

Conversion to Organic Farming as an Opportunity for Syrian Farmers of Fresh Fruit and Vegetables: An Application of the Theory of Planned Behaviour

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Abstract

The export of organic fruit and vegetables to the European Union might offer a great opportunity for Syrian farmers and exporters. Yet, the organic sector in Syria is comparatively young and only a very small area of fresh fruit and vegetables (FFV) is organically managed. To date, little is known about Syrian farmers' attitudes towards organic fruit and vegetable production. Therefore, the aim of this study was to explore the intentions and attitudes of Syrian farmers of FFV towards organic farming and the likelihood of converting their farms to organic production within the next five years. The study was based on a survey among 266 Syrian farmers. The theory of planned behaviour (TPB) was used as theoretical framework and partial least squares structural equation modelling (PLS-SEM) as the main tool for data analysis. The results show that the majority of farmers currently use at least one of the practices, which are also part of certified organic production, and hold strong positive attitudes and intentions to adopt organic production within the next five years.

Introduction

Syria is a major producer and exporter of various agricultural products in the Arabic region. Different varieties of fruit and vegetables are produced, and a considerable amount is exported. Before the political rumours, Syrian fresh fruit and vegetables were mainly exported to the neighbouring countries and the Gulf States as well as to Eastern European countries. Although the EU is potentially one of the most profitable markets of high quality fruit and vegetables in the world, Syrian exports of FFV to Western European countries like Germany have been small. It could be a lucrative opportunity for Syrian growers and exporters of FFV to export high value organic products to markets such as Germany, where national production is limited to a few months due to climatic conditions. Yet, the organic sector in Syria is comparatively young and only a very small area of FFV is certified according to EU organic regulations. However, many farmers are producing FFV traditionally with low chemical inputs. These are good pre-conditions for further expansion of organic agriculture among Syrian farmers. So far no research has been conducted on Syrian farmers' attitudes towards organic fruit and vegetable production. Therefore, the aim of this study is to explore the intentions and attitudes of Syrian farmers of fresh fruit and vegetables towards organic farming.

Material and methods

In order to explore the intentions and attitudes of Syrian farmers towards organic farming and the likelihood to convert their farms to organic, the theory of planned behaviour (TPB) was used as theoretical framework (Ajzen, 2012). The theory of planned behaviour stipulates that the intention to perform a specific behaviour (BI) is the immediate antecedent of that behaviour (B), and the intention itself is considered as a function of attitude towards the behaviour (ATT), subjective norm (SN) and perceived behavioural control (PBC). Moreover, the theory of planned behaviour assumes that these three conceptual components of a person's intention to perform a specific behaviour are also functions of behavioural beliefs (bsoe), normative beliefs (nbmc) and control beliefs (cbpc), respectively (Ajzen 2012, see figure 1). Thus, behavioural intentions are basically derived from person's salient beliefs (i.e. bsoe, nbmc & cbpc). The effects of these beliefs on behavioural intention, however, are indirect (i.e. mediated) through ATT, SN and PBC, respectively. Therefore measuring those beliefs is important to better understand a person's intention to perform behaviour. Following the theory of planned behaviour, it is important to formulate questionnaire statements that represent best the TPB components. In order to do that, the 'principle of compatibility' should be followed: "a single behaviour can be viewed as involving an action directed at a target, performed in a given context, at a certain point in time" (Ajzen and Fishbein 2005: 182). In this study the four elements are

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explicitly identified as follows: the *action* is defined as ‘producing fruit and vegetables organically’, the *target* is ‘organic fruit and vegetables’, the *context* is ‘the specific farm’ and the *time frame* is set as ‘five years’.

The survey region for this study and the main production area for FFV in Syria is the coastal region, where 1.1 and 1.2 million tons of citrus fruit and tomatoes, respectively, were produced in 2010 by about 100,000 farmers and workers (MAAR 2012). Using a cluster sampling procedure, about 266 conventional farmers in 75 villages located in different districts of the coastal region were selected for this survey. The data was collected through face-to-face interviews by a project partner in Syria (Citrus Fruit Board in Tartous). A pre-test of five interviews was conducted in November 2012. Data was collected between December 2012 and mid of May 2013. The data for this paper was mainly analysed with partial least squares structural equation modelling (PLS-SEM). PLS-SEM is a prediction-oriented technique that tries to maximize explained variance in the model using ordinary least squares (Hair *et al.* 2013). Results of PLS-SEM are shown in (Figure 1, Table 1).

