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IMPACT OF AGRICULTURAL INTERVENTION PROGRAMS ON INCOME AND EMPLOYMENT: EVIDENCE FROM VEGETABLE SECTOR IN KOSOVO

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Abstract

The paper aims to analyse the feasibility of the vegetable crop production in Kosovo by developing a model used to measure the impact of agricultural intervention programs. For this purpose, we have used combination of direct costing (DC) and activity based costing (ABC) to assess the production costs

schemes comparing the two crop modalities extended in the two different regions using different cultivars and different production technologies. This study uses a DC and ABC approach in calculating costs in the pepper and tomatoes' production sectors and in the related agro-processing industries based on five case studies. The results derived from the adopted DC and ABC model in the vegetable sector provide more details and precise cost information that assist various managerial decisions, but are primarily used here to evaluate the impact of agricultural programmes on employment and income generation. It helps government and donors to decide between types of funding intervention programs and to see their impact on agricultural development and employment. Results, which referred to one-hectare area, showed both a higher economic and financial sustainability of good agricultural practice with respect to conventional farming, while the opposite was true in terms of employment effects of intervention programs. The study provides policy implications for both, policy makers and donors when estimating impact of interventions on employment and income levels.

Keywords: direct costing, activity based costing, agriculture intervention program, cost, donor support

1. INTRODUCTION

The agricultural sector calls for a better system of calculation and cost management. Literature suggests there is a need to go "beyond output assessment and profit determination and coordinates a tool that supports the decision-making process' (González-Gómez & Morini-Marrero, 2009). This enables evaluation of impact of the different cultivation techniques and varieties on economic and financial performance of farms. Nowadays, farm managers are required to make informed decisions not only about the most profitable crops, but also about the right level of investment stock in machines and use of external advisory services and management strategies (Bytyqi et al., 2014; Carli & Canavari, 2013b; Carli, Canavari, & Grandi, 2014).

Therefore, the importance of the crop cost evaluation is twofold. On the one hand, it includes facilitating of decision making at farm management level, while on the other hand simplifies the decisions-making of government and donor intervention programs in evaluating the impact of their interventions. The focus of this paper is on intervention programs in agriculture. But, we use direct costing and activity-based costing model for calculating and managing production costs in agricultural firms for evaluating an intervention program that enables to evaluate cost and benefit of intervention. In particular there is a need for more survey-based research on the impacts of intervention on small farmers and how their inclusion may increase income and modernize technologies (Reardon, Barrett, Berdegué, & Swinnen, 2009).

The multiproduct and labor intensive nature of agricultural firms in Kosovo determined by the crop cycle of the output and low-level of agricultural

development with small average farm size and huge involvement of family supplied labor, making it necessary to work with different varieties to optimize firms' productive resources. In this view, it is necessary to apply cost management flexible tools which will be easily adaptable to new products and cultivation techniques (González-Gómez & Morini-Marrero, 2009). In particular, there is a need to adopt activity based costing model in countries where there is a lack of information because of traditional cost systems (Ríos-Manríquez, Colomina, & Pastor, 2014) and unique and complex local context (Luo & Liu, 2014). In this way, managers can overcome informational barriers needed to evaluate their cost advantage by keeping cost control. Equally important, this weak traditional cost system for farmers in Kosovo makes it difficult for government and donor authorities to evaluate the effects of their intervention funding programs and to that end justify their funding channelled for agricultural support. Considering the poor research literature in agriculture in Kosovo because of lack of micro data (Latruffe & Desjeux, 2014; Osmani, Gorton, & White, 2013) there is an important need which calls for more research to respond to dilemmas of agricultural policy intervention in Kosovo (Beilock, 2015). This is particularly important, having in mind that the most pronounced increase in total budgetary support to agriculture was recorded in Kosovo (from 11 million in 2011 to 59.1 in 2015) (see Volk et al, 2017).

To address this gap, the present study employs accounting and financial self-reported data gathered by the Institute for Entrepreneurship and Small Business (IESB) for the project entitled "The Promoting Private Sector Employment (PPSE) program in Kosovo". This project funded by the Swiss Agency for Development and Cooperation (SDC) and carried out by a consortium of Swisscontact, Riinvest Institute and PEM Consult. The program aims at reaching large-scale sustainable impact on employment for young women and men through improved competitiveness of the private sector. The project's, focus is to help small and medium size businesses operating in competitive and well-organized economic sectors, specifically in vegetable production especially for pepper and tomatoes through direct support of local farmers. During February-April 2015, the IESB team has conducted five case studies with agricultural firms to collect data. The underlying theme of the report is crop and product costing aimed at estimating employment opportunities for this sector. The analysis in the report draws on relevant information based on personal interviews self-reported financial data and secondary data, on both, producers and processors of vegetables in Kosovo. In line with direct costing and activity-based costing model the analysis includes all dimensions of crop and product costing, including labor, vegetable cost share in total cost, share of labor cost and finally calculation of gross margins.

The production cost and employment in vegetable sector has been researched by a number of authors. Keskin et. al. (2010) in their analysis of tomato production in Turkey finds that the rate of the labour force and input costs in variable costs in tomato production is calculated as 52% to 78%. They found

that labour costs vary between 34% and 49% in open production, whereas in production under greenhouse conditions labour force costs can decrease down to 6% because of the high input cost. In Tanzania the labour cost constituts 54 per cent of the average total production costs in vegetable sector (Everaarts et.al. 2015). Because of the high share of labour into total cost of vegetable production, the farmers and support programs increased their efforts to advance technologies in order to reduce labour cost (Lancaster, 2009). Lampietti et al. (2009) in their study on Western Balkans show that one of the biggest differences between the Western Balkans and Southern Europe is that a higher percentage of economically active people are employed in agriculture in the Western Balkans (about 20 per cent) than in Southern Europe (about 10 per cent) indicating a deficit of alternative employment opportunities.

The remainder of this paper is organized as follows. Next section provides the context of research. Further on, it discusses the recent literature concerning the intervention programs and reviews DC and ABC in agriculture and its important role for farm management decision-making and evaluating intervention programs in agriculture. Next, it elaborates research design, case study sample selection, and method used to analyze the accounting and financial data followed by the case study analysis. Finally, the paper ends with some conclusions and recommendations for intervention programs to develop both vegetable production and processing industry aimed at boosting employment.

2. CONTEXT: VEGETABLE PRODUCTION IN KOSOVO

In Kosovo, 53% of its territory is agricultural land with small firm size (46% having less than one hectare) and mainly subsistence farming with low levels of investment and production (MAFRD, 2014). Accordingly, the agricultural sector is accounted for 12.0% of GDP and is estimated to employ around 4.6% of labour force. Table 1 presents the data on key agricultural indicators. According to the data reported RS has the largest agricultural area (3.5 million ha), followed by BA, MK and AL. Kosovo together with Montenegro (ME and XK) have relatively small agricultural areas: less than 0.3 million ha each.

