

SPIRITUALITY AND BUSINESS SUSTAINABILITY

A CASE OF COFFEE FARMS IN AMADEO, CAVITE

MARGARET AREVALO EUSEBIO
De La Salle University–Dasmariñas
Cavite, Philippines
maggie@healingorchard.com

Abstract. There has been a steady decline in coffee production and general farming activity in Amadeo, Cavite—farmers lament that their soil is acidic, causing a significant drop in coffee yields, while conversion of farmlands to housing and commercial establishments is on the rise. Viewing these recent changes in light of Pope Francis’s encyclical *Laudato si’*, it is clear that the sustainability of local farms and their ecology is under threat, and that a Christian viewpoint would yield a deeper understanding and solution to this emerging problem. For this study, therefore, data on the spirituality of farm owners in Amadeo, Cavite was collected and analyzed to determine the relationship between their spirituality and the sustainability of their farms. Spirituality was defined using a composite of personal spirituality, social responsibility, and stewardship, while sustainability consisted of three components: sustainability of family needs, plans to sell, and plans to convert to non-agricultural land. Results showed that personal spirituality was positively associated with farms sustaining family needs; stewardship and social responsibility practices, on the other hand, produced mixed results.

Keywords: coffee farms; Amadeo, Cavite; intrinsic/extrinsic religious orientation; personal spirituality; sustainability; social responsibility; stewardship

INTRODUCTION

A common sight along winding inner roads in the agricultural municipality of Amadeo, a town in upland Cavite known as the coffee capital of the Philippines, are parcels of land overgrown with weeds and unshaped coffee trees. They are a testimony to overall inactivity and “idle farms”; indeed, the development of low-cost housing and commercial establishments such as hardware stores has become the most recent enterprise in this farming community.

Such a decline in agricultural activity is also happening in other municipalities of upland Cavite, with several local farm owners expressing their belief that the sustainability problem is being caused by the naturally fertile volcanic soil that has become acidic. They recognize that trees require more and more fertilizer as their yields have decreased over the years and remained below par, all the while failing to understand that the overuse of such chemicals damages the soil itself. The damaged soil in turn is evidence of a sickness alluded to by Pope Francis, reflecting the violence present in the human heart that is wounded by sin (Francis, 2015: 3).

Another activity that also leads to non-sustainability is the trend of selling family-owned farms to buyers who convert the land into either residential or commercial properties. Low crop yields and rising operational expenses make such transactions more attractive, and gaining several million pesos in one lump sum is more lucrative at any rate than earning the same over many years of laborious farm work. Unfortunately, these quick, short-term fixes eventually leave former farm owners with their original (or worse) financial problems due to poor financial management. It is a problem that runs counter to the call to till and keep the garden of the world and “to protect the earth and to ensure its fruitfulness for coming generations” (Francis, 2015: 67); heeding this call is what leads to sustainability and proper stewardship.

These are scenarios that play out in other upland Cavite towns, and so the more urbanized Cavite becomes, the more we will see the phenomenon of farm owners selling their lands and the conversion of such to commercial use. Such shortsighted land conversion projects, however, also upset local biodiversity, causing destruction or serious harm to certain species (Francis, 2015: 36) in exchange for quick and easy profit. Furthermore, rapid urbanization also has the effect of undoing social structures, which have for a long time shaped cultural identity and a sense of the meaning of life and community—in this case, farming. Indeed, the disappearance of a culture can be more serious than the

disappearance of a species of plant or animal (Francis, 2015: 145). As such, perhaps the source of and solution to the issues these farm owners are facing are not of a financial nature but a matter of spirituality.

A related and noteworthy concern is that upland Cavite contributes to Metro Manila's food supply (National Economic and Development Authority, 2018). Therefore, it is in the interest of both the province and Metro Manila to sustain the existing agricultural activity in this upland area. If more and more agricultural lands convert to commercial uses, the inevitable effect will be higher food and (ultimately) living costs.

