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Research Article
(Araştırma Makalesi)

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The public extension in the last quarter century in Manisa Province in Türkiye*

Son çeyrek yüzyılda Türkiye'nin Manisa İlinde kamu yayımı

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ABSTRACT

Objective: The objective of this study was to reveal some extension indicators in the province, to contribute to the extension memory of the country, and to develop advice for the extension system by examining the change in the last quarter century.

Material and Methods: The main material of the study consisted of the data from 229 extensionists working in Manisa Provincial Directorate of Agriculture and Forestry and some district directorates. Logistic regression analysis was used to determine factors affecting occupational satisfaction of extensionists.

Results: The number of young, female and university educated extensionists has increased. While the time devoted to extension has decreased, the bureaucratic workload has increased. The number of farmers served by an extensionist increased by 43% during the covered period. Extensionists who spend a lot of time on farmer training were found to become satisfied with their work.

Conclusion: The employment policy should be planned in such a way that one extensionist serves 200 farmers. Extension activities should be carried out with project logic by defining criteria such as time, region, targets, budget, opportunities, collaborations, and result indicators.

ÖZ

Amaç: Çalışma, son çeyrek yüzyıldaki değişimi inceleyerek ildeki bazı yayım göstergelerini ortaya koymayı, ülkenin yayım hafızasına katkıda bulunmayı ve yayım sistemine yönelik öneriler geliştirmeyi amaçlamıştır.

Materyal ve Yöntem: Çalışmanın ana materyalini Manisa İl Tarım ve Orman Müdürlüğü ile bazı ilçe müdürlüklerinde görev yapan 229 yayımcıdan elde edilen veriler oluşturmaktadır. Yayımcıların mesleki memnuniyetlerini etkileyen faktörlerin belirlenmesinde lojistik regresyon analizi kullanılmıştır.

Araştırma Bulguları: Manisa'da genç, kadın ve üniversite mezunu yayımcıların sayısı artmıştır. Yayıma ayrılan süre azalırken, bürokratik iş yükü artmıştır. Kapsanan dönemde, bir yayımcının hizmet verdiği çiftçi sayısı %43 artmıştır. Çiftçi eğitimine daha fazla zaman harcayan yayımcılar işlerinden daha memnunlardır.

Sonuç: İstihdam politikası, bir yayımcı 200 çiftçiye hizmet verecek şekilde planlanmalıdır. Yayım faaliyetleri, zaman, bölge, hedefler, bütçe, fırsatlar, işbirlikleri, sonuç göstergeleri gibi kriterler tanımlanarak proje mantığıyla yürütülmelidir.

INTRODUCTION

Extension studies carried out to raise living standards in rural areas began to be institutionalized in the 1800s in the world, became widespread in the 1900s, and especially after the Second World War. It gained great momentum with the newly established states after World War II. For disseminating the inputs of the green revolution and overcoming the technological deficiencies and communication problems the General Extension Approach till 1970s; aiming to update the information of the extensionists, strengthen the relations with research, and planning the regular farmer contacts the Training-Visit Approach in the late 1970; and in the 1980s the small farmers and approaches as Farming Systems Research that take into account their families were utilized by extension organizations in the world (Anderson et al., 2006; Swanson & Rajalahti, 2010; Ashraf & Yousaf Hassan, 2021). It is stated that 40% of the extension organizations in the world use Training-Visit Approach, and 23% use general extension approach (Axinn, 1988; Contado, 1990). In the rural extension and development, holistic approaches including information systems in the late 1980s, local participation in the 1990s, innovation systems in the 2000s were appeared in the world. Approaches have led to changes on such as financing mechanisms, digitalization, participation, and localization in a way that can respond to economic, political, technological, and sociological developments. (Rogers, 1993; Chambers, 1994; Dinar & Keynan, 2002; Rivera et al., 2002; Anderson & Feder, 2003; Davis & Franzel 2018; Norton & Alwang, 2020).

