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4 **The effective agricultural extension approach**

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8 **ABSTRACT**

9 This paper is a review article. It depended on information obtained from secondary sources (books and scientific journals). The main purposes of this paper were to: review the definition of extension approach and present various types of agricultural extension approaches defined by researchers, determine attributes of the effective agricultural extension approach and qualities and necessary conditions for this approach, review different methodologies used to measuring the effectiveness of agricultural extension approaches, and propose determinants of the effectiveness measurement of extension approaches, and finally to present the application of extension approaches in Egypt.

10  
11 **Keywords:** Attributes, determinants of effectiveness, Egypt, measuring effectiveness of  
12 extension approaches, qualities and conditions, types of extension approaches.

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14 **1. INTRODUCTION**

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16 Many extension approaches have been defined by researchers. Advantages and  
17 disadvantages of these approaches were clarified and comparisons between different  
18 approaches were made. These approaches have been adopted in different countries of the  
19 world and the effectiveness of some approaches was measured. The main objectives of the  
20 present paper were to: (1) review the definition of extension approach and the types of  
21 agricultural extension approaches defined by researchers, (2) present previous research  
22 studies on the effectiveness of some extension approaches and methods, (3) describe  
23 attributes of the effective extension approach, (4) determine qualities and necessary  
24 conditions for this approach, (5) present different methodologies used to measuring the  
25 effectiveness of some extension approaches, (6) determine determinants of effectiveness of  
26 extension approaches, and finally (7) present the application of extension approaches in  
27 Egypt. The paper proposed some determinants to measuring the effectiveness of agricultural  
28 extension approach.

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30 **2. DEFINITION OF EXTENSION APPROACH**

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32 The approach is defined by Axinn [1], as the style of action within system. It's like the  
33 drummer which sets the pace for all activity of the system. Hagmann *et al.*, [2] explained an  
34 approach as a way in which different guiding principles are applied in a specific situation to  
35 fulfill different purposes. It consists of a series of procedures for planning, organizing and  
36 managing the extension institution as well as for implementing practical extension work by  
37 staff with technical and methodological qualification and using the necessary and  
38 appropriately adapted means. The approach is like a doctrine for the system, which informs,  
39 stimulates and guides such aspects of the system as its structure, its leadership, its  
40 program, its resources and its linkages [3].  
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42 **3. TYPES OF EXTENSION APPROACHES**

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44 Various approaches have been defined by researchers for agricultural extension. Axinn [1]  
45 defined eight approaches. These are: General approach, Commodity specialized approach,  
46 Training and Visit approach, Participatory approach, Project approach, Farming system  
47 approach, Cost-sharing approach, and Educational institution approach. Many other  
48 approaches were defined by other researchers.

49

50 Nagel [4] classified different alternatives to organizing extension demand choices on various  
51 levels: public versus private, government versus nongovernment, top-down (bureaucratic)  
52 versus bottom-up (participatory), profit versus nonprofit, free versus cost-recovery, general  
53 versus sector, multipurpose versus single purpose, and technology driven versus need  
54 oriented. Nagel also described in details two groups of extension approaches. These are  
55 general clientele approaches and extension to selected clientele approaches.

56

57 The World Bank distinguished between profit oriented and public extension service. It also  
58 distinguished between multipurpose and specialized extension services [5]. Swanson and  
59 Rajalati [6] described different extension approaches and models under four main  
60 categories. These are: technology transfer extension models, participatory extension  
61 approaches and market – oriented extension approaches and non-formal  
62 education/extension approach. Davis [7] described a typology for types of extension which  
63 included the basic form of public-top down or government driven, participatory or demand  
64 driven, and private or supply driven.

65

66 As stated by Kaur and Kaur [3] that agricultural extension is done mainly by public sector,  
67 private sector, and public-private partnership. The public sector is normally conducted by  
68 agricultural ministries, universities, and other governmental agencies. The private extension  
69 is offered by various private agencies, and clients are expected to pay for the service.  
70 Public-private partnership describes a service which is funded and operated through a  
71 partnership of the government and one or more private sector. Since farmers are the main  
72 beneficiaries, they pay the cost of the service.

73

74 Kaur and Kaur [3] described some other extension approaches which depend on individual  
75 and group communication methods such as farmer interest group, successful groups, farmer  
76 field school, farmer to farmer communication approach, farmer field approach, and group  
77 approach. They also described other approaches which were adopted in India such as  
78 farming system approach, mass media approach, market led extension approach which  
79 focuses on providing information on agricultural production marketing, cyber extension  
80 approach which depends on Information Communication Technology, cost recovery  
81 approach, and share-cropping system.