Results

60% of the interviewed farmers had heard about the term ‘organic farming’ through different sources. Their understanding of organic farming, however, varies from avoiding chemical inputs to a correct description of what certified organic farming includes. The majority of farmers indicated that they use ‘low chemical inputs’ on their farms, and that their current practices for maintaining soil fertility (94% of farmers) and for pest control (86% of farmers) includes at least one of the practices that are part of certified organic production. For instance, 89% of farmers used livestock manures for their fields and 60% and 68% of farmers indicated using biological enemies and physical-pheromone traps, respectively, for controlling pests and diseases.

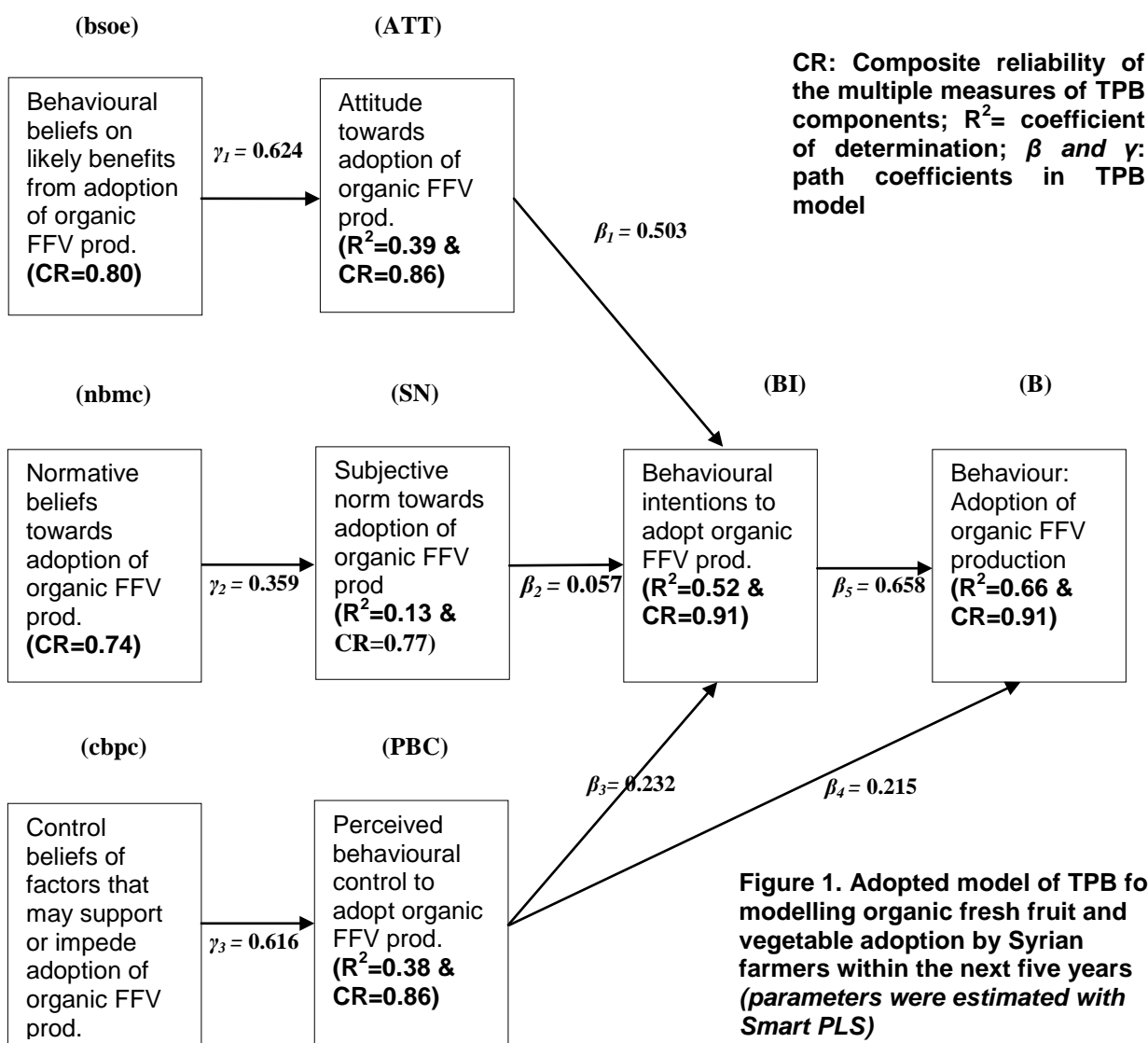


Table 1: Total effect coefficients of TPB components on behavioural intention to adopt organic FFV Production (BI) and adoption decision (B): (coefficients were estimated using Smart PLS)