Statement of the Problem

According to Karns (2011), "the center of economic gravity is shifting towards emerging markets" and "a new vision for the purpose of business is vitally and urgently needed for emerging and developed markets." In my study, I intended to determine whether a relationship exists between farm owners' spirituality and their farms' sustainability, and if so, what conclusions can be drawn and how they can be used to understand and gain insights into the declining activity of small family-owned farms in upland Cavite which are forms of micro and small enterprises. By studying business owners' spirituality and their business's sustainability, a deeper understanding can be gained about what relationship exists between them. Such information would benefit micro, small, and medium enterprises (MSMEs) in the Philippines, which are part of its emerging markets.

My research thus addresses the existing knowledge gap concerning spirituality, which in turn includes the aspects of personal spirituality, corporate social responsibility (CSR), and stewardship as applied to small businesses, particularly to small family-owned farms in upland Cavite. If I consider the farm as a business entity and its owner(s) as manager(s) and/or leader(s), it is of interest to determine whether a correlation exists between the sustainability of farms and the owner(s)' spirituality, and what type of relationship this is. In this study, the focus was limited to family-owned farms in upland Cavite measuring three hectares or less.

Objectives of the Study

The specific objectives were as follows:

1. to obtain profile information on farm owners and their farms; and

2. to determine if there is a relationship between farm owners' spirituality and the sustainability of their farms.

Literature Review

Spirituality. "The farmer knows just what to do, for God has given him understanding.... The LORD of Heaven's Armies is a wonderful teacher, and he gives the farmer great wisdom" (Isa. 28:26, 29 NLT [New Living Translation]).

There are two types of spirituality—intrinsic and extrinsic. Intrinsic refers to spiritual orientation that is inwardly directed; it has the integration of espoused faith values and spiritual beliefs with decision-making and actions as its goals. Individuals who are religiously motivated for intrinsic reasons will typically incorporate religious tenets within their daily life (Galbraith & Galbraith, 2007). In short, it is a life of integrity that is true to one's faith values. Extrinsic spirituality, on the other hand, is an externally directed spirituality motivated by utilitarian and societal gain. Since extrinsic religious motivation is "instrumental and utilitarian," the tenets of the religion are not as important to the individual as the personal and social benefits derived from religion (Allport & Ross, 1967).

In this research, the focus is on spirituality, with the definition of such comprising three component variables: a) personal spirituality, b) social responsibility, and c) stewardship. The following sections describe and list literature related to these.

Personal Spirituality. There are many tools that researchers have used for measuring spirituality; the most cited are the 10-item Hoge intrinsic religiosity scale (Hoge, 1972), the Duke University Religion Index (DUREL) questionnaire (Koenig & Büsing, 2010), and the intrinsic and extrinsic (I/E) measurement of religious orientation (Gorsuch & McPherson, 1989) which this study uses. Consisting of 14 Likert scale questions, the questionnaire by Gorsuch and McPherson (1989), who developed a scale for measuring intrinsic and extrinsic (I/E) religious orientation, has been used in business studies including those of Galbraith and Galbraith (2007) and Day and Hudson (2011). Galbraith and Galbraith employed the scale in their study of entrepreneurial activity, intrinsic religiosity, and economic growth, while Day and Hudson used it for studying the intrinsic and extrinsic motivation of leaders and how it relates to their perception of organizational values.

The I/E scale, therefore, is best for this study because it has been used in previous business studies to measure the intrinsic and extrinsic religious orientation of respondents.

Social Responsibility. Hui (2008) proposed a theory that Christian-based values will create corporate sustainability. Honoring God and His creation, one's neighbor, commissions, and the everlasting concept—these are interlocking Christian principles that shape Christians' fundamental approaches toward their social responsibilities. His CSR model, therefore, is based on and driven by faith, although it is a theory yet to be tested.

Day and Hudson (2011) found that leaders who have lower extrinsic motivation for personal gain (i.e., they are more intrinsically motivated) are more likely to perceive that their organizations' values are directed toward the welfare of others. However, an unexpected finding is that intrinsic religious motivation had no association with small business leaders choosing more other-directed organizational values. The weakness of this study, though, is that it only considers the perceptions of leaders and not their actual choices, the latter being important when evaluating decisions that ultimately affect business. Nevertheless, the study still gives insight into the relationship between low extrinsic motivation and the perceptions of leaders toward social responsibility.