82

83 In the general approach, extension services cover all areas of agricultural production. If  
84 these services were directed to a specific commodity, they are called commodity extension  
85 approach. If the services were directed to all people, they are called public or general  
86 clientele approach. If these services were directed to a specific group of people, they are  
87 called sector or selected clientele approach. The general and public extension approach is  
88 normally implemented and controlled by the government through agricultural ministries and  
89 educational institutions. The commodity approach may be implemented by the government  
90 or by any private organization. General or public agricultural extension services offered  
91 through governmental organizations are called governmental. When these services are  
92 offered through some nongovernmental agencies, they are called nongovernmental or  
93 private approach. While the governmental approach does not seek any profits, the non-

94 governmental or private agricultural extension services are offered by profit achieving  
95 organizations.

96  
97 Normally, in the general or public approach, extension services are offered free of charge,  
98 but if farmers contribute and pay the cost of extension services, or if these services were  
99 offered by any non-governmental organization, this approach is called cost-sharing or cost  
100 recovery approach.

101  
102 In the developing countries, extension programmes are designed and planned at the central  
103 levels. This centralized approach is a non-participatory approach. If local people and village  
104 extension workers participated in programme planning, the approach is called participatory  
105 approach. The non-participatory approach is a top-down approach, and the participatory  
106 approach is a down-top approach.

107  
108 In the training and visit approach, extension workers are trained to educate certain groups of  
109 farmers in a selected area on certain types of agricultural innovations concerning certain  
110 commodities. In the project approach, agricultural extension services are directed to a  
111 certain agricultural commodity or activity and normally funded by a foreign organization  
112 through a particular period. In the farming system approach agricultural extension  
113 programmes are planned for each agricultural local area according to its conditions. In the  
114 technology derived approach, extension programmes are based on the available agricultural  
115 technologies at research centres, but in the need oriented approach, extension services are  
116 based on people's needs or demand driven services.

117  
118 The distinction between these types of approaches is not absolute and there are no border  
119 lines between them. They are interrelated and one can hardly find a single approach  
120 adopted without other approaches. For instance, the participatory approach, farmer to farmer  
121 approach, farm field schools, farmer group approach, farmer friend approach, sharing cost  
122 approach are adopted under the general and commodity approaches. They are also adopted  
123 under the governmental and nongovernmental approaches and in public and private  
124 approaches. Some approaches are defined and focusing on the extension methods used  
125 whether these methods were individual and group communication methods or mass media  
126 contacts. Some other developed approaches are using ICT which may be adopted in any  
127 broader approach.

128  
129 As stated by Axinn [1], an approach which is appropriate and applicable at a certain time in  
130 certain place, may not be appropriate and applicable at different times and places. Also  
131 there are some approaches which may be adopted as supportive to other approaches.  
132 The general approach is the most common adopted approach in most countries. All other  
133 approaches have been introduced in some developing countries and funded by foreign  
134 agencies as means to improve the effectiveness of agricultural extension systems in these  
135 countries. These approaches were adopted in certain areas for certain commodities during  
136 certain periods of time to cover limited sectors of people. The success or failure of their  
137 adoption depends on the continuity of their finance. But the governments of these countries  
138 face much difficulty in providing the required financial resources to sustain the  
139 implementation of such projects.

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#### 141 **4. ATTRIBUTES OF THE EFFECTIVE EXTENSION APPROACH**

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143 An effective extension model focuses strongly on the dissemination and facilitation of the  
144 adoption of recommended technologies and practices to achieve its objectives. It should be  
145 able to improve production and productivity. It should also be available and accessible.

146 Ssemakula and Mutimba [9] defined some attributes which constitute an effective extension  
 147 model. They considered these attributes as determinants of effectiveness of the extension  
 148 model. These are: existence of a clear and inclusive philosophy, knowledge and  
 149 commitment of the extension providers, social proximity of providers and beneficiaries,  
 150 involvement of beneficiaries in the process of technology generation and dissemination,  
 151 availability of the services to beneficiaries at all times, improving productivity of enterprises,  
 152 and presence of supportive policies, institutions, programmes, and related enabling  
 153 processes.