In Türkiye, in the middle of the 18th century, the first extension attempts were started with the activities such as printing farmers' brochures and organizing agricultural exhibitions to improve cotton production with export agreements (Anonymous, 1938). In the First Agricultural Congress (1931) some decisions were such as being informing about agricultural issues the teachers working in the village for training the farmers, educating of rural youth on agricultural issues during the military service and using the radio and press for informing the rural people. Furthermore, establishment of agricultural faculty was decided during this congress and Ankara University Faculty of Agriculture was founded in 1933. At the Village and Agriculture Congress in 1938, the word agricultural extension was used for the first time in Turkish and it was decided to institualization of extension in Türkiye. In this context, the organizational activities that started in Ankara, Eskişehir and Manisa provinces in 1943 were completed in 1958 throughout the country. General/ Traditional Extension Approach, which was used in the world for more than a century, has been used for many years in Türkiye as well, and with the reorganization of the Ministry in 1984, it was planned to expand the training-visit system in all over the country. The approached was employed within the scope of the Agricultural Extension and Applied Research Project (TYUAP). With the support of the World Bank, the first slice of TYUAP was carried out in 16 provinces including Manisa in the 1984-1993 period, and the second slice was carried out in 37 provinces between 1990-1997 with the addition of 21 provinces (Anonymous, 2004). In the project was aimed to strengthen relations between research and extension, regular in-service training of extensionists, and planned farmer visits. The TYUAP approach had been also continued to use by some extension organizations for a while after the project was completed (TOKB, 1987; TKB, 2004). The extension activities carried out by the Ministry in the form of free public service, the result of the shrinkage in the state budget and the inadequacies in personnel employment, ministry applied the Village-Centered Agricultural Production Support Project (KÖY-MER) (2004-2007). Carrying out throughout the country and aiming the cost sharing, but intended results were not realized at KOYMER after which the Agricultural Extension Development Project (TAR-GEL) has been implemented in Türkiye in 2007 (Boyaci & Yildiz, 2011). The name of the Ministry has been changed over time to the Ministry of Agriculture and Rural Affairs, Agriculture and Livestock and finally the Ministry of Agriculture and Forestry, and it was referred to as the Ministry of Agriculture or the Ministry in the study. In this study, the province of Manisa (Figure 1), where extension the first institutionalized in Türkiye and the TYUAP project was first implemented, and which has significant experience in the field of extension such as KÖY-MER and TAR-GEL examined. The importance of the province in the country's agriculture is highly significant. For example, in Türkiye, 89% of seedless raisins, 21.1% of table olives, 25% of tobacco and 18.8% of tomato (for paste) are produced in Manisa. The agricultural export value of the province in 2019 was $676.150.884 (Manisa İl Tarım & Orman Müdürlüğü, 2023).

It thought that examining the extension activities in the province in different periods and revealing the change might shed light on extension in Türkiye. Due to the inadequacy of comparison studies for different periods, the study will fill a gap and contribute to the extension memory of the country. The data of three different studies conducted in between 1995-2017 used in the study. Considering that change takes time, it can be said that the study covers the quarter-century experience of extension in the province. The personal characteristics of extensionists working in the public sector, their education levels, the activities spending time, target topics and groups, adoption levels of farmers, and the reasons for rejection of advice, the level of professional satisfaction, and factors affecting examined in the study. Hence the study conducted with the objective was to answer the research question "to what extent have extension activities in the region changed over time?"

MATERIALS and METHODS

The main material of the study consisted of data from three different research conducted in Manisa province in 1996-1998, 2006-2007 and 2016-2017 periods ((Boyacı, 1998; Boyacı, 2007; Boyacı, 2017). In all three studies data were collected via questionnaire forms from 229 public extensionists working in Manisa Provincial Directorate of Agriculture and Forestry and district directorates of Turgutlu, Ahmetli, Salihli, Salihli, Alaşehir, Sarıgöl and Saruhanlı. The years, in which the data used in the study collected, the number of participating extensionists and their shares are tabulated in Table 1. The research covering the first period (1996-1997) deals with the time of implementation of TYUAP. The Ministry aimed to change the extension with this project. The other two researches conducted ten years apart in Türkiye and in the Aegean Region.