Table 1

Key agricultural data, Kosovo and WB countries, 2014

	AL	BA	XK	MK	ME	RS	EU-28
Agricultural area (000 ha) (% of EU-28)	1,201[a] (0.7)	2,163[a] (1.2)	288[b,c] (0.2)	1,263[a] (0.7)	230[d] (0.1)	3,507[df] (2.0)	175,815[d,e] (100.0)
% Agricultural area in total area	42	42	26	49	17	45	39
% arable land in Agricultural area	:	47	59	33	3	74	59
% crops in agricultural goods output[c]	49[f]	63[e]	59	76	:	67	56

a Total agricultural land (administrative data).
b Utilised agricultural area (agricultural household survey). c 2013.
d Utilised agricultural area. e 2010.
f 2012.
:, not available; AA, agricultural area.
Note: WB countries: Albania (AL), Bosnia and Herzegovina (BA), Kosovo (XK), the former Yugoslav Republic of FYR of Macedonia (MK), Montenegro (ME) and Serbia (RS)

Source: Agricultural Statistics Database, in Eurostat, in Bajramovic, et al. (2016)

Vegetable production is one of the main agriculture sectors Kosovo-wide, while in some regions like Dukagjini Valley (especially regions along Drini i Bardhë River) it represents the main economic activity. Open field cultivation is the dominating vegetable production practice. The production of vegetables in Kosovo is primarily concentrated near the rivers, with suitable conditions for irrigation by surface water. Majority of agricultural land is irrigated by surface water (stream, river, lake), 38.4%, and from hydro-system, 31.7%. (Kosovo Agency of Statistics, 2015). [1]

In Kosovo mixed type farms operate, covering production of different varieties. Rarely are there farms specialized for production of vegetables. In the triangle Rahovec – Gjakovë – Prizren, there are specialized farms for the production of vegetables. In this region, livestock fund is poor, and therefore, the use of manure is low.

Arable land in Kosovo comprises 43.6% of total utilized agricultural land. 113,231 agricultural holdings are engaged in the production of arable crops. On average, the agricultural holdings with arable crop production cultivate 1.6 ha of arable land (Kosovo Agency of Statistics, 2015). In Kosovo, there are a few vegetable crops and cultivars. The dominant crops produced in Kosovo are pepper, tomatoes, onion, cabbage, and watermelon. These five types of crops cover more than 60% of areas with vegetables in Kosovo. Kosovo Agency of

[1] According to the Kosovo Agency of Statistics (2015) out of the total utilized agriculture area, 5.5% is irrigated (22 888 ha).

Statistics (2015) reports that structure of vegetables on agricultural holdings is mainly comprised of peppers (38.2%), tomatoes (8.3%), onions (15.6%), and cabbage (8.3%).

There are some tendencies to improve the assortment through the introduction of new hybrids for main crops produced in Kosovo. Some positive trends are noticed in production of tomatoes, cucumber, and cabbage, while with regard to pepper production these improvements are only minor. These changes in vegetable production are linked with the consumption tradition, because some cultivars like Somborka and K. Kapia are most preferred in consumption (especially for pickles or processed food).

According to Kaçiu (2008) open field vegetables are concentrated in the Anadrine valley - a triangle between Rahovec, Jakova and Prizren. More than 3,000 ha of peppers are grown there (out of the total 5000 ha). The production of pepper for longer periods in the same land area created difficulties in crop production management. Kaçiu (2008) suggests that the problem is in farmers not seeing alternative crops, as more than half of the area is under pepper, and farmers use the same land for 2 – 3 years consecutively with no crop rotation practices, while with only 1-2 cows per farm, there is not enough manure.

The vegetable processing industry in Kosovo has a long tradition. This tradition is mostly related to the former socially-owned enterprise "Progress" vegetable processing industry located in Prizren. Despite this fact, in Kosovo, there is no specialized production for the processing. Production of pepper, tomatoes, cabbage, and other types of vegetables that cannot be sold for fresh consumption are sold for processing purposes of the industry. All the processed quantities mentioned above are supplied by the local producers, except for the chilli peppers, which are imported from FYR of Macedonia (at a price of 0.30-0.40 Euros) (Kaçiu, 2008). During August and September at the peak of pepper production, it is impossible for the processing companies to absorb all the produced quantities of pepper from the field, even though processing capacities are high. On the other hand, there is lack of local chili peppers production, which could be a good opportunity for the farmers who are interested to specialize in this production. (MAFRAD, 2002; Kaçiu, 2009)

3. INTERVENTION PROGRAMS IN AGRICULTURE

Recently there has been a renewed interest among donors and domestic policy makers in promoting agricultural development in Kosovo. Such renewed interest is evident in recent initiatives of different donors and agencies including government such as New Opportunities in Agriculture (NOA) a five-year program funded by the United States Agency for International Development (USAID), the Agriculture and Rural Development Project (World Bank), The Promoting Private Sector Employment (PPSE) program in Kosovo" funded by the Swiss Agency for Development and Cooperation (SDC) and several central

and local government initiatives in provision of grants or extension services to support agricultural sustainable development. For example NOA focuses on improving farm production and processing; increasing linkages to domestic, regional, and international markets; and strengthening strategic partners for growth.[2] NOA's strategic partners include large-scale aggregators (collection centres, pack houses, and processors), commercial farmers, producer and processor organizations, and public sector institutions that provide support services.

Nonetheless, the choice of policy instruments that are the most suitable to promote agricultural development remains subject to a debate in Kosovo. The cornerstone of the debate in this area is to analyse the role that the policy beliefs of different actors play in deciding policy choices and policy implementation, a theme that has been largely neglected in the agricultural economics on the political economy of agricultural (Mockshell & Birner, 2016). Nevertheless agriculture is regaining its importance now again in the headlines because high food prices are increasing food insecurity and poverty and it will be essential to increase food production in developing countries (Dethier & Effenberger, 2012). Kosovo is not an exception.

In particular, there is a need for new empirical evidence to respond to current debate on whether and how much to do intervention programs in Kosovo. Some authors advocate rethinking agricultural and rural development in Kosovo and oppose the direct subsidization of framers (Beilock, 2015). He argues that the potential of Kosovo's agriculture is severely limited for growth because its agricultural industries benefit from low or no trade barrier polices with other countries, which means that there is high competition from neighbouring countries and subsidization of agriculture by their respective governments. On the other hand, there is an argument that there is need for specialised programmes that are expected to build new competitive advantages in some agricultural sectors. Beilock (2015) argues' that here is both current dependence upon small-scale agriculture and the need to set the stage for making agriculture more competitive through restructuring. These two realities create dilemmas for the government and donors. Measures to sustain and improve agricultural production by small farmers can alleviate current poverty, but may delay restructuring of agricultural sector. Besides, the attempts to make sustainable rural development may involve a shift away from agriculture's traditional 'core' activities (production of food) (Van der Ploeg, 2000) in other non-agricultural activities. This makes even more difficult for policy makers to decide about intervention programs. As agricultural sources of income remain critical for rural households for livings in all countries (Davis et al., 2010) and for Kosovo's present economic development is even more prominent. This is because the agricultural sector is facing several obstacles which reduce competitiveness of farm products within the markets of the region (MAFRD, 2014). They argue that subsidized

[2] See http://www.tetratech.com/en/projects/agricultural-growth-and-rural-opportunities-activity-in-kosovo. The recent launch in 2015 includes budget of $11.8 million.

agricultural products from countries which export to Kosovo are putting local producers in an unfavourable position, which therefore cannot compete with imported products. Most troubling is the increase in unemployment among youths and long-term unemployment. The government of Kosovo consider that these farms need support from different programs to improve the competitiveness of the agriculture sector in Kosovo, to create new jobs and replace the imports with local production. Therefore, the focus of the remainder of the paper will be on evaluating the impact of PPSE on income and employment in specific sectors in Kosovo, and therefore contribute to this growing debate on policy dilemmas of intervention.