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155 **5. QUALITIES AND NECESSARY CONDITIONS FOR THE EFFECTIVE**  
 156 **EXTENSION APPROACH**

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158 The effective extension approach is that approach which should be based on principles of  
 159 agricultural extension. These principles were described by many researchers (see for  
 160 instance: [9], [10], and [11]). Based on these principles, and some other research studies on  
 161 the effectiveness of extension models and approaches (see for example: [1], [8], [12], and  
 162 [13]), the following qualities and necessary conditions for the effective agricultural extension  
 163 approach can be determined:

164

165 **First:** It should fill the gap between research and farmers and play the role of extension  
 166 effectively. Extension is a two-way link. As stated by Oakley and Garforth [10], this two-way  
 167 flow of ideas can occur at different stages: When the problem is being defined, when  
 168 recommendations are being tested in the field, and when farmers put recommendations into  
 169 practice. The effective agricultural extension should not only identify farmers' problems and  
 170 needs and take these problems to research centres for solutions, but it should also go back  
 171 to farmers with these solutions. In addition, the effective extension should identify  
 172 appropriate new technologies and provide farmers necessary education about them and  
 173 carry the consequences of their adoption to the research centres (Figure 1). The effective  
 174 agricultural extension approach should have strong linkages with the research centres as  
 175 well as with farmers and other related institutions.

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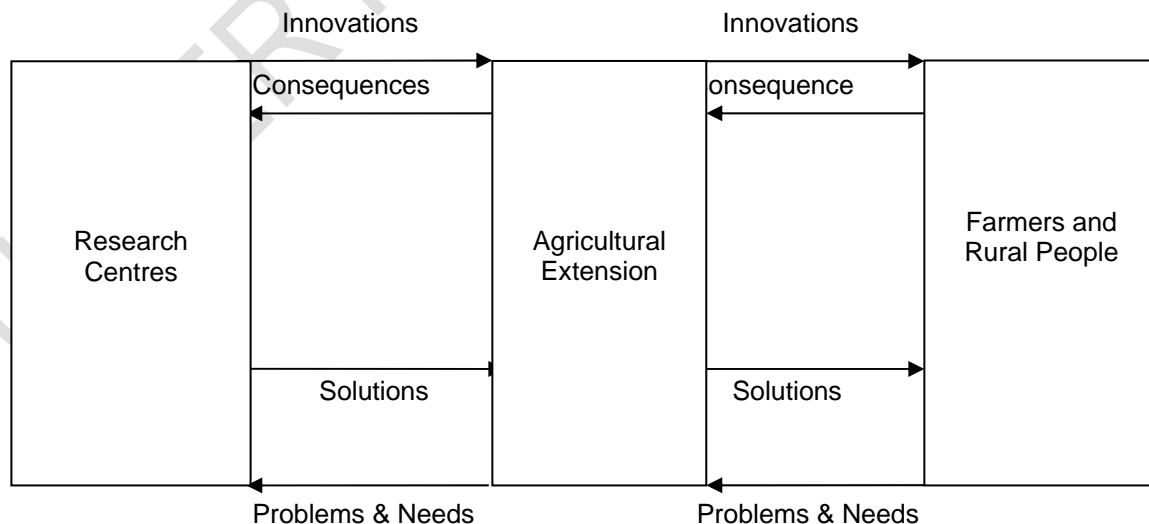
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**Figure 1: The role of effective agricultural extension**

197 **Second:** It should fit extension programme goals. As stated by Axinn [1], the success of an  
198 agricultural extension **approach** tends to be directly related to the extent to which it fits the  
199 programme goals for which it was established.

200  
201 **Third:** It should improve agricultural production and productivity through the dissemination  
202 and adoption of new technologies and practices.

203  
204 **Fourth:** Its extension services should be available for beneficiaries at all times.

205  
206 **Fifth:** Its extension services should be accessible to beneficiaries.

207  
208 **Sixth:** It can reach beneficiaries and offer necessary education on new technologies for  
209 them.

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212 **Seventh:** It should rely on appropriate extension communication methods.

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214 **Eighth:** It should be based on people's participation in generating and disseminating new  
215 technologies.

216  
217 **Ninth:** It should be based on participation of extension staff at local levels in planning  
218 extension programmes.

219  
220 **Tenth:** It should rely on local leaders.

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222 **Eleventh:** Its extension programmes should be planned at the local levels (from down to  
223 top).

224  
225 **Twelfth:** It should design appropriate extension programmes for each area.  
226 These qualities and necessary conditions for the effective agricultural extension approach  
227 can be regarded as determinants for effectiveness and constitute the main components of  
228 the effective extension approach.