Table 1. The frequencies of interviewed extension workers by years

Çizelge 1*. Görüşülen yayımcıların yıllara göre dağılımı*

Periods	Years	Number	Percentage (%)
Period I	1996-1997	72	31.4
Period II	2006-2007	78	34.1
Period III	2016-2017	79	34.5
	Total	229	100.0

Kruskal Wallis test, Mann Whitney U test, and Chi-square test were used to determine whether there was a difference between the averages for variables that were not normally distributed. For normally distributed variables, T test was used to test the difference between means (Field, 2009; Pallant, 2010). Logistic regression analysis was used to determine factors affecting occupational satisfaction of extensionists. Economic satisfaction, regular in-service training, gender, individual methods, and farmer groups were considered as independent variables of the analysis. Logistic regression tests models for predicting categorical outcomes with two or more categories. Independent variables can be categorical, continuous, or a combination of the two in a single model (Pallant, 2010). In this study, some opinions on attitudes, behaviors and tendencies collected from extension workers with a Likert scale (5 points) were recoded and transformed into two groups for comparison purposes. IBM SPSS Version 25 was used to analyze the data.

RESULTS and DISCCUSSION

Some personal characteristics of extensionists

The characteristics and skills of the employees affect the success of the organization. Age and experience are the indicators of knowledge and skills, and it is of great importance in services based on human relations (UNDP, 2003). The average age of extensionists in Manisa by years is 38.8, and it differs according to the periods. The average age in the province, which was 39.7 in 1996, became 42 in

2006 and 34.6 in the following period. Similar fluctuation is seeing in experience duration that differs according to the periods. Extensionists have the lowest professional experience in recent period.

The gender of the extensionists was found to be significant according to the periods the ratio of female extensionists in the world is stating as 13% in 1990's, and 15% of public extension agents in 2008's (Swanson et al., 1990; Heinemann et al., 2009). Overall, about one in four extensionists (24%) are women in Manisa. The number of female extensionists increased in the province. While the rate of female extensionists was 6.9% in the first period, it reached 35.4% in the last period. The marriage rate of extensionists has decreased over the years. In the first period, 95.8% of the extensionists, and in the last period, 69.6% were married. In the study, living in the village, the family's livelihood being agriculture, and the existence of farming experience defined as the rural life experience of the extensionists. In general, 49.3% of extensionists have good rural life experiences, but they are higher in the first period.

Educational qualifications of extensionists

The quality of human resources available to extension is a major factor influencing the effectiveness of extension. A primary measure of quality is the educational qualifications of extension staff. It has stated that 23% of the extensionists in the world are university graduates and 5% have postgraduate education (Swanson et al., 1990). The education level of extension staff has increased over the years in Manisa. The number of agricultural high school graduates has decreased substantially throughout the province. The rate of agricultural high school graduates is 69.4% in the first period, 32.1% in the second period and 5.3% in recently. The number of faculty and college graduates has increased in a quarter of a century. The fact that the level of foreign language has improved over the years is an important development in terms of monitoring foreign information resources and project opportunities. 17.5% of the extensionists have a master's degree and there is no difference according to the period. 72.5% of extensionists are stating the education at the faculty does not prepare them to business life and remains inadequate and this idea has not changed over the years (Table 2).

Table 2. Comparison of some educational indicators of extensionists (Chi-Square Test)

Çizelge 2. *Yayımcıların bazı eğitim göstergelerinin karşılaştırılması (Ki-Kare Testi)*

