Direct and Indirect Effects of Variables on the Performance of Role as Perceived by the Agricultural Extension Personnel under Extension Reform in Assam

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ABSTRACT

The present study was carried out in the 11 districts of Assam to access the direct and indirect effects of variables on the performance of role as perceived by the Agricultural extension personnel under extension reform in Assam. A total of 112 agricultural extension personnel were interviewed who were working under the revitalized extension system in Assam with the help of structured schedule during the period of 2015. A total of 15 characteristics of the respondent were considered in the study. The primary data was collected directly from the respondents through personal interview method. The Direct and Indirect effect of these variables on the performance of role as perceived by the Agricultural extension personnel was calculated with the help of path analysis. It is evident from the results of the path analyses that the variables role awareness, role perception, service experience and job anxiety emerged to be most important variables which exhibited substantial direct effects on the level of role performance.

Key words: *Level of role performance; Direct and Indirect effect; Extension reform; Path Analysis;*

With the onset of Agricultural Technology Management Agency (ATMA) in India, the public extension system has been placed in a new decentralized institutional arrangement to ensure demand driven, farmer-accountable and farming system based extension delivery. The study in respect to the new set of roles to be played by the extension functionaries under extension reform is utmost importance to find out the factors which contributes significantly towards the level of role performance. One of the pioneer researchers who conceptualized the term "performance" was *Vroom (1964)* who suggested an equation to picture performance and he narrated that it is a product of personal "ability" and "motivation" of an individual or performance = ability × motivation. Vroom's model explains that an individual who is thought to be highly motivated would not be able to perform a job well if he does not possess relevant knowledge, skills and attitudes (KSAs). In other words, both ability and motivation are essential ingredients to good employee performance. The formula to determine performance as drawn above can be implemented at various fields such as management, education, and organizational behaviour.

The motivational climate of an organization is the environment prevailing in the organization which specifically activates, energizes, direct an employee towards the achievement of organizational and personal goals. (*Pareek,1981*).

The Agricultural Technology Management Agency (ATMA) calls for integrated approach wherein different stakeholders come closer to plan, organise, and execute the activities to take full advantage of the technologies demonstrated in the operational area (*Kumar et.al. 2011*). It is therefore important to measure the internal and external characteristics that exist within the new institutional arrangement in the form of ATMA and their interrelationship which contributes towards the role performance.

The direct and indirect relationship that exists among the variables will help us to find out the significant path which effectively related with the role performance.

METHODOLOGY

The study was conducted in 11 districts of Assam where Agricultural Technology Management Agency (ATMA) was first constituted in these districts under the World Bank aided Assam Agricultural Competitiveness Project (AACP). A total of 112 agricultural development officers were selected and interviewed in the 11 selected districts for the study. A total of 15 characteristics of the respondents were considered in the study which were age, educational qualification, service experience, training exposure, decision making ability, role awareness, role perception, job involvement, role conflict, role ambiguity, attitude towards ATMA, achievement motivation, motivational climate, job satisfaction and job anxiety. The primary data in the present study were collected directly from the respondents through personal interview method. The Direct and Indirect effects of these variables on the performance of role as perceived by the Agricultural extension personnel under extension reform in Assam were calculated with the help of path analysis.

Path analysis is a technique that aims at determining the direct and indirect effects among number of variables and thereby helps to a quantitative interpretation to the interrelationships within a known or an assumed casual system that exist in some specific population. The basic theorem of path analysis states that the zero order correlation between any two variables is equal to the sum of the products of the paths and correlations between all the variables in the system. In this technique the direct and indirect effects are measured by a quantity (standardized partial regression) called the path coefficient. A path coefficient is an absolute number without any physical unit, whatever the actual units of measurement for the variables. It indicates the extent to which the variance in a dependent variable is determined by the variance of the independent variable. It also has direction (*Li, 1965* and *Pine, 1977*). Path analysis is a method employed to determine whether or not a multivariate set of non-experimental data fits well with a particular (*a priori*) causal model (*Wright, 1934*). A path analysis can be worked out as a hierarchical (sequential) multiple regression analysis conducted for testing the significance of relationship in a hypothetical causal model.