3.1. Direct costing and Activity-based Costing

Direct costing is an accounting practice that is oriented at charging variable costs to products (Siegel & Shim, 2000), whereas ABC methodology has been developed to face the increasing level of fixed costs in the modern companies (Collier, 2015; Cooper & Kaplan, 1988; Nolan, 2004). According to Dierks and Cokins (2000) the cost allocation to products is complex and ABC has been developed as "a methodology that measures costs and performances of activities, resources and cost objects, assigns resources to activities and activities to cost objects based on their use, and recognizes causal relationships of cost drivers to activities". We use this accounting logic to allocated costs based on activities especially for agro industries where there is large number of complex products. An ABC cost system make possible to allocate the overhead cost between different products within the company. This is done by first, assigning the certain activity a resource in order to be completed and then it estimates the cost, which will be distributed to number of products. In agriculture in general and in Kosovo in particular, the ABC can prevent some product cost related informational distortions that arise from traditional accounting systems which allocates the overhead (indirect costs) arbitrarily, usually in proportion to an activity's direct cost (Carli & Canavari, 2013a, 2013b).[3] This is typical for agricultural production in Kosovo. They argue that, traditional systems create higher distortions when there are complex production structures (large number of products and services) that need to assign large general costs. Therefore, this line of literature suggest 'the combination of DC and ABC enables to analyse cost supporting detailed analysis based on a precise view of the cost of the single crop, considering its relative use of machinery and human resources'. Therefore, in this study we used combination of direct costing and activity-based costing together with financial and accounting data analysis approach (Iotti & Bonazzi, 2016) to estimate crops costing in Kosovo.

[3] For more information about the financial and management practices of private sector in Kosovo see Krasniqi (2010, 2012, 2014), Krasniqi and Mustafa (2016), and Lajqi and Krasniqi (2017).

4. MATERIALS AND METHODS

We follow direct costing and activity-based cost logic and principles to collect date in order to measure financial and employment impact of international agricultural intervention programs. It adopts case study method combined with series of interviews and meetings with farmers and agro-processing companies and collection centres. The first phase of research consisted of secondary research on crop and product costing based on previous studies especially for pepper and tomatoes production in Kosovo and elsewhere. Research team collected and analysed data from various institutions (association of producers and processors, selected municipalities, research reports and official statistics of Ministry of Agriculture Forestry and Rural Development - MAFRD, international agencies, etc.). Then, a workshop with PPSE project team is organized to discuss aims, issues, and research study method. This workshop helped IESB research team to clarifying the methodological approaches used in this study such as sample selection and especially cost template questionnaire.

The study used purposive nonprobability sampling technique, in which an 'experienced individual selects the sample based on his or her judgment about some proper characteristics needed of the sample member' (Zikmund, Babin, Carr, & Griffin, 2012). We have selected samples that satisfy specific purposes (farmers in different regions), even if they are not fully representative of vegetable sector, both producers and processing companies to capture two main agricultural regions and cultivar varieties (see Bonhee, Arshad, Kusari, and Shaufique (2016) for similar approach. These two selected regions of vegetable production were Anadrini region (triangle between municipalities Rahovec, Gjakovë, Prizren), and Anamorava region (Mogilla). We have used these two regions in order to achieve higher variance in the data as these regions differ in terms of technology use for production of the crops. For data collection for the tomatoes and papers and other specific crops specialized regions well-known for producing tomatoes were selected (Collection Center). In addition, to increase variation in data collected we analysed production cost of three types of farmers/companies: small-scale family owned farms, association of individual processors (for example Women Association) and processing companies with larger industrial capacities.[4]

In this study, we used activity-based costing and comparative analysis based on best agricultural practice for pepper[5], meaning that farmer has applied professionally new agricultural techniques of cultivation (starting from hybrid seed, qualitative seedling, satisfactory use of fertilizers, irrigation, pesticides,.). This data has been used with aim to analyse growth potential of this sector to create income and employment for farmers. All types of worker engagements

[4] Full list of interviewees and company details is available for request. It remains anonymous throughout the paper because of sensitive information.
[5] Kaçiu, S. (2008). Study of the current situation of pepper production in Kosovo, Intercooperation, Prishtine.

(part-time, seasonal) have been converted into full time employees. To create employment yearly figures we used calculation of full time employment based on 240 working days per year equivalent to one full time employee. Part time employee is calculated at rate of 50% of full time employees (120 working days).

The case studies were done based on series of face-to-face interviews and visits to selected companies. Several meetings were done with the key decision makers in each farm or company, mainly owner/managers or financial managers. The authors of this paper prepared a cost questionnaire template for both producers and processors. The questionnaire has been revised several times and tested with companies to ensure it fits cost structure and activity based costing in each company. Cost structure includes cost items such as labour by gender[6], raw material and inputs (pepper or/and tomatoes), and other direct and indirect costs. The collected financial data is expressed in Euro currency. The activity-based costing model is developed in excel sheet for easer communication, calculation and revision of data and is also available as a template for future application by international donors in Kosovo or similar contexts.

The first phase of the field visit is used to deliver and provide detailed explanations of questionnaire and excel template to farmers/producers. This helped research team to avoid possible misunderstandings or excluding certain cost items in ABC model. In addition, during the interviews we have completed questionnaire with information provided by interviewees on company characteristics, their perspective on the business opportunities and occasionally on plans for expansion, strengthening the overall findings. In the second phase, farmers and producers sent back their ABC final template in excel. After careful analysis, screening, and consistency checking of financial data the research team has visited again companies for further clarifications and extra information about specific cost items. Finally, visits to companies were used to confirm financial performance and employment figures produced by ACB financial model in excel. Next section discusses case studies based on DC and ABC models.

5. CASE STUDY 1: PRODUCTION OF PEPPER FOR PROCESSING

There is no distinction in production of pepper for processing industry and fresh consumption purposes in Kosovo. The dominating varieties in pepper production in Kosovo are old and not satisfactorily productive. Somborka, K. Kapia and D. Bella. There is no hybrid found for wider production. Moreover, very frequently producers of this type of peppers use seed from produced from their regular production, especially for Soborka and K. Kapia. In the Anamorava region, instead of K. Kapia farmers use cultivar Amanda. Interviews with farmers in village Mogilla show that in this region K. Kapia cannot be grown. Seeds

[6] The breakdown of labour data by gender is done because the intervention program aimed at improving gender involvement in agriculture, too.

produced in this way undergo no control or preplanting treatment. Undoubtedly, all these shortages significantly influence the pepper production yields and time of ripening of the final crop.