Period		1996		2006		2016		Total		Chi Square	Df	Asymp sig.
Variable		N	%	N	%	N	%	N	%			
Education status	High school	50	69.4	25	32.1	3	5.3	78	37.7	57.497***	2	0
	University	22	30.6	53	67.9	54	94.7	129	62.3			
	Total	72	100.0	78	100.0	57	100.0	207	100.0			
Master's degree	No	63	87.5	63	80.8	63	79.7	189	82.5	1.826	2	0.4
	Yes	9	12.5	15	19.2	16	20.3	40	17.5			
	Total	72	100.0	78	100.0	79	100.0	229	100.0			
Foreign language level	Poor	45	62.5	57	73.1	40	50.6	142	62.0	8.403**	2	0.02
	Good	27	37.5	21	26.9	39	49.4	87	38.0			
	Total	72	100.0	78	100.0	79	100.0	229	100.0			
Education at school	Insufficient	48	66.7	58	74.4	60	75.9	166	72.5	1.835	2	0.4
	Sufficient	24	33.3	20	25.6	19	24.1	63	27.5			
	Total	72	100.0	78	100.0	79	100.0	229	100.0			

*Significance level: *** α <0.01; ** α <0.05*

Time-allocated activities by extensionists

It is important for the diffusion of innovations and development to spend most of the time on extension. It generally states that, the extension activities involve 75% of the work of the extensionists in the world (Swanson, et. al., 1990). In EU countries, on the other hand, the average of extension activities over the working hours of the extensionists is 80% (Boyacı, 1996). In the province of Manisa, the issues that

extensionists spend their time on differentiate from one year to another. The share of extension has decreased over the years, but the bureaucratic workload has increased. In general, 39.4% of the time in Manisa goes extension; 34.5% is reserved for bureaucratic work. The time allocated to the extension, which was low in all three periods decreased even more recently. The excessive bureaucratic workload in extension organizations is one of the discussed issues as it negatively affects extension and development studies. While the bureaucratic workload was 25.9% in the first period, it increased in the following periods and became between 45.1-31.9%. The share of personal development and research in overtime has increased recently. It is noteworthy that the time devoted to research has tripled in the last 25 years (Table 3).

Table 3. Comparison of the activities allocated for working time by periods (Kruskal Wallis test)

Çizelge 3. *Dönemlere göre faaliyetler için ayrılan çalışma süresi (Kruskal Wallis testi)*

Activities (%)	Period	N	Mean	Mean Rank	Chi Square	Df	Asymp sig.
Extension activities	1996	72	52.9	151.5	33.409***	2	0
	2006	77	34.5	99.5			
	2016	79	31.9	95.4			
	Total	228	39.4				
Bureaucratic affairs	1996	72	25.9	90.7	25.003***	2	0
	2006	77	45.1	143.3			
	2016	79	31.9	108.1			
	Total	228	34.5				
Self-improvement	1996	72	15.3	122.2	27.651***	2	0
	2006	77	10.1	83.9			
	2016	79	18.1	137.3			
	Total	228	14.5				
Research activities	1996	72	5.2	84.3	39.939***	2	0
	2006	77	10.1	106.8			
	2016	79	15.0	149.5			
	Total	228	10.2				

*Significance level: *** α <0.01*

In the past, while extensionists were not favored to be active in research and in recent years they have been involved in joint studies. With Training-Visit Approach put into practice in Manisa in 1984, the time allocated to the extension activities has increased, regular in-service training (IST) has given to extensionists, and strong relations have established with research. For extension efforts, a strong in-service training is essential to success (Norton & Alwang, 2020). While 87.5% of extensionists received regular IST in 1996, there was a serious decrease in the following period, and the rate of those who received regular IST decreased to 6.3% in 2017 (Table 4).

Table 4. The status of extensionists receiving regular in-service training (Chi-Square Test)

Çizelge 4. *Yayımcıların düzenli hizmet içi eğitim alma durumu (Ki-Kare Testi)*

Receiving in-service training	1996		2006		2016		Total		Chi Square	Df	Asymp sig.
	N	%	N	%	N	%	N	%			
Not receiving	9	12.5	58	74.4	74	93.7	141	61.6	113.079***	2	0
Receiving	63	87.5	20	25.6	5	6.3	88	38.4			
Total	72	100.0	78	100.0	79	100.0	229	100.0			

*Significance level: *** α <0.01.*

It was observed that existing strong relations in the 1990s between research and extension weakened considerably in recent years (Table 5). In fact, these relations increase the social and economic benefits of research besides the solution of rural problems and the spread of innovations.