For this purpose, a hypothetical causal model consisting of variables found significant in correlation analysis was prepared (Fig 1) to show their inter relationships. Some exogenous variables whose variance is assumed to be caused entirely by variables not in the causal model were considered in the hypothetical causal model. The connecting line with arrows at both ends in between the two exogenous variables indicates no correlation between these variables as none is explained by either of the variables. Some endogenous variables whose variance is assumed to be explained in part by other variables (intervening variables) in the model were also considered in the hypothetical causal model. The path drawn to endogenous variables are directional (arrowhead on one end only) and must be unidirectional. For each endogenous variable, a multiple regression analysis is conducted predicting the variable (Y) from all other variables which are hypothesized to have direct effect on Y. The variables which are hypothesized to affect Y indirectly were also taken into consideration in the hypothetical causal model. The beta weights from these multiple regression are the path coefficients which were shown in the hypothetical causal model displaying the results of the path analysis. For each path to an endogenous variable, a path coefficient was computed which was denoted by P_{ij} where 'i' indicates the effect and 'j' the cause. The coefficient may be positive (increasing the causal variable causes increase in the dependent variable if all other causal variables are held constant) or negative (increasing the causal variable decreases dependent variable). The paths drawn to endogenous variables are directional (arrow head on one end only). The standardization of the hypothetical causal model was done (Fig 2) by keeping the paths where path coefficients were found to be significant. The indirect effects of endogenous variables were calculated by multiplying the path coefficients of intervening variables whereas the direct effect could be evaluated by considering the path coefficients of endogenous variables impacting on Y.

RESULT AND DISCUSSION

Direct and indirect effects of selected independent variables on the overall role performance: A hypothetical causal model showing the paths of interrelated variables influencing the level of role performance was made and shown in the Fig. 1. The variables which were found significant in the correlation
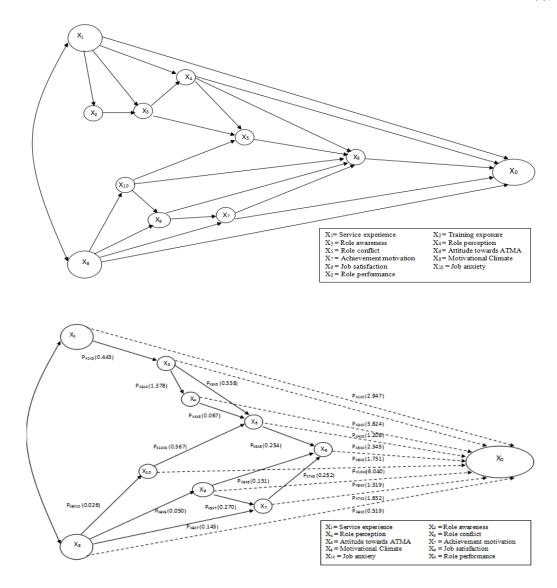
analysis were selected for the causal model to show their indirect interrelationship towards the level of role performance. Out of the 15 variables selected for the study 9 variables were found significant in correlation analyses which were role awareness, role perception, job anxiety, service experience, role conflict, attitude towards ATMA, achievement motivation, job satisfaction and motivational climate. Sequential multiple regression was done to analyse the actual causal interrelationship among these variables. Hence, the model was restructured based on the values of multiple regressions and drawn as Fig. 2. The diagram was drawn to show the direct and indirect effects among the interrelated independent variables towards the level of role performance of the extension personnel. The direct and indirect effect of selected independent variables on the role performance by the extension personnel is presented in the table.

The maximum direct effect on role performance was exhibited by role awareness (2.518) variable which was followed by role perception (1.058), job anxiety (0.875), service experience (0.403) and role conflict (0.335). The remaining other four variables namely attitude towards ATMA (0.268), achievement motivation (0.233), job satisfaction (0.204) and motivational climate (0.082) had registered comparatively smaller direct effect on the level of role performance of the extension personnel. The maximum indirect effect was exhibited by the role awareness (1.231) variable which was followed by service experience (0.274), role perception (0.252) and job anxiety (0.184). The remaining other four variables namely Job satisfaction (0.098), role conflict (0.074), motivational climate (0.073) and achievement motivation (0.072) had registered comparatively smaller indirect effect on the role performance of the extension personnel. It can be seen from the fig 2 that the effect of the two exogenous variables namely 'service experience'(X_1) and 'motivational climate' (X_8) were channelized through different variables to ultimately affect the role performance. 'Attitude towards ATMA' and 'role conflict' were the two most important variables through which most of the indirect effects were channelized. The highest total effect on the level of role performance was exhibited by role awareness (3.749), followed by role perception (1.310), job anxiety (1.059), service experience (0.677), and role conflict (0.409).