## 229 230 **6. MEASURING THE EFFECTIVENESS OF EXTENSION APPROACH**

231  
232 Different methodologies have been used by many researchers to measuring the  
233 effectiveness of some extension approaches, models, and services. Ssemakula and  
234 Mutimba [8] measured the effectiveness of farmer – to farmer approach by increased:  
235 technology uptake, production, food availability, information – sharing, and sales of  
236 commodity. Al-Sharafat *et.al.* [14] depended on olive productivity in their assessment of  
237 Jordan's agricultural extension services.

238  
239 Saravanan and Veerabhadraiah [12] measured the effectiveness of public, private, and  
240 NGO's extension services by using twenty eight indicators in three levels: input, process,  
241 and outcomes. The same methodology was adopted by Debnath *et.al.* [13] to measure the  
242 effectiveness of public extension services of the department of agriculture in Tripura state,  
243 India by using twenty indicators. These indicators included nine organizational indicators, six  
244 clientele indicators and five indicators related to extension personnel. The organizational  
245 indicators are concerning total expenditure, expenditure on extension activities, frequency,  
246 adequacy and usefulness of extension activities, clientele contact, technical manpower :  
247 cultivator ratio, organizational climate, guidance and supervision, facilities and resources,  
248 and communication. The clientele indicators included their commitment, willingness to pay  
249 for the service, relevance, quality, and usefulness of extension service. The indicators

250 related to extension personnel included organizational commitment of extension personnel,  
251 client accountability, job satisfaction, job performance, and job competence.

252

253 Lotfy and Adeb [15] measured farmers' satisfaction and their perception of quality of  
254 extension services in Minya and BaniSuef governorates in Egypt. Agbarevo [16] used  
255 several indicators to measure farmers' perception of the effectiveness of extension  
256 personnel in Cross-River-state, Nigeria. These indicators included the level of awareness of  
257 extension services created among farmers, number of visits made by the village extension  
258 worker, organized and held meetings with farmers, method and result demonstrations,  
259 research/extension linkage, workshops, farmer training programmes, farmers participation in  
260 OFAR, distribution of pamphlets, leaflets, ..., etc., and organization of audio-visual shows.

261

262 Cerdan-Infantes, *et.al.* [17] measured the impact of the provision of agricultural extension  
263 services to grape producers in Mendoza, Argentina on its yield and quality. Akomaning, *et.*  
264 *al.* [18] examined the effectiveness of agricultural extension system employed by farmer  
265 based organizations (FBOs) in the central region of Ghana. Their assessment of the  
266 effectiveness of the extension systems identified was measured based on farmers'  
267 perception of the performance of various extension systems, and their perception of the  
268 effectiveness of extension approaches. The performance indicators included training  
269 workshops, research/extension linkage, input provision, credit provision, marketing outlets,  
270 provision of essential services, adoption of technology, farmer participation, and farm  
271 productivity- yield. The effectiveness of extension approaches was measured on a five point  
272 Likert-type scale ranging from very effective to not effective.

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## 274 **7. EFFECTIVENESS DETERMINANTS**

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276 Based on the above, it can be said that there are several determinants of the effective  
277 agricultural extension approach which should be taken into consideration in its  
278 measurement. These determinants can be stated as follows (Figure 2):

279

280 1. Organizational determinants which include the extension organization, extension/research  
281 linkage, extension/farmers organizations linkage, and extension/other systems linkage.

282

283 2. Farmers determinants which includes their characteristics, their satisfaction of extension  
284 services and their perception of extension service quality and usefulness, their participation  
285 in generating and adoption of new technology as well as in planning and evaluating  
286 extension activities.

287

288 3. Extension personnel determinants including their commitment of extension services, their  
289 efforts and activities for extension services provision.

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291 4. Economic determinants which include production, productivity, and net profits of  
292 agricultural products.

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294 5. Marketing determinants including the provision of necessary information on marketing of  
295 agricultural products.