Table 5. Level of research and extension relations (Chi-Square Test)

Çizelge 5. *Araştırma ve yayım ilişkilerinin düzeyi (Ki-Kare Testi)*

Relations with research	1996		2006		2016		Total		Chi Square	Df	Asymp sig.
	N	%	N	%	N	%	N	%			
Poor	17	23.6	48	61.5	45	57.0	110	48.0			
Strong	55	76.4	30	38.5	34	43.0	119	52.0	25.427***	2	0
Total	72	100.0	78	100.0	79	100.0	229	100.0			

*Significance level: *** α <0.01*

The knowledge transfer function, which is the heart of the extension, should have adequate mechanisms to formulate and bring knowledge to farmers (Cawley et al., 2023). For this reason, rural areas should be included in target setting processes in extension and development. The objectives in the extension relate to the rural structure and country priorities. While quality is at the forefront in the products subject to export, production and productivity increase is the priority in the products/places where insufficiency is experienced. Production-efficiency increase in the 1990s, quality improvement in the 2000s, and cost reduction and environmental issues in the 2010s were more on the extension agenda of Manisa (Table 6). The target groups in the extension have changed. Although medium-sized farmers generally take precedence, the share of large farmers has increased in the 1990s and 2010s, and since the 2000s, the share of small farmers. In addition, women and disadvantaged groups were considered in the extension, albeit very limitedly, in the 2010s. Taking the views of the farmers in the planning of the extension motivates the bottom-up information flow. While the level of farmers' being a source of information was high in the 1990s, it decreased in the following periods (Table 6).

Table 6. Targets in extension by periods and the status of farmers as a source of information (Chi-Square Test)

Çizelge 6. *Dönemlere göre yayımda hedefler ve bilgi kaynağı olarak çiftçilerin durumu (Chi Kare Testi)*

Period		1996		2006		2016		Total		Chi Square	Df	Asymp sig.
Variables		N	%	N	%	N	%	N	%			
Target subject	Yield/production	60	84.5	40	52.6	20	26.0	120	53.6			
	Quality	7	9.9	18	23.7	19	24.7	44	19.6			
	Cost	1	1.4	10	13.2	26	33.8	37	16.5	57.578***	6	0
	Environment	3	4.2	8	10.5	12	15.6	23	10.3			
	Total	71	100.0	76	100.0	77	100.0	224	100.0			
Target group	Big	23	35.4	11	18.3	29	37.2	63	31.0			
	Middle	34	52.3	29	48.3	28	35.9	91	44.8			
	Small	8	12.3	20	33.3	21	26.9	49	24.1	12.949**	4	0.01
	Total	65	100.0	60	100.0	78	100.0	203	100.0			
Farmer as information sources	Low	37	22.6	64	39	63	38.4	164	71.6			
	High	35	58.8	14	21.5	16	24.6	65	28.4	21.239***	2	0
	Total	65	100.0	60	100.0	78	100.0	229	100.0			

*Significance level: *** α <0.01; ** α <0.05*

The number of farmers served by an extensionist in the world varies between 325 and 2661 (Swanson et al., 1990). It has planned that an extensionist will serve 500 farmers under dry farming conditions and 250 farmers under irrigated farming conditions at TYUAP (TOKB, 1987). The number of farmers provided with extension services in Manisa has changed over time. The number of farmers (1794 farmers) served by an extensionist has increased in the last 20 years (Table 7).

Table 7. Comparison of the number of farmers served by periods (Mann-Whitney U Test)

Çizelge 7. *Dönemlere göre hizmet verilen çiftçi sayısının karşılaştırılması (Mann-Whitney U Tesi))*

Period	N	Mean	Mean Rank	Sum of ranks	Mann-Whitney U	Z value	Asymp sig.
1996	46	1254.7	63.1	2903.5	1213.5*	-1.802	0.07
2016	66	1794.2	51.9	3424.5			

*Significance level: * α <0.1*

Tools and methods used in extension

Several factors such as the conditions of the institution, the skills of the extensionists, the nature of the message, the characteristics of the target group, and the stages of the diffusion process of the innovations are effective in the preference of the extension methods (Van den Ban & Hawkins, 1985; Rodewald, 2001). The rates of methods used in extension studies in the world are 43% individually, 41% in groups and 16% in mass (Swanson et al., 1990). In the study, extension tools and methods were classified as individual, group, and mass. In the last quarter, the use of individual methods decreased in Manisa, group while the mass methods have increased (Table 8).