Utilizing such (traditional) seed influences the likeliness of many difficulties in production (presence of diseases, different degradation processes, lack of growth) which naturally has an effect in the decrease of the yields as well as in a lower quality of the fruits. The traditional way of producing seedling results in low quality. Almost, none of the interviewed farmers (during our fieldwork) uses production of seedling in modules. In addition, transplanting seedlings is done with bear rooted seedlings. There is no need for a big investment in order to correct these "shortages" in seedling production. The key to correct these "shortages" is a better and more professional caretaking practice in seedling production. There are different methods of transplanting of seedlings in open field. In the Anadrini region, manual transplanting is most common method while machinery-based seedling transplantation is very rare. The opposite holds for Anamorava region. In order to increase yield it is necessary to promote modern technology of seedling production. In Kosovo, there are no specialised greenhouses for production of seedlings - there is a need for intervention support for development of nurseries. This has a vital role not just for vegetable production for processing industry, but also for vegetable produced for fresh consumption market.

In regions where pepper production is widespread, only 30-40% of farmers use organic fertilizer. The main reason why farmers in these regions do not use organic fertilizer is that their families usually own a small farm animals stock. Most farm families own 1-2 heads of animal stock, which is too little to fulfil the needs for organic fertilizer in pepper cultivation. In cases when farmers use organic fertilizer, they usually buy quantities in other regions. The fertilizers that farmers use are based on their own free judgment.

Irrigation of the pepper plants is done based on farmers' own judgment. In regions with irrigation (Anadrini), farmers irrigate more often. The difference in irrigation cost is very high. While in regions with established irrigation system (Anadrini), irrigation cost is around 120 Euro/ha, in the Anamorava region (in Mogilla) is roughly six times higher (See Table 1 and 2 for cost of production). There are few cases of drip irrigation use in open field pepper cultivation.

Weeding is regularly applied in pepper production. Usually 2-4 hoeing between rows are practiced. Depending on the producer, hoeing is done by hand or by using machines. This takes place until the area between rows is wide enough to allow for weeding. This is useful not only because it helps in making the soil friable, but also because most farmers do not use herbicides or black mulch between the rows. Protection from diseases, pests and weeds is done without prior planning. Preventive protection measures take place in very few cases.

Based on the collected data from the field, we did not identify commercial producers of pepper for milling purposes. Almost, none of farmers does not keep written evidence of production and other farm – related cost. For this reason, there is no exact data of yield. Therefore, their calculations are based on the quantity sold and based on this quantity they calculate yield per hectare, which means that not all quantity produced is sold. Yield rates vary depending on the region, growing conditions and technology, and the general care of production.

Harvesting starts at different times of the year depending on the location. Cultivars used for processing (K. Kapia and Amanda) usually harvest 2-3 times. In general, harvesting is an activity that influences heavily on the cost of production. According to the majority of the pepper producers, harvesting requires about four full-time workers during the two and a half months of pepper harvesting period. Even though harvesting is considered an "easy" activity in pepper production and all the farm family members are involved in it, still it represents a heavy burden for the pepper cost of production.

5.1. Cost of pepper production

In this section, we discuss cost of production for two varieties of pepper based on ABC model; both of them produced using traditional technology. Differences in cost structure of production are not significant, except in regions where costs of irrigation and rent are high and it makes some differences in the cost of production. However, regarding the different cultivars used, there are no notable differences. Pepper production in the way the PPSE wants to support farmers (with hybrid seeds and best agricultural practices) will lead to higher profitability, income and employment (see Annex 3 for comparative data for production of pepper in two regions).

The total cost of production for the present production system (in first case – Mogilla) is € 6.967,60[7] . The value of land rent would be an extra 300 Euros. Considering an average pepper sales price of 0.30[8] Euros/kg the gross profit per hectare would be € 533 /ha not including land rent. If we consider that the farmer is not renting the land and that 70 % of farm labour is done by family members, the total income for the farmer family would be €2.170 /ha, or with his land 2,702.34 €/ha.

The higher irrigation cost in Anamorave has a significant impact on the total income from production of pepper (around 700 Euros) compared to Anadrini region (120 Euros). Similarly, the paid labour force (excluding family members) is very high (30%) compared to Anadrini Region where majority of works is done by family members. This is because the larger family size of Anadrini Region compared to Anamorava where family size is smaller.

[7] Without rent

[8] In contrast to Anadrini region, the producers of the Anamorave region have longer production tradition of this type of pepper. Average yield is higher and this enables to sell at higher prices because they are able to avoid the hyper-production days for this cultivar.

Table 2

Traditional pepper production, K. Kapia, Mogilla

	Area 1 hectare				
		Unit	**Quantity**	**Price (€)**	**Total (€)**
1	**Revenue**	kg	25,000	0.30	**7,500.00**
	Costs				
	Inputs (including packaging e.g. nets or bottles)				3,367.66
	Labour	Day	240	12.92	3,100.00
	Machinery (costs of fuel considering that bigger farmers that target processors have tractors and attachments)				500.00
2	**Total cost of production**				**6,967.66**
3	**Gross profit *(1-2)***				**532.34**
4	**Income with family labour (70% of labour costs)**				**2,170.00**
	Total income *(3 + 4)*				**2,702.34**

Source: Authors' own calculation

In a per hectare basis, the cost of production for the present production system (in second case – Anadrini, Table 3) is € 5262. The value of land rent would be an additional 600 Euros. Considering an average pepper sales price of 0.25 Euros/kg the gross profit per hectare would be € 838 /ha not including land rent, or € 238 /ha should we deduct land rent. If we consider that the farmer is not renting the land and that 90% of farm labour is done by family members, the total income for the farmer family would be € 1,800.40, /ha, or with his land 2.400,4 €/ha

Table 3

Traditional pepper production, K. Kapia, Anadrini

	Area 1 hectare				
		Unit	**Quantity**	**Price (€)**	**Total (€)**
1	**Revenue**	kg	22,000	0.25	**5,500.00**
	Costs				
	Inputs (including packaging e.g. nets or bottles)				2,776.00
	Labour	Day	240	7.23	1,736.00
	Machinery (costs of fuel considering that bigger farmers that target processors have tractors and attachments)				750.00
2	**Total cost of production**				**5,262.00**
3	**Gross profit *(1-2)***				**238.00**
4	**Income with family labour (90% of labour costs)**				**1,562.40**
	Total income *(3 + 4)*				**1,800.40**

Source: Authors' own calculation

6. CASE STUDY 2: PRODUCTION OF TOMATOES

Since decades ago, there is no production of tomatoes for industrial processing purposes. Although, there are initiatives to promote the production of this type of tomatoes but without success. It is worth mentioning that during the period of former Yugoslavia, Kosovo produced up to hundreds of hectares with this cultivar, primarily for the purposes of vegetable processing industry in Prizren. The protected areas (various types of greenhouses) compose a dominant form of producing tomatoes. Farmers producing tomatoes in this way, usually supply the processing industry with unsold quantities of tomatoes in the market. Under these circumstances, processors face obstacles in their supply chain, and the quality of the supply with tomatoes is inadequate for their processing standards.

