



# Using the theory of planned behavior to understand the intention of small farmers in diversifying their agricultural production



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## ABSTRACT

The academic and political debate about small farms and rural development has been extended recently. The diversification of agricultural production is important, because it contributes to rural development. The objective of this study was to identify which and how underlying psychological factors affect farmers' intention to diversify their agricultural production. To reach this objective, the theory of planned behavior (TPB) was used as a main framework. 101 farmers were interviewed in the northwest region of the state of Rio Grande do Sul/Brazil, who have milk production as their main source of income. Results showed that farmers have a low intention to diversify their agricultural production. Results also showed that the three TPB constructs attitude, subjective norm and perceived behavioral control are positively correlated with the intention. In addition, the results demonstrated the behavioral, normative and control beliefs that drive attitude, subjective norm and perceived behavioral control, respectively. Results of this study can contribute to the development of strategies and public policies to enhance the diversification of agricultural production by small farmers, and therefore contribute to rural development.

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## 1. Introduction

The political and academic debate about small farms and rural development has been extended in the last years. Among the discussed issues, diversification of agricultural and non-agricultural activities is important, as these activities can decrease poverty in the rural areas. Indeed, amongst the main discussions in the European Union about rural development policies, the diversification of agricultural production stands out as a major concern (Hansson et al., 2013). The diversification of agricultural production is important, as it contributes to rural development. Diversification may provide different sources of income and the consequent improvement of the household income. It can still protect the environment, because if farmers earn a higher income from different sources of agricultural production, they do not over

exploit the soil; and finally, diversification of agricultural production provides safety against market oscillations (Ellis, 2000; Mahoney et al., 2004). As agricultural diversification is a strategy for subsistence of small farmers, it has been promoted by agrarian policies (Meert et al., 2005).

In Brazil, there are around 4.5 million small farmers (IBGE, 2009). These small farmers play an important role on the production of Brazilian agricultural products. For instance, small dairy farmers are responsible for 58% of the total milk production in Brazil (Silva, 2015). However, small Brazilian farmers usually earn a low income. As a result, Brazilian government has developed policies to increase the income of small farmers. One of the policies is to encourage farmers to diversify their production. Indeed, diversification is part of the Brazilian government agenda by the National Plan of Sustainable and Solidary Agricultural Development and by the Production and Income Diversification Actions in Tobacco Cultivated Areas in Brazil, both developed by the Agrarian Development Ministry (MDA). Thereby, a study in the northwest of Rio Grande do Sul Brazilian state, which shows the factors that affect the intention of small farmers to diversify their agricultural production can contribute to the efficiency of such policies. These

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policies are expected to stimulate farmers to increase the number of activities in their farms, as well as the food production; generate income; reducing the risk of developing just one kind of agricultural activity; and increase food security.

In the literature, agricultural diversification has been defined differently. Sometimes this concept includes activities developed inside the farm and sometimes outside the farm (Abdulai and Crolerees, 2001; Barbieri and Mahoney, 2009; Barbieri and Mshenga, 2008; Ellis, 2000; Ilbery, 1991; Meraner et al., 2015; Ploeg and Roep, 2003). In this study, diversification concerns the development of activities inside the farm, focusing on agriculture. By this definition, diversification entails the processing and improvement of products (e.g. making and selling cheese rather than milk), adding value to the products (e.g. creating a cheese brand), and selling products on the market (Barbieri and Mahoney, 2009; Ilbery, 1991; Mahoney et al., 2004; Ploeg and Roep, 2003; Turner et al., 2003). Therefore, this study considers diversification of agricultural production inside the farm. In addition, it is considered that farmers diversify their agricultural production only if they sell their products on the market.

In the light of the foregoing the objective of this study was to identify which and how underlying psychological factors affect farmers' intention to diversify their agricultural production.

One of the relevant theories to analyze psychological factors underlying farmers' decisions and behaviors is the theory of planned behavior (TPB), developed by Icek Ajzen. This theory has been widely used in investigations of decisions and behaviors of farmers (Bergevoet et al., 2004; Borges et al., 2014; Burton, 2004; Elliott et al., 2011; Fielding et al., 2005; 2008; Greiner, 2015; Hansson et al., 2012; Lauwere et al., 2012; Läßle and Kelley, 2013; Sutherland and Holstead, 2014; Yazdanpanah et al., 2014). According to the TPB, the decision to diversify originates from the intention of the farmers, which is influenced by three constructs: attitude, subjective norm and perceived behavioral control. The use of these three constructs allow us to identify how farmers evaluate the possibility of diversifying agricultural production on their farms (attitude), verifying the social pressure perceived by farmers to diversify their production (subjective norm) and identifying the perception of farmers of their ability to use this strategy on their farms (perceived behavioral control). The constructs attitude, subjective norm and perceived behavioral control are originated from behavioral, normative and control beliefs, respectively. The analysis of beliefs identifies the drivers of these constructs.