Table 8. Comparison of the extension methods used according to the periods (Kruskal Wallis Test)

Çizelge 8. *Dönemlere göre kullanılan yayım yöntemlerinin karşılaştırılması (Kruskal Wallis Test)*

Extension aids	Year	N	Mean	Mean Rank	Chi Square	Df	Asymp sig
Individuals (%)	1996	72	50.8	123.8	37.075***	2	0
	2006	65	51.0	132.6			
	2016	79	36.5	74.8			
	General	216	45.6				
Group (%)	1996	72	26.7	82.2	32.596***	2	0
	2006	65	30.7	100.7			
	2016	79	37.0	138.9			
	General	216	31.7				
Mass (%)	1996	72	22.6	98.0	28.131***	2	0
	2006	65	18.9	85.1			
	2016	79	26.4	137.3			
	General	216	22.9				

*Significance level: *** α <0.01*

Job satisfaction levels of extensionists

Employee satisfaction level affects corporate performance. Satisfaction has professional (spiritual, promotion, assignment, etc.) and economic (income, bonus, reward, etc.) dimensions (Cole, 1993). In addition, the desire to recommend his profession to his close circle/of friends reflects his job satisfaction. It has stated that 94% of extensionists working in public, private sector, and farmer organizations are professionally satisfied in Türkiye (Boyaci & Yildiz, 2015). The level of professional satisfaction has decreased over the years. While 87.5% of extensionists were satisfied with their jobs in the 1990s, the rate decreased to 52% in the 2000s. The level of economic satisfaction, on the other hand, decreased to 12.8% in the 2000s and increased in the following years. While during periods when adverse conditions such as high inflation in the country were the level of economic satisfaction of extensionists decreased, in the 2010s increased compared to previous periods (Table 9).

Table 9. Extensionists' professional satisfaction status (Chi-square Test)

Çizelge 9. *Yayımcıların mesleki memnuniyet durumu (Ki-kare Testi)*

Variables		Period	1996		2006		2016		Total		Chi Square	Df	Asymp sig.
			N	%	N	%	N	%	N	%			
Recommend to friends	No		24	33.3	59	75.6	31	39.2	114	49.8	32.167***	2	0
	Recommends		48	66.7	19	24.4	48	60.8	115	50.2			
	Total		72	100.0	78	100.0	79	100.0	229	100.0			
Economic satisfaction	No		40	55.6	68	87.2	25	31.6	133	58.1	49.989***	2	0
	Satisfied		32	44.4	10	12.8	54	68.4	96	41.9			
	Total		72	100.0	78	100.0	79	100.0	229	100.0			
Professional satisfaction	No		9	12.5	37	47.4	38	48.1	84	36.7	26.447***	2	0
	Satisfied		63	87.5	41	52.6	41	51.9	145	63.3			
	Total		72	100.0	78	100.0	79	100.0	229	100.0			

*Significance level: *** α <0.01*

Factors affecting the professional satisfaction levels of extensionists found to be economic satisfaction, regular in-service training, gender, use of individual extension tools and methods in extension studies, and the size of the farms served. While economic satisfaction, receiving IST, utilizing individual extension methods, and male extension workers are increasing job satisfaction but giving priority to the small farmers has decreased the job satisfaction levels of extension staff (Table 10).