In comparison to pepper production, producing tomatoes noted a significant progress using hybrid seedlings and good agricultural practice (GAP) technology.[9] Because of this, the average yields are comparably higher. In the period of production, harvest of tomatoes begins during the first week of June and lasts until the end of September, depending on the growing conditions. While the harvest for tomatoes produced in the open field begins in the second week of June and lasts until the end of September.

The period of the tomato production is limited from the climate conditions of the region as well as greenhouse technology. There are no major differences and variations in the harvest period of tomatoes during the years, but the high production takes place in July and August. This is because the harvest of tomato produces in the open field and in the protected areas concur. Similarly to the production of other vegetables in Kosovo, the production of tomatoes depends on the imported inputs.

After harvesting, the tomatoes are delivered to the market within the short period of 1-2 days. Finalization of the quantities in the market is reasonable because farmers do not have a well-organized system for collection and storage of large quantities of tomatoes. Packaging is mostly done in wooden boxes of 5-6 kg. Transportation of tomatoes to the market or to the processing company is done by different types of trucks. Usually, trucks used for transportation of tomatoes do not have the equipment for the controlled tomato transport. Based on the farmers' estimates, the distance from farm to farthest market in Kosovo does not exceed more than 2 hours of drive. According to them, the distance does not have an effect on reducing the quality of tomatoes.

There is a lack of cooperation agreements between tomato producers and processors. The main reason for this are limited capacities of producers/farmers and fresh consumption of tomatoes. The quantity of produced tomatoes still does not satisfy

[9] We refer to Good agricultural practices (GAP) when we use term modern technology in this paper. GAP are Practices that address environmental, economic and social sustainability for on-farm processes and result in safe and quality food and non-food agricultural products. FAO Committee on Agriculture (COAG), Nineteenth Session, Rome , 13-16 April 2005; "Sustainable Agriculture and Rural Development (SARD) and Good Agricultural Practices (GAP)" COAG 2005 SARD GAP paper.

the market needs for fresh consumption, and therefore has an implication for the supply of processing industry. Another indicator is a limited area of production per farm, resulting in lower levels of quantity left for processing industry.

6.1. Tomatoes - Cost of production

Because there is no commercial production of tomatoes for processing, the single source of data was Collection Center that cooperates with producers of this type of tomatoes. Collection Center's calculations points to higher average yield. However, yield could be even higher if we consider the use of hybrid seedlings in large areas of production (the yield can arrive at 55 t/ha[10]).[11]

Producing this type of tomatoes does not need large investments and especially does not need large number of labour. In this case, net profit is 1.322 Euro/ha and if we calculated that 90% of work is done by family labour supply, then the profit margin would be 2.555 Euro (Table 4)

Table 4

Tomatoes for processing[12]

	Area 1 hectare				
		Unit	**Quantity**	**Price (€)**	**Total (€)**
1	**Revenue**	kg	55,000	0.08	**4,400.00**
	Costs				
	Inputs (including packaging e.g. nets or bottles)				1,498.00
	Labour	Day	240	7.23	1,370.00
	Machinery (costs of fuel considering that bigger farmers that target processors have tractors and attachments)				210.00
2	**Total cost of production**				**3,078.00**
3	**Gross profit *(1-2)***				**1,322.00**
4	**Income with family labour (90% of labour costs)**				**1,233.00**
	Total income *(3 + 4)*				**2,555.00**

Source: Authors' own calculation

[10] The authors' opinion here is based in their previous experience.

[11] In neighbouring countries, it is not very popular for processors to work with farmers through collection centres, because this increases cost of production of processors. However, in Anadrini case, the collection centre is functioning well because we have small average size of firms and for processors it is difficult and costly to make contracts with small farmers. The average cost of per kg of vegetable (excluding packaging) is around 0.02-0.05 Euros. The average employment engagement per 1 ton of vegetables is one full time employee. The average employment cost in collection centre is 13.6 Euros per day (300 Euros per month at rate of 22 days per month). However, the evidence on the impact of intervention policies remains scarce and the outcome may vary (Ingram & Oosterkamp, 2014).

[12] It is estimated that the farmer has its own mechanization and land, while the price of hybrid type of seedlings is not calculated because farmers planned to use seedlings provided by processors. Based on this information, the overall profit is calculated (revenues based on 90% family labour) to be around 850 Euros lower.

6.2. The share of labour in the production of pepper and tomatoes for processing

The share of labour cost in total cost of production is high (around 45%) in the vegetable production because of low-level of mechanization. Low productivity of producers of pepper has a significant impact in lowering their profits. On the other hand, the use of modern techniques in growing these vegetable would double the yield and gross profit. It is important, that, processors encourage and influence producers to introduce new hybrids, modern technology, and better crop management practices.

All family members, including women, are engaged in the fieldwork. Based on the collected data, the share of women in the fieldwork varies. For example, in the village Mogilla, the share of women in the production of pepper is 30%, mainly working in the harvesting period. In the Anadrini region, the share of women labour in production is around 50%. Their share in caring for seedlings is 40%, while in harvesting is 60%. However, the employment generation for this sector is promising. Taking into account that profitable opportunities for this sector are not fully utilized (around 50%)[13] and considering the high motivation of women to take up employment opportunities, the further support of this sector would promote the employment of women in rural areas.

7. CASE STUDY 3: COST OF MILLED PEPPER PRODUCTION

Based on the interview with milled pepper producers there is no single producer of pepper for milled pepper production. The company relies heavily on imports of pepper for milled purposes from Serbia. Generally, the raw material (pepper) is imported as a semi-finished good that further is processed in final products. Therefore, last year there was an initiative of the Company to provide free seedlings of this type of pepper for selected producers, which agreed to cooperation agreement.

Table 5 reports a cost structure of producing milled pepper. This profile envisages the processing and packing of pepper with a capacity of based on 1000 kg pepper processing. A 1/3 of milled pepper is produced from a quantity supplied of fresh pepper from farmers. It is worth mentioning that Serbia remains the main supplier of pepper for the milled pepper production.

Despite the modern technology used in producing milled pepper the share of labour cost on total cost of production remains very high (around 26 %) suggesting a high potential for employment generation. In addition, the share of fresh pepper on total cost for producing milled pepper is 32%, suggesting the supporting this sector will have a large impact on developing pepper production for milled purposes, creating a multiplier effect on employment. Based on calculations, a unite change (increase) in

[13] Author's own estimations

sales generated from milled pepper producers leads to 1/3 increase in sales from producers or farmers of this specific pepper cultivar for this industrial purposes. A big concern of processor remains both high price (0.35 Euros) of pepper and limited supply. Therefore, there is a need for introduction of new cultivars in pepper production. The small area of average farm size with this type of paper is a cause for concern for both quantity and prices.