The use of the TPB is justified first, by the growth of this kind of approach that suggests that the behavior of farmers is not only influenced by profit maximization (Gasson, 1973); and second, because relatively few studies focus on the social psychological factors that influence farmers' decisions on diversifying their agricultural production (Barbieri and Mahoney, 2009; Hansson et al., 2012), particularly in developing countries, as Brazil.

## 2. Methodology

### 2.1. The theory of planned behavior

The theory of planned behavior (TPB) was developed in 1991 by Icek Ajzen as a derivation of the theory of reasoned action proposed by Ajzen and Fishbein (1980). A central factor in the TPB is the intention of the individual to perform a certain behavior. According to Ajzen (2005), the intention of acting is the immediate determinant of the behavior. The TPB assumes that the stronger the intention of engaging in a behavior, the more likely to be their performance (Ajzen, 1991). Ajzen (1991) argues that an intention result in behavior only if the person can decide voluntarily to engage in the behavior or not. However, most of the behaviors may

depend, at least to some degree, on the availability of non-motivational factors, such as opportunities and resources (financial, skills, cooperation of others). Considering that a person has the opportunities and resources, and intends to perform the behavior, he or she must succeed in doing it (Ajzen, 1991).

In the TPB, intention originates from three conceptually independent constructs: attitude, subjective norm and perceived behavioral control, which can be measured directly, or derived from individuals' beliefs (indirect measures). Attitude refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior (Ajzen, 1991). Individuals form their attitude based on their perception of what may be true about a particular subject and this perception may or may not be based on information, knowledge or even be an emotional reaction to the subject, sometimes supported by beliefs and values (Willock et al., 1999). Subjective norm is a social factor, which corresponds to the perceived social pressure to perform or not perform the behavior. Perceived behavioral control refers to the ease or difficulty perceived by the individual to perform the behavior (Ajzen, 1991). The more favorable these three constructs are, the stronger the intention of an individual to perform the behavior (Ajzen, 1991). Therefore, it is expected that the relative importance of attitude, subjective norm and perceived behavioral control in the prediction of intention may vary between behaviors and situations (Ajzen, 1991).

In this study, intention was defined as farmers' intention to diversify agricultural production in their farms in the next five years. Therefore, the first hypothesis of this research is:

H<sub>1</sub>: The intention of small farmers to diversify their agricultural production is positively correlated with direct measures of attitude, subjective norm and perceived behavioral control.

In the TPB, attitude is derived from behavioral beliefs ( $b_i \times e_i$ ), where  $b_i$  is the belief about the likelihood of the  $i$ th outcome of the behavior, and  $e_i$  is the evaluation of the  $i$ th outcome of the behavior (Wauters et al., 2010). Subjective norm is derived from normative beliefs ( $n_j \times m_j$ ), where  $n_j$  is the belief about the normative expectations of the  $j$ th important referent, and  $m_j$  is the motivation to comply with the opinion of the  $j$ th important referent (Wauters et al., 2010). Perceived behavioral control originates from control beliefs ( $c_k \times p_k$ ), where  $c_k$  is the belief about the presence of the  $k$ th factor that may facilitate or inhibit the performance of the behavior, and  $p_k$  is the perceived power of the  $k$ th factor to facilitate or inhibit the behavior (Wauters et al., 2010). Therefore, behavioral, normative and control beliefs present a double function in TPB. First, the sums of behavioral beliefs, normative beliefs, and control beliefs result in indirect measures of attitude, subjective norm, and perceived behavioral control, respectively. Discontinuous arrows in Fig. 1 represent these relations. The indirect attitude, subjective norm and perceived behavioral control are also expected to influence farmers' intention (Borges et al., 2014). Therefore, we derived the following hypothesis:

H<sub>2</sub>: The intention of small farmers to diversify their agricultural production is positively correlated with the indirect measures of attitude, subjective norm and perceived behavioral control.

Second, behavioral, normative, and control beliefs are expected to drive direct attitude, subjective norm and perceived behavioral control, respectively, as shown in Fig. 1 (Borges et al., 2014). This led to the following hypotheses:

H<sub>3</sub>: The direct measure of attitude is positively correlated with behavioral beliefs.

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