Innovations

This study findings support the study hypothesis 3, which corroborates the results of Msuya and Düvel (2007) regarding the adoption of recommended optimum level of seed spacing. This finding in this study lends further support to the Düvel (1991) model that respondents' unawareness or a lacking of knowledge of the optimum yield achievable negative impacts the need tension, and therefore, the motivation to adopt an innovation, in this case, the payment for the delivery of public extension visits.

CONCLUSION

To analyze the factors which contribute the most to farmers' acceptance to pay for extension visits, this study adopted a framework of behavioral adoption analysis by means of mediating variables as opposed to the often preoccupation of extension research with a causal relation between adoption and independent variables such as age, sex or farm size education.

There is evidence from the study data to suggest that most respondents support the payment idea. The study findings show that the need-related variables investigated influence the adoption of the delivery of public extension visits. In light of the hypotheses of this study, the producer aspiration issues investigated namely, overestimation of level of adoption of management practices, need tension regarding production efficiency and unawareness of optimum achievable, are found to be major determinants of payment for the delivery of public extension visits. There seems, however, to be a pattern of consistent significant positive results with need tension associated with a difference between aspired and present situation but inconsistent results for need tension associated with a difference between perceived optimum and present situation or perceived optimum and aspired situation. There was no indication of previous in-

vestigations in the literature reviewed concerning the inconsistent results in the need dimensions reported here. For this reason, it might be unjustifiable to make definitive statements whether these findings conform to expectations.

The study findings have a lot of significance. Extension policymakers could pursue this novel idea of generating extra income to defray extension delivery operational costs. The findings further provide a basis for Extension scientists and field-level extension practitioners to effect change through extension programs that manipulate the psychological field forces associated with the variables investigated in this study, thereby, making behavior change studies more focused on factors the contribute the most to the variance in adoption. This focused approach could reduce time and cost of adoption research because of reduced size of questionnaire.

RECOMMENDATIONS

The use of non-probability sampling approach limits generalization of the study's findings. Future research by probability sampling would overcome this limitation; there is also need for further work to quantify how much extra income could be generated and how best to implement the idea tested in this paper. More research is needed to confirm or reject the validity of the claim about inconsistent results regarding some of the need dimensions reported in this study.

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