Table 10. Factors affecting occupational satisfaction (Logistic Regression analysis)

Çizelge 10. *Mesleki memnuniyeti etkileyen faktörler (Lojistik Regresyon Analizi)*

	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp (B)**
Constant	0.541	0.149	13.152	1	0.00	1.718
Factors	**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp (B)**
Constant	-2.041	0.818	6.229	1	0.01	0.130
Economic satisfaction	1.825	0.413	19.526	1	0.00	6.201
Regular in-service training	1.817	0.426	18.165	1	0.00	6.154
Gender	1.465	0.439	11.129	1	0.00	4.326
Individual methods (%)	0.023	0.012	3.749	1	0.04	1.023
Farmer groups	-0.451	0.244	3.416	1	0.04	0.637
-2 Log likelihood	188.311	Cox & Snell R Square	0.288	Nagelkerke R Square		0.394

Those with high professional satisfaction; are spending more time on extension but, less time on bureaucratic work, and serve fewer farmers (Table 11). Asadi et al. (2008) stated that extensionists who are married earn more and have higher job satisfaction.

Table 11. Comparison of some extension indicators according to the level of job satisfaction (T test)

Çizelge 11. *Bazı yayım göstergelerinin iş memnuniyeti düzeyine göre karşılaştırılması (T testi)*

Variables	Level of job satisfaction	Number	Mean	Standard deviation	T Value	Df	Asymp sig.
Time for extension works (%)	Low	83	34.7	21.669	-2.257**	226	0.03
	High	145	42.1	24.607			
Time for bureaucratic works (%)	Low	83	39.5	24.893	2.433**	226	0.01
	High	145	31.6	23.102			
Number of farmers served	Low	34	2237.4	3209.671	1.968*	110	0.05
	High	78	1282.8	1883.571			

*Significance level: ** α <0.05; * α <0.1*

Adoption tendency of extension advice

Adoption of advice/innovations is one of the important indicators of the success of extension (Engel, 1990). While the farmers in some countries adopt almost all the extension advice, the adoption of 80% of the farmers considered a success in some studies (Contado, 1990). The advice adoption levels of

by farmers in Manisa have compared by two periods. The adoption level which, is generally below 50%, is higher in 2016 than in 2006 (Table 12).

Table 12. Adoption levels of farmers in different periods (T-Test)

Çizelge 12. *Çiftçilerin farklı dönemlerdeki benimseme düzeyleri (T-Testi)*

	Period	N	Mean	Stand. Deviation	Std. Error Mean	T	df	Asymp sig.
Farmer's advice adoption rate (%)	2006	70	42.57	23.786	2.843	-1.672*	145	0.097
	2016	77	49.53	26.447	3.014			

*Significance level: * α <0.1*

Two groups of low and high (below and above average) adoption levels of innovations/advice were formed for comparison. According to the adoption groups, target groups and the reasons for the farmers' rejection of innovation/advice found significant. Medium-sized farmers are more tendency to adopt innovation (Table 13).

Table 13. Propensity of farmers to adopt according to target groups (Chi-square test)

Çizelge 13. *Çiftçilerin hedef gruplara göre benimseme eğilimi (Ki-kare testi)*

Farmers	**Big**		**Middle**		**Small**		**Total**		Chi Square	Df	Asymp sig.
Adoption levels	N	%	N	%	N	%	N	%			
Low	25	67.6	30	54.5	30	76.9	85	64.9			
High	12	32.4	25	45.5	9	23.1	46	35.1	5.178*	2	0.08
Total	37	100	55	100	39	100	131	100			

*Significance level: * α <0.1*

According to the extensionists, the reasons for the rejection of the advice/innovations by the farmers are sociological factors (such as tradition, low level of education), farmer circumstances (economic, farm conditions, etc.), and extension-depended (information lack, not believing in its benefits, being of priorities different). The reasons for the rejection of the advice varied by the year as the farmers' circumstances in 1996, sociological factors in 2006, and extension-depended justifications in 2016 (Table 14).