Findings from the interviews suggest a huge market potential for this product and therefore affect both processing and production. The unit-selling price at 4.20 euros compared to unit cost of production of 2.7 Euros, marks high gross profit margin of around 36 per cent. On the gender share in total labour data show that the share of women in total employment is around 20 per cent, this may suggest that despite encouraging potential for employment the female labour participation remains a concern.

Table 5

Cost of milled pepper production

Qty for processing (1000 kg pepper)	**Unit price**	**Quantity**	**Total (Euros)**	**Labour involved**			
				Full time		**Part time**	
Materials				**F**	**M**	**F**	**M**
Peppers (kg) purchased	0.30	1000	300.00				
Oil (litter)	1.00	6	6.00				
Salt (kg)	0.25	2	0.50				
Sugar							
Electricity (KW)	8.33	500	60.00				
PACKING	1.25	20	16.00				
Labour (Days)							
Cleaning and drying	15	3	45.00		3		
Baking	15	2	60.00		4		
Cleaning the skin							
Milling	15	2	30.00		2		
Cooking	15	1	45.00		3		
Filling the jars	15	1	30.00		2		
Storing	15	1	30.00		2		
Other work							
Indirect cost							
Administration			80.00	5			
Machines			40.00				
Receiving			15.00		1		
Packing			30.00		2		
Engineering			65.00				
Insurance							
Utilities			15.00				
Other (Depreciation)			50.00				
Total Cost of production			**917.50**	**5**	**19**		
Total Quantity produced			333.00				
Cost per unit (Kg)			**2.76**				
Selling price (kg)			**4.20**				

Source: Authors' own calculation

8. CASE STUDY 4: COST OF TOMATO SAUCE PRODUCTION

Tomato ketchup is a flavoured product processed from sorted, washed, and fresh whole tomatoes and hot fruits. Although tomatoes are one of the most widely grown vegetables in Kosovo, their production for industrial purposes remains limited, as discussed in previous sections. Several intensive and interlinked operations in the production process of tomato sauce include washing, crushing, concentrating, homogenizing, flavouring, bottling and/or canning, packing and dispatching.

The share of total cost tomatoes in the total cost for production of tomatoes sauce is 48%, reinforcing the argument that the development of processing industry will have tremendous impact on producers and farmers. In marginal terms, a unit change increase in production of tomatoes sauces will lead to ½-unit increase of production of tomatoes. However, the major concern of processors remains the limited supply side capacities of producers. Moving, from traditional cultivars to industrial type cultivars would enable famers to increase their sales.

Table 6

Cost of tomatoes sauce production

Qty for processing (7,000 kg pepper)				**Labour involved**			
			Total	**Full time**		**Part time**	
Materials	**Euros/unit**	**Quantity**	**cost**	**F**	**M**	**F**	**M**
Tomatoes (kg)	0.10	7,000.00	700.00				
Salt	0.15	15.00	2.25				
Preservatives	5	1.00	5.00				
Sugar							
Gas/coal	60	2.00	120.00				
Electricity	0.17	750.00	127.50				
PACKING	0.26	1,000.00	260.00				
Labour			140.00				
Cleaning and drying	7	5.00	35.00		2	3	
Baking							
Cleaning the skin	7						
Milling	7	3.00	21.00		3		
Cooking	7	2.00	14.00		2		
Filling the jars	7	6.00	42.00	6			
Storing	7	4.00	28.00		4		
Other work							
Indirect cost							
Machines	1	10.00	10.00				
Receiving							
Packing	7	8.00	56.00	6	2		
Engineering							
Insurance							
Utilities	5	1.00	5.00				

Other (Depreciation)	10	1.00	10.00				
Total Cost of production			1,575.75	12	13	3	0
Total Quantity produced (packs)			1,000.00				
Cost per unit			1.58				

Source: Authors' own calculation

In terms of employment, the share of labour cost in total production cost of tomato sauce is relatively small (around 9%). However, the potential of export for this product noted encouraging trends, indicating that despite the low share of labour the potential for increase in volume of production can have an impact on employment generation. Data show that the share of women in total number of employees in this production is 53% (both full time and part time). From all three seasonal part time employees all of them were women.

9. CASE STUDY 5: COST OF AJVAR PRODUCTION

In this section, we use ABC to estimate income and employment generation in two types of industries using modern and traditional technology.

9.1. Cost of ajvar production using (modern technology)

The production of ajvar involves sequence of different production operations such as cleaning and drying, baking, removing the skin, milling, cooking, filling the jars and storing. The share of total cost of peppers in the total cost for production of ajvar is 27.4 %, while share of labour cost in total cost is 22 percent (Table 7). In marginal terms, a unit change increase in production of ajvar will lead to almost 27.4 percent increase in the production of peppers. However, the major concern of processors remains the limited supply of producers to satisfy the needs of processors.

Table 7

Cost of ajvar production

Qty for processing (1000 Jars)				**Labour involved**			
				Full time		**Part time**	
Materials	**Euro/unit**	**Qty**	**Total cost**	**F**	**M**	**F**	**M**
Peppers (kg) purchased	0.18	1500	270.00				
Oil	1.10	20	22.00				
Salt	0.15	15	2.25				
Sugar							
Gas/coal	60.00	2	120.00				

Electricity	0.17	750	127.50				
Jars	0.13	1000	130.00				
Labour							
Cleaning and drying	7.00	10	70.00	5		5	
Baking							
Cleaning the skin	7.00	3	21.00		3		
Milling	7.00	3	21.00		3		
Cooking	7.00	3	21.00		3		
Filling the jars	7.00	6	42.00	6			
Storing	7.00	4	28.00		4		
Other work	7.00	3	21.00	2	1		
Indirect cost							
Machines	2.00	10	20.00				
Receiving							
Packing	7.00	8	56.00	6	2		
Engineering							
Insurance							
Utilities	5.00	1	5.00				
Other (Depreciation)	10.00	1	10.00				
Total cost of production	134.73		986.75	19	16		-
Total production (Jars)			1,000.00				
Unit cost of production			0.98				

Source: Authors' own calculation

In terms of employment, women's share in total full time employment is around 54 percent, and 100 percent in total part time employment, respectively. This finding suggests important employment opportunities, especially for women. To illustrate, if production of ajvar doubles, then, the expected increase of employment is 22 percent. Within the 22 percent, increase of labour female participation would be more than half. The ajvar production has potential for market growth, including export, therefore is promising in generating employment.

9.2. Cost of ajvar production using (traditional technology)

Traditional technology of production of ajvar involves more labour than production based on modern technology. Traditional technology has been based on long tradition of women in Kosovo. The selected company sells its products in various fair-trades and other food events, which were organized by MAFRD, ABK and Economic Chamber, etc. They sell their products also to various individual consumers in the surroundings of Krusha e Madhe and to major trade centres like ALBI, Ben AF, Maxi, Interex, Nertili, Liridon, etc. They usually have predetermined signed contract with trade centres for supply with ajvar.