Stewardship. "The earth is the Lord's, and everything in it. The world and all its people belong to him.... You gave them charge of everything you made, putting all things under their authority" (Psalm 24:1, 8:6 NLT).

McCuddy and Pirie (2007) proposed a theory of inter-temporal stewardship that incorporates stewardship founded on spirituality as a framework for models in business financial decision-making. Their subsequent research (Pirie & McCuddy, 2007) tested the validity of their theory, where success was a function of both stewardship and financial considerations, not one or the other. As such, they found that the failure of businesses in the new economy could be traced to the loss of values related to spirituality and stewardship. The weakness of this study, however, is that it used mission statements as a measure of stewardship and financial consideration but without any data on how these companies actually applied stewardship or financial considerations.

Van Wijk (2010) investigated, through literature review, the role of spiritual values in ancient land management systems to determine whether the knowledge could be used as a springboard for the development of sustainable land management programs. The finding was that spirituality was a leading element in the establishment of good

stewardship in ancient agricultural systems. Van Wijk thus proposes a three-step process to promote good stewardship in farmers: a) break through the taboo to address spirituality, b) revitalize spirituality to recreate good stewardship, and c) focus on places where traditional values are not totally lost.

Business Sustainability. In this study, business sustainability is a variable that is defined as the composite of three component variables, namely, sustain, sell, and convert. All three variables are dichotomous.

Choi and Gray (2008) studied the entrepreneurial process of sustainable entrepreneurs, defined as those who create profitable companies. The finding was that these entrepreneurs employed unconventional practices in the development, management, and exit of their businesses. Common among them are the strong values that govern their decision-making, with these values directed toward the environment and making a better place for everyone. Although this study did not correlate entrepreneurs' spirituality with the sustainability of their businesses, it did find that these business owners had strong values that affected their decision-making and that were directed toward ecological harmony, one of the variables (labeled stewardship) examined in this study. These entrepreneurs can thus be viewed as possessing stewardship and social responsibility characteristics that lead to the sustainability of their businesses.

Galbraith and Galbraith (2007) found a correlation between intrinsic religiosity and entrepreneurship, which in turn leads to economic growth, in twenty-three Christian countries. Their study suggested that intrinsic spirituality was positively related to economic growth and that the key relationship may be between intrinsic religiosity and entrepreneurship.

Farmer Education. Hansson (2008) discovered that several management capacity aspects of farm managers were found to influence long- and short-run input efficiency scores (e.g., using the cheapest and minimal set of inputs, like fertilizer) but had less influence on output efficiency (maximization of outputs, such as crop harvest, given a set of inputs). Their research revealed that personal aspects of the farmer were more important for efficiency compared to management systems aspects. In fact, management capacity had little influence on output efficiency; it was participation in continuing education, such as study circles (i.e., informal education), that produced a positive effect on both long-term economic output and input efficiency scores.

Theoretical Framework

McCuddy and Pirie (2007) state that the principles of spirituality are invoked to guide stewardship behavior. In their theory of intertemporal stewardship, “the failure of businesses in the new economy can be traced to the loss of values regarding spirituality and stewardship,” with the implication that it is “essential [for] managers [to] base their decisions on internalized spiritual and stewardship values that they do not ‘park at the door’ when they arrive at work. Managers should never lose sight of these values, and their decisions should always be grounded in [them]” (McCuddy & Pirie, 2007). In their research, spirituality is the foundation of stewardship. As such, given that stewardship is an important component of spirituality in this view, we include stewardship as a characteristic of spirituality in our study.

Hui (2008) combines Christian faith with CSR responsibilities. In this theoretical model, five Christian-based values—honoring God, neighbors, Creation, the two great Christian commandments, and God’s everlasting presence—are combined with corporate, socially responsible behavior. The model then proposes that such faith-based CSR produces corporate sustainability.