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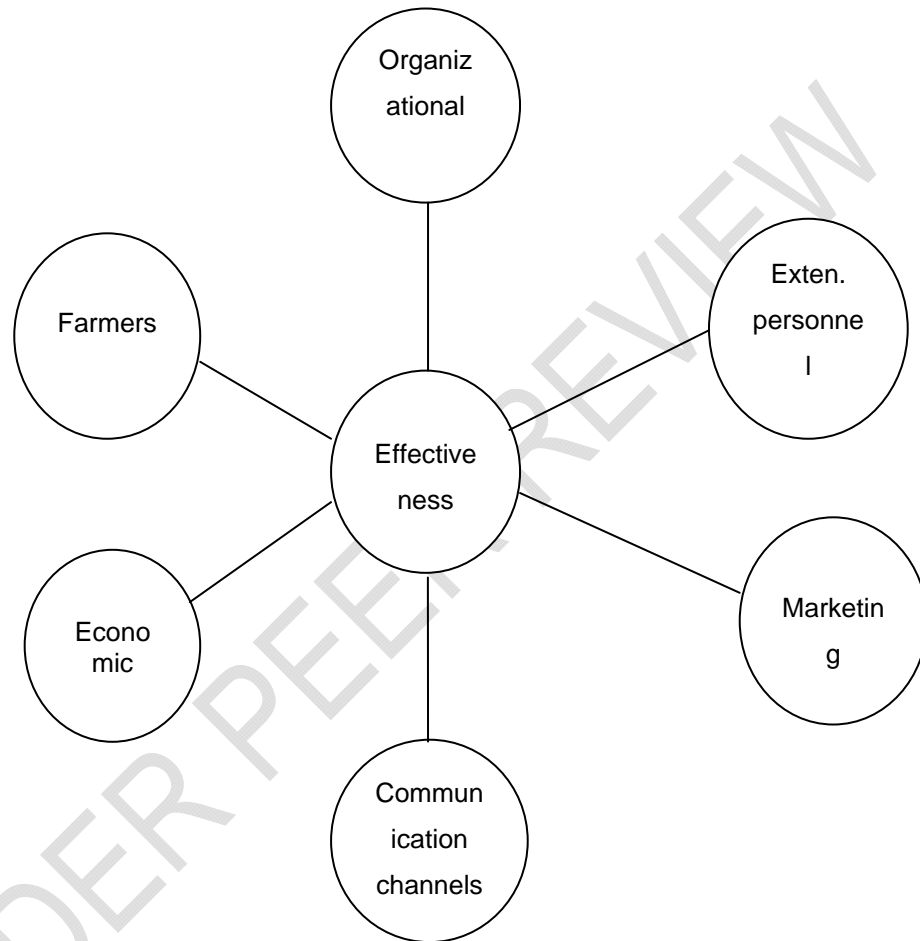
297 6. Communication channels including various types of communication channels used to  
298 disseminate knowledge and information on new technology among farmers and encourage  
299 them for their adoption.

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**Figure 2: Effectiveness determinants**

## **8. APPLICATION OF AGRICULTURAL EXTENSION APPROACHES IN EGYPT**

Most of the defined agricultural extension approaches were adopted in Egypt. The general approach is the traditional agricultural extension approach and has been adopted through the Ministry of agriculture since the establishment of the extension organization in Egypt in 1953. The commodity approach has been implemented through certain extension projects for certain agricultural products in certain agricultural areas such as strawberry village in Qalubia governorate, cantaloupe or muskmelon project in Ismaeiliah governorate, and wheat



356 national campaigns over all the country. Small Farmer approach, T & V approach, Farmer to  
357 farmer, Farmer Field School, and Group approach were adopted in some governorates in  
358 the country. In addition, Virtual Extension & Research Communication Network (VERCON)  
359 and The Rural and Agricultural Development Communication Network (RADCON) which are  
360 based on ICT were also adopted in some governorates funded by some foreign  
361 organizations. The continuity of these projects depends on the availability of local financial  
362 resources. Several research studies and reports have been carried out and published on the  
363 results of the adoption of different agricultural extension approaches in Egypt. Examples of  
364 these are: [19], [20], [21], and [22]. Some of these studies and reports gave positive signs on  
365 their success. But the main problem has been related to their continuation after the end of  
366 projects.

## 367 368 **9. CONCLUSION**

369 There are numerous agricultural extension approaches defined by researchers and some  
370 world organizations. However, there is no one approach which could be applied at all times  
371 and for all different places. Any approach in order to be effective requires the adoption of  
372 some other supportive approaches. Most approaches have been proposed to be applied in  
373 some developing countries to improve the effectiveness of their extension systems and have  
374 been introduced and adopted through some foreign funded projects. Several attributes,  
375 qualities and necessary conditions of the effective extension approach were identified.  
376 Different methodologies were used to measuring the effectiveness of some extension  
377 approaches. But each focused on certain aspects or dimensions of effectiveness. It can be  
378 concluded that all attributes, qualities and necessary conditions of the effective agricultural  
379 extension approach should be taken into consideration in measuring its effectiveness.  
380 Determinants of effectiveness measurement were identified. Several types of agricultural  
381 extension approaches have been adopted in Egypt funded by some foreign organizations  
382 besides the governmental public services. But the continuity of their adoption was restricted  
383 by non-availability of financial resources.

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387  
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