Table 1. Direct and indirect effects of selected independent variables on the role performance (N=112)

Independent variables	Direct effect	Variables through which indirect effects are channelized	Total Indirect effect	Total effect
Service experience (X_1)	0.403	$0.184(X_3)$ $0.058(X_4)$ $0.026(X_5)$ $0.006(X_6)$	0.274	0.677
Role awareness (X_3)	2.518	$0.799(X_4)$ $0.354(X_5)$ $0.078(X_6)$	1.231	3.749
Role perception (X_4)	1.058	$0.206(X_5)$ $0.046(X_6)$	0.252	1.310
Role conflict (X_5)	0.335	$0.074(X_6)$	0.074	0.409
Achievement motivation (X_7)	0.233	$0.072(X_6)$	0.072	0.305
Motivational climate (X_8)	0.082	$0.023(X_{10})$ $0.004(X_5)$ $0.010(X_9)$ $0.034(X_7)$ $0.002(X_6)$	0.073	0.155
Job satisfaction (X_9)	0.204	$0.035(X_6)$ $0.063(X_7)$	0.098	0.302
Job anxiety(X_{10})	0.875	$0.151(X_5)$ $0.033(X_6)$	0.184	1.059
Attitude towards ATMA(X_6)	0.268	- -		0.268

X₁= Service experience   X₂= Training exposure
X₃ = Role awareness   X₄= Role perception
X₅= Role conflict   X₆= Attitude towards ATMA
X₇ = Achievement motivation   X₈= Motivational Climate
X₉ = Job satisfaction   X₁₀ = Job anxiety
X₀ = Role performance

X₁ = Service experience   X₃ =Role awareness
X₄ = Role perception   X₅ = Role conflict
X₆ = Attitude towards ATMA   X₇ = Achievement motivation
X₈ = Motivational Climate   X₉ = Job satisfaction
X₁₀ = Job anxiety   X₀ = Role performance

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It might be because of the fact that with the higher the level of 'Role awareness' and 'Role perception' more is the conscious about their role and their duties to be performed under extension reform which ultimately influence the performance level. This might be accompanied by the fact that the respondents spontaneously expressed desire to do something well for its own sake which is ultimately reflected through their increased level of performance. The result of the present study conforms to the findings of *Reddy and Jayaramaiah (1990)* and *Manjunath et al. (2011)*.

The variable 'Service experience' also showed higher level of effect on the level of role performance of extension personnel. This might be because of the fact that the people who had high degree of 'Service experience' were more likely to have social mobility, more expose to outside contact and had a tendency to change over to new ideas and culture rather than remaining conservative and tradition oriented. The result of the present study conforms to the findings of *Balasubramanian and Perumal (1991), Gogoi et al. (1993), Kumari et al. (1997), Awasthi et al. (2001), Yadav et al. (2010), Das et al. (2010)* and *Maiti et al. (2011)*.

The variable 'Job anxiety' also had significant effect on role performance which might be because of the fact that with the fair amount of job anxiety's component like job security, recognition and fair evaluation, human relation at work, future prospects, capacity and confidence to shoulder job responsibilities

increases the performance level of the employee of an institution. The result of the present study conforms to the findings of *Judge and Hulin (1993), Judge et al. (2001), Adeyemi (2008), Moyes et al. (2008)* and *Manjunath et al. (2011).*

CONCLUSION

It is evident from the results of the path analyses that the variables role awareness, role perception, service experience and job anxiety emerged to be most important variables which exhibited substantial direct effects on the level of role performance of the extension personnel under the extension reform in Assam.

The higher effect of these variables with the level of role performance indicates that the extension personnel with longer service experience, higher role awareness, higher role perception and job anxiety were likely to influence the level of role performance to great extent. Suitable management strategies may be adopted in case these attributes found at lower level to modify their behaviour for increased level of performance of their roles.

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