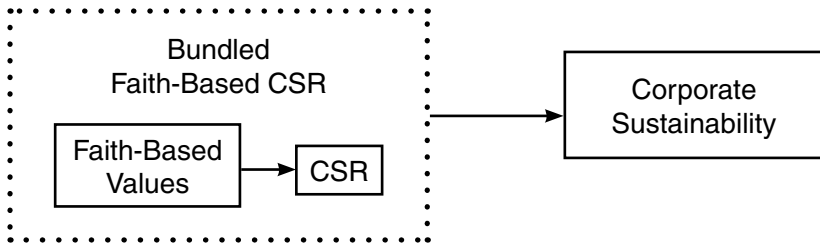


FIGURE 1: Hui’s (2008) Model of Combining Faith and CSR

My research combined McCuddy and Pirie’s theoretical model (2007) with that of Hui (2008). The resulting model includes spirituality as a variable composed of personal spirituality, social responsibility, and stewardship as its characteristics, and shows how spirituality, as an independent variable, relates to business sustainability. I then examined characteristics of the Cavite farm owners’ spirituality (e.g., social responsibility) to determine its relationship with their farms’ sustainability. The goal was to show that there was a correlation between the spirituality of farm owners (i.e., business owners) and the sustainability of their farms. In addition, I also explored other components of spirituality that may also contribute to business and sustainability.

Conceptual Framework

In the conceptual (or operational) framework depicted in Figure 2, there are two main variables: the independent variable (spirituality) and the dependent variable (business sustainability). Spirituality is that of the farm owners or designated managers while business sustainability pertains to their farms' sustainability as a business. The lines indicate that spirituality has a relationship with business sustainability.

Both variables are composed of component variables: three for spirituality and three for business sustainability. The composite variables for spirituality are a) the owner's personal spirituality, b) social responsibility, and c) stewardship. I used the Likert scale questions (shown in Appendix A) to measure each farm owner's personal spirituality, which consists of three characteristics: intrinsic (denoted by I), extrinsic-personal (denoted by E_p), and extrinsic-social (denoted by E_s) spirituality. The last two are further subdivisions of the extrinsic scale, resulting from a study of intrinsic-extrinsic scales by Kirkpatrick (1989). E_p refers to extrinsic items that are personally oriented; E_s refers to items that are socially oriented.

As for social responsibility (which pertains to how farm owners or managers relate to other members of society), I measured this component of spirituality by assessing the concern that farm owners had for consumers, employees, and the community.

Stewardship is treated as a separate entity from social responsibility, and the reason is to distinguish the farm owners' relationship with the land or environment from that with society (social responsibility). Stewardship, therefore, is restricted to that which pertains only to the farmland.

I measured stewardship through dichotomous questions pertaining to the farm owners' land management practices; these questions are in the consumers, employees, and community activities section of the questionnaire. Six component variables were chosen as spiritual indicators of land stewardship. They are described as follows: 1) *compost* indicates whether composting is practiced; 2) *fert* indicates whether organic, chemical, or a combination of both fertilizers are used; 3) *pest* indicates whether organic, chemical, or a combination of both pesticides are used; 4) *intercrop* indicates whether inter-cropping is practiced; 5) *crop rotation* indicates whether such is practiced; and 6) *rest land* indicates whether "sabbaths" are applied to the farmland.

The dependent variable, sustainability, is comprised of three components: 1) *sustain* indicates that farm income is able to sustain family needs; 2) *sell* indicates whether or not the farm owner has plans to sell their farmland; 3) *convert* indicates whether or not the owner has plans to convert their farm to nonagricultural land such as for residential, industrial, and commercial establishments, which would have a negative impact on farm sustainability. All three variables are dichotomous.

Though land conversions are commonplace in other municipalities of Cavite, Amadeo is a predominantly rural and agricultural community; to invite industrialization and urbanization, e.g., by building thousands of affordable housing units, for example, would urbanize the town and create unwanted side effects such as higher crime rates and increased pollution of natural water sources (streams and rivers) which would be detrimental to farming. Furthermore, the number of farmlands would decrease, which is already an existing trend and problem in the entire province.

Education is a moderating value and was hypothesized to have an effect on the relationship between farm owners' spirituality and their farms' sustainability. The proposed effect was that informal education would have a positive influence on the relationship but that formal education would have none. This expected positive influence is based on Hansson's (2008) study of dairy farms in Sweden, where informal education in the form of participation in study circles affected farm performance in a significantly positive way as measured in terms of economic and technical efficiency scores.