Total Effects = direct effects (i.e. path coefficient when there is a direct path linking between two given components of TPB model) + indirect effects (i.e. mediated effects) between two components, not necessarily, having direct path linking between them)				
-> : effect direction (e.g. Attitudes -> Behaviour: represents effects of attitudes on behaviour)	coefficients (Original Sample) (N=266)	coefficients (Sample Mean ^(M))	Std. Error (N=266)	P- value
Attitudes (ATT) -> Behaviour (B)	0.331**	0.330	0.067	0.000
Attitudes (ATT) -> Behavioural intention (BI)	0.503**	0.500	0.085	0.000
Behavioural intention (BI)-> Behaviour (B)	0.658**	0.657	0.055	0.000
Perceived behavioural control (PBC) -> Behaviour(B)	0.368**	0.369	0.068	0.000
Perceived behavioural control(PBC) -> Behavioural intention (BI)	0.232**	0.233	0.078	0.003
Subjective norm (SN) -> Behaviour(B)	0.037	0.039	0.036	0.305
Subjective norm(SN) -> Behavioural intention(BI)	0.057	0.059	0.055	0.301
Behavioural beliefs (bsoe)-> Attitudes(ATT)	0.624**	0.635	0.037	0.000
Behavioural beliefs(bsoe) -> Behaviour(B)	0.206**	0.210	0.049	0.000
Behavioural beliefs(bsoe)-> Behavioural intention(BI)	0.314**	0.318	0.062	0.000
Control beliefs(cbpc) -> Behaviour(B)	0.227**	0.229	0.047	0.000
Control beliefs(cbpc) -> Behavioural intention(BI)	0.143**	0.145	0.050	0.005
Control beliefs(cbpc) -> Perceived behavioural control(PBC)	0.616**	0.621	0.042	0.000
Normative beliefs(nbmc) -> Behaviour	0.013	0.015	0.014	0.343
Normative beliefs(nbmc) -> Behavioural intention(BI)	0.020	0.022	0.021	0.341
Normative beliefs(nbmc) -> Subjective norm(SN)	0.359**	0.382	0.056	0.000

*: Total effect coefficients of original sample (N=266) is significant at P<0.05 and **: coefficient is significant at P<0.01

^(M): Sample mean represents the total effect mean obtained from PLS bootstrapping procedure (5000 samples of 266 cases for each)

Generally speaking, the majority of farmers had positive attitudes towards organic farming aspects, measured on a five-point Likert scale from strongly disagree(1) to strongly agree(5). Thus, farmers rate many statements regarding the environmental, health and economic aspects of organic agriculture positively. Attitudinal statements about protecting the environment and providing healthy food for family members were rated with a mean score of 4.18 (standard deviation 0.91). Attitudes towards economic and profitability aspects of organic farming were also positively rated, however, with a mean score of 3.55 (standard deviation 1.16). Interestingly, the interviewed farmers stated that an adoption of organic FFV production within the next five years is a feasible option for them (mean score of 4.13, standard deviation 0.76).

The results of PLS-SEM (Figure 1) show that farmers' positive attitudes and perceived behavioural control towards conversion to organic FFV production have positive influence on behavioural intention to convert. These findings are in line with the TPB assumptions as explained in section 2. Subjective norm towards a conversion to organic FFV production, however, plays a small role in forming behavioural intention in this study. Furthermore, the direct components of behavioural intention (ATT, PBC and SN) are also well predicted by their respective salient belief (bsoe, cbpc, nbmc). PLS path modelling results confirm these findings: (1) the significant path coefficients linking the TPB components, and (2) the total effect coefficients that demonstrate the chain of causal effects from the set of salient beliefs (bsoe, cbpc, nbmc) to behaviour (B) in the TPB model (see Table 1). Table 1 shows that most of total effect coefficients are highly significant ($\alpha = 0.01$). Though normative beliefs (nbmc) have significant effect on subjective norm (SN), their total effects on intention (BI) and behaviour (B) are not significant.

Conclusions

The results of this study suggest that the majority of Syrian farmers of FFV have positive attitudes towards organic farming and are willing to convert their farm to organic within the next five years. The strong intention to convert to organic agriculture can be seen particularly with farmers who are already using many organic practices and low chemical inputs. Though farmers have positive intentions and attitudes towards conversion to organic farming, governmental and NGOs initiatives about organic farming are important to spread out further information about conversion, certification and markets for their organic produce.

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