Table 8 presents cost structure of production of ajvar using traditional technology: pepper (raw material) 39%, labour 21.50, and other 39.05. Compared to modern technology production of ajvar we can notice that there are differences in terms of engagement. Almost 100 percent of labour (both full and part time) is women (only one male employee) suggesting that this technology of production

is fully based on women labour. A total number of employed is four full time females and one male we well as 15 seasonal part time workers. Having considered the product penetrated successfully into the market, it has potential for future growth. A unit cost of production of ajvar is 3.07 Euros, which is very high compared to modern technology production unit cost (around 1 Euros). The profit margin for production of ajvar is more than 30 per cent.

Table 8

Cost of ajvar production, traditional technology

Qty for processing (90,000 kg)				Labour involved			
				Full time		Part time	
Materials	**Euro /unit**	**Qty**	**Total cost**	**F**	**M**	**F**	**M**
Peppers (kg) purchased	0.30	90,000	27,000.00				
Oil	1.1	6,500	7,150.00				
Salt	0.4	750	300.00				
Sugar	0.5	750	375.00				
Gas/coal							
Electricity			950.00				
Containers/Jars/ PACKING			6,250.00				
Labelling			1,562.50				
Wood for boiling	50	80	4,000.00				
Labour			14,795.00	4	1	15	
Cleaning and drying							
Baking			2,450.00				
Cleaning the skin			2,150.00				
Milling			850.00				
Cooking			3,545.00				
Filling the jars			960.00				
Storing			1,240.00				
Other work			3,600.00				
Indirect cost			6,760.00				
Machines							
Receiving							
Packing			2,350.00				
Engineering			1,800.00				
Insurance							
Utilities			420.00				
Water supply			90.00				
Depreciation			450.00				

Other			1,650.00				
Total cost of production		-	69,142.50	4.00	1.00	15.00	-
Total production			22,500.00				
Unit cost of production 1 Kg			3.07				
Quantity produced		Quantity (kg)		Jar 720 gr	Price per Jar	Total revenue	
Hot baked ajvar		11250		15625	3.30	51,562.50	
Mild baked ajvar		11250		15625	3.30	51,562.50	
Total revenues		22500		31250		103,125.00	
Cost of product sold						69,142.50	
Profit before tax						33,982.50	

Source: Authors' own calculation

This company with same equipment and labour inputs produces the pickles with yogurt. However, the profit margin for pickled peppers in yogurt (21percent) is lower than producing ajvar (30 percent).

Table 9

Cost of production of pickles with yogurt, traditional technology

			Labour involved			
			Full time		**Part time**	
	Total cost	**Qty**	**F**	**M**	**F**	**M**
Materials	**49,551.34 €**					
Peppers (kg) purchased	24,000.00 €	80,000	4	1	20	
Oil						
Salt	380.00 €	950				
Sugar						
Milk	8,000.00 €	20,000				
Gas/coal						
Electricity	750.00 €					
Containers/Jars/ PACKING	14,737.10 €	21,053				
Labelling	1,684.24 €	21,053				
Labour	10,040.00 €					
Cleaning and drying	2,540.00 €					
Baking						
Cleaning the skin	3,500.00 €					
Milling						
Cooking						
Filling the jars	1,650.00 €					
Storing	1,240.00 €					

Other work	3,650.00 €					
Indirect cost	6,970.00 €					
Machines						
Receiving						
Packing	2,560.00 €					
Engineering	1,800.00 €					
Insurance						
Utilities	420.00 €					
Water supply	90.00 €					
Depreciation	450.00 €					
Other	1,650.00 €					
Total cost of production	**66,561.34 €**					
Total production	40,000.00 €					
Unit cost of production (2.7 kg)	**1.66 €**					
Quantity produced		Quantity (kg)	**Jars 2,7 Kg**	Price per Jar	Total revenue	
Babura with yogurt		20,000	10526	4	42,105	
Somborka with yogurt		20,000	10526	4	42,105	
Total		40,000	21053		84,211	
Cost of product sold					66,561	
Profit before tax					17,649	

Source: Authors' own calculation

SUMMARY TABLE: EMPLOYMENT AND INCOME PROJECTIONS

In the table below, we have estimated the income and employment projection based on one ha area of production of different crops, collection centre and processing activities.

Table 10

Summary Table: Employment and income generation projections

Reference table	Quantity per ha area	Production			Employment (percentage share)				Reference table	Processing			Employment (percentage Share)					
		1 ha area	Income (Euros)	FT employee*	Full time		part time				Income	FT Employee	Full time		part time		total FT employees (production processing)
					M	F	M	F					F	M	M	F	
Table 1	22000	Pepper with traditional technology	2,170	1	0.5	0.5			Table 5	milled pepper	n/a	2	0.8	0.2			3
Kaciu (2009)	40000	Pepper with best agricultural practice	6,500	2.5	0.5	0.5			Table 7	ajvar/industry	n/a	1.3	0.5	0.5			3.8
Kaciu (2009)	40000	Pepper with best agricultural practice	6,500	2.5	0.5	0.5			Table 8	ajvar/traditional	n/a	3	0.9	0.1			5.5
Table 2	55000	Tomato with traditional technology	2,555	1	0.5	0.5			Table 6	Tomatoes sauce	n/a	0.7	0.48	0.5			1.7
Kaciu (2009)	80000	Tomato with best agricultural practice	3,700	2	0.5	0.5			Table 6	Tomatoes sauce	n/a	0.7	0.48	0.5			2.7
Average for all 5 crops			4285	1.8	0.5	0.5						1.54	0.632	0.36			3.34

* 1 FTE equals 8 hours per day, 240 days per year.

Source: Authors' own calculation

The data for the best agricultural practices production for pepper are based on earlier studies (Kaçiu, 2008) with very small modifications in certain parameters, while for the tomato production the Agro Celina report on cost of production for processing tomatoes was used. For the purposes of evaluation of the impact of agricultural program intervention, the traditional technology of processing should be used cautiously because it overestimates the employment opportunities; asprocessing mostly takes part in the industrial sector with modern technology, which is a less intensive labour activity. All working days have been adjusted to provide information for full time employment. In order to create yearly figures we used an estimation based on 240 working days a year. Part time employees also have been adjusted into working days to calculate full time employment per year.

10. CONCLUSIONS AND RECOMMENDATIONS

Government and donors face difficulties in evaluating the impact of agricultural intervention programs aimed at increasing employment and income generation, especially in countries where farm management practices are based on traditional bookkeeping practices. This study used ABC approach to compare the conventional and modern production practices of vegetables and related agro processing industries in the main Kosovar production area from the perspective of cost structure to estimate employment engagement levels and income. While the ABC model has been widely used for farm management at the firm level, we use this approach primarily to estimate the impact of intervention programs, although it can be used to analyse economic and financial feasibility in vegetable sector in Kosovo and elsewhere. In addition, this study analysed how efficient each farm is at using its own traditional and modern technology, measuring farm efficiency in relation to the best practices in their group. In order to achieve both goals, the research has considered the cost structure observed at individual farm level including of sales revenue and the cost of four large groups of agricultural tasks or activities: soil and plant cover management, land rent, fertilization, seedlings, labour cost, and all inputs.