Table 14. Reasons for rejecting innovations/extension proposals by farmers by periods/years (Chi-square test)

Çizelge 14. *Çiftçilerin yenilik/tamamlama tekliflerini dönemlere/yıllara göre reddetme nedenleri (Ki-kare testi)*

	1996		**2006**		**2016**		**Total**		Chi Square	Df	Asymp sig.
Reasons	N	%	N	%	N	%	N	%			
Circumstances	37	55.2	20	28.6	24	30.8	81	37.7			
Sociological	14	20.9	48	68.6	21	26.9	83	38.6	56.693***	4	0
Extension	16	23.9	2	2.9	33	42.3	51	23.7			
Total	67	100	70	100	78	100	215	100			

*Significance level: *** α <0.01; * α <0.1*

CONCLUSION

The extension staff in Manisa, whose ages fluctuate over the years, is generally composed of young people, and the number of women has increased in the extension organization. The increase in the number of female extensionists made it easier to reach rural women. Despite the increase in the rate of faculty-educated extensionists, extensionists find their education during their student years insufficient. Since rapid developments in technical and economic fields require continuous updating of information, the importance of IST studies in organizations is increasing. Conducting regular IST studies in extension will also increase cooperation with different segments, especially with agricultural research institutes.

The time devoted to the extension has decreased over the years, and the bureaucratic workload has increased. It is not economical in terms of personnel policy for personnel with a high technical capacity to deal with a bureaucratic workload. To provide the expected benefits from the extension organizations, it is imperative to focus on farmer training.

In Manisa, production-efficiency increase in the 1990s, quality improvement in the 2000s, and cost and environmental issues in the 2010s were higher in the extension agenda. Although production-efficiency increase and quality improvement are important due to exports, sustainable development goals should be more widely included in the extension.

In the analyzed period (1996-2017), the number of farmers served by an extensionist increased by 43%. However, this increase is because extensionists, whose numbers have decreased, are employed more like office workers, rather than the increase in the number of farmers in rural areas. The fact that an extensionist served 1794 farmers in 2017 hinders success and widespread influence in extension. Extension not only transmits information but also requires monitoring for observing the changes or unchanged and the reason behind them. It is impossible for the staff, which serves such many farmers, properly manage all extension processes at the desired level. For this reason, it is imperative for the efficiency of extension and the sustainability of agriculture to design an employment policy in a way that an extensionist can serve at most 200 farmers over time.

While the proportion of individual methods of communicating with farmers in extension has decreased, group and mass methods have increased. The use of individual extension methods, which contribute to institutional visibility in rural areas, persuading the adoption of advice, and being aware of local conditions and problems has decreased due to the lessen in the number of personnel, excessive bureaucratic workload, and inadequate transportation possibilities. Although individual interviews increase the economic cost of the extension, they will increase the social benefit and the effectiveness of the extension with the increase in efficiency. For this reason, it is imperative to devote more time to extension, employ more staff, improve transportation opportunities, and establish strong and active communication networks with different segments, especially local actors.

Extensionists' job satisfaction levels have decreased in the study period. As the economic satisfaction of extensionists, their tendency to receive IST and to use individual extension methods increase, and their level of professional satisfaction also increases. Those with high occupational satisfaction allocate more time to extension, use individual extension methods more frequently, and provide extension services to fewer farmers. According to the findings, those who take the time to the extension are more satisfied with their jobs.

Adoption of advice/innovations in extension by farmers is the indicator of success. In Manisa, the rate of adoption of the advice by the farmers has decreased over the years. The continuation of this situation is worrisome in terms of competition and change capabilities of rural areas in the long term. For increasing of adoption rate of farmers, in setting the extension agenda, it is necessary to increase the influence of farmers, increase the time allocated for extension, institutionalize collaborations with different segments, especially research, and markets, and conduct on a program and project basis extension. In project-based extension; activities should be carried out with a team of experts in a certain time and region, identifying objectives, work packages, responsibilities, collaborations, budget, and opportunities, and the results should be evaluated according to predefined indicators.

Data availability

Data will be made available from the corresponding author upon reasonable request.

Author contributions

Conception and design of the study: MB, ÖY; sample collection: MB, ÖY; analysis and interpretation of data: MB, ÖY; statistical analysis: MB, ÖY; visualization: MB, ÖY; writing manuscript: MB, ÖY.

Competing interests

There is no conflict of interest between the authors in this study.

Ethical statement

This research was approved by the ethics committee of Ege University with document number 31-2012, dated 04.10.2012.

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