The results obtained highlight, first, that in Kosovo, there is no specialized production of vegetables for processing industry. Production of pepper, tomatoes, and other vegetables which cannot be sold for fresh consumption is sold for processing purposes (for those vegetables attractive to processing industry) suggesting high excess of market demand oversupply. The results also reveal that traditional processing of pepper may be a good choice for these producers even in small quantities. Although with limited production capacities, women involvement in this sector is higher due to the higher involvement of labour because of the low level of technology used in production. Crop management practices are inadequate, with majority of them not having proper data on the cost of production and other expenses. Usually, their estimation of sales is based on sold quantities.

Findings suggest the employment generation for crop production is promising – in particular if crop production is based on good an agricultural practice produces higher results in terms of employment. For one hectare there are employed 5,6 employees as compared to production of tomatoes with traditional technologies which is as low as 1, 9 employees. Considering that profitable opportunities for this sector are not fully utilized (around 50%) the further support of this sector would facilitate the employment of women in rural areas. Study shows that there are different engagement rates of female and male in vegetable production activities. For example, in Mogilla female labour participation in production activities is around 30 percent and is primarily engaged in harvesting activities. In Anadrini region, female participation is around 50 percent. Female participation share is 40 percent in caring for seedlings and 60 percent in harvesting. Paid labour force in Anamorava region (excluding family labour) is very high (around 30 percent) compared to Anadrini region because of family size differences in respective regions.

Case study analysis suggests that there is a need to support and develop commercial production of both pepper and tomatoes to fulfil the needs of the market in terms of both quality and quantity. This will unleash the potential for vegetable processing industry. We suggest government and donor agencies in horticulture to direct their funding in supporting farmers with higher potential to aid them develop commercial pepper production and display the economic feasibility of their entrepreneurial investments, which in turn will result in more employment opportunities and sustainability of the sector.

As by agro processing industry, study shows that despite the modern technology used in producing milled, pepper the share of labour cost on total cost of production remains very high (around 26 %) suggesting high potential for employment generation. However, the potential for female labour participation is very low. A big concern of processor remain, both, high price (0.35 Euros) of pepper and limited supply. Therefore, there is a need to support farmers in introducing new cultivars in pepper production. The share of total cost tomatoes and peppers in the total cost for production of tomatoes sauce and ajvar is 48%, and 27 percent respectively. This suggests that developing processing industry will have impact on causing aggregate demand for producers and farmers. The share of employment cost on total cost of production for tomato sauce is 9 percent while for ajvar is 22 percent. Within this range, the female labour participation is high (around 50%).

The major concern of processors remains the limited supply-side capacities of producers. Moving, from traditional cultivars to industrial type cultivars would enable famers to increase their sales and therefore, encouraging increase of production capacities of farmers. In this regard, the processing companies have shown readiness to finance the seedlings of pepper and tomatoes production. The support of seedling may have a positive impact in encouraging the producers to move towards producing commercial vegetables, and so creating employment opportunities. At the same time, it shows less need for intervention

in this area. Study points out weak linkages between producers and processors in the value chain as main problem. In response to this value chain gap, collection centres play a significant role in connecting producers and processors, because literature suggests that system approach should be used to have an influential agricultural policy (Hawkes, Friel, Lobstein, & Lang, 2012).

Finally, research findings display that an average income from 1-hectare crop production (4,285 Euros), while average employee is 1.86 full-time employees. In the processing sector the employment generation per one/ha of crops used for processing is 3.36 full time of employees. Female participation in labour in production is around 50 percent while in production more than 50 percent. This estimated income and employment figures can be used by future intervention programs to estimate and predict the outcome of such programs in sustainable development of agriculture. The main limit of this research is limited sample size and hence we suggest larger samples in future studies.

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Annex 3: Comparative data for production of pepper in two regions

	Area 1 hectare	Mogilla				Anadrini			
		Unit	**Quantity**	**Price (€)**	**Total (€)**	**Unit**	**Quantity**	**Price (€)**	**Total (€)**
1	**Revenue**	kg	25,000	0.30	**7,500.00**	kg	22,000	0.25	**5,500.00**
	Costs								
	Inputs (including packaging e.g. nets or bottles)				3,367.66				2,776.00
	Labour	Day	240	12.92	3,100.00	Day	240	7.23	1,736.00
	Machinery (costs of fuel considering that bigger farmers that target processors have tractors and attachments)				500.00				750.00
2	**Total cost of production**				**6,967.66**				**5,262.00**
3	**Gross profit** *(1-2)*				**532.34**				**238.00**
4	**Income with family labour (70% of labour costs)**				**2,170.00**				**1,562.40**
	Total income *(3 + 4)*				**2,702.34**				**1,800.40**

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UTJECAJ POLJOPRIVREDNIH INTERVENCIJSKIH PROGRAMA NA PRIHOD I ZAPOŠLJAVANJE: DOKAZI IZ SEKTORA POVRĆA NA KOSOVU

Sažetak

Cilj je rada analizirati izvedivost proizvodnje povrtnih kultura na Kosovu razvijanjem modela koji se koristi za mjerenje utjecaja poljoprivrednih intervencijskih programa. U tu svrhu koristili smo se kombinacijom modela izravnih troškova (DC) i troškova na temelju aktivnosti (ABC) kako bismo ocijenili sheme troškova proizvodnje usporedbom dvaju modaliteta usjeva proširenih u dvjema različitim regijama, služeći se različitim sortama i proizvodnim tehnologijama. U istraživanju koriste se DC i ABC modeli izračuna troškova u proizvodnim sektorima paprike i rajčice te u srodnoj poljoprivredno-prerađivačkoj industriji na temelju pet studija slučaja. Rezultati dobiveni iz DC i ABC modela u sektoru povrća daju više pojedinosti i točnih podataka o troškovima koji pomažu pri donošenju upravljačkih odluka, ali ovdje se prvenstveno koriste za procjenu utjecaja poljoprivrednih programa na zapošljavanje i ostvarivanje prihoda. Oni pomažu Vladi i donatorima u izabiranju intervencijskih programa financiranja te u sagledavanju njihova

utjecaja na poljoprivredni razvoj i zapošljavanje. Rezultati koji se odnose na površinu od jednog hektara pokazali su veću gospodarsku i financijsku održivost dobre poljoprivredne prakse u odnosu na konvencionalnu poljoprivredu, dok je suprotno djelovanje intervencijskih programa na učinke zapošljavanja. Istraživanje donosi političke implikacije za donositelje odluka i donatore pri procjeni utjecaja intervencija na razine zapošljavanja i prihoda.

Ključne riječi: izravni troškovi, obračun troškova na temelju aktivnosti (ABC), program intervencije u poljoprivredi, trošak, donatorska potpora.

JEL klasifikacija: Q10, Q11, L66, O21