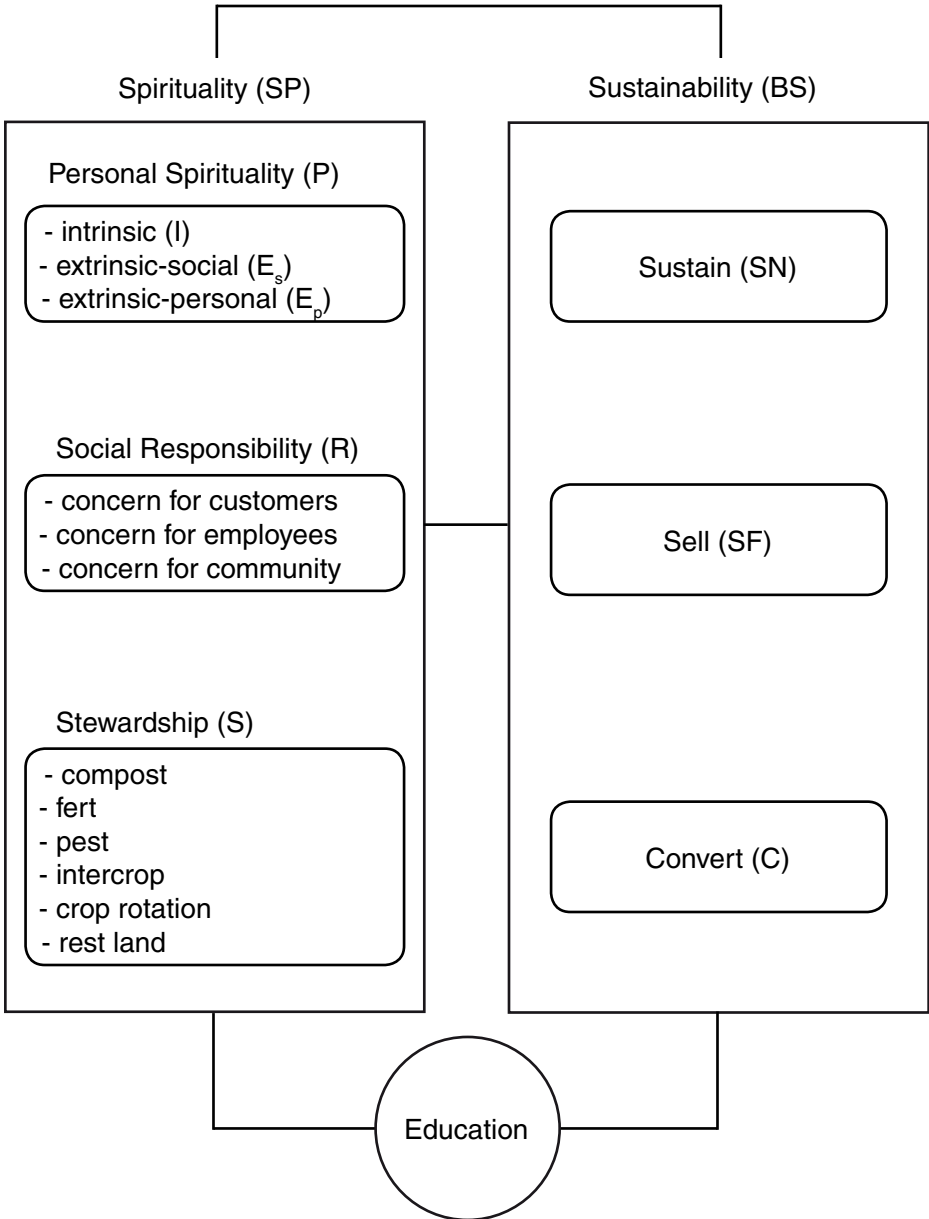


FIGURE 2: Operational Framework for Business and Sustainability

Summaries of dependent and independent variables are listed in Table 1 and Table 2, respectively.

Code	Dependent Variable	Description	Data Type
SN	Sustain	Whether farm sustains respondent’s family needs	Dichotomous
SF	Sell	Whether respondent plans to sell farm	Dichotomous
C	Convert	Whether respondent plans to convert farm to nonagricultural land	Dichotomous

TABLE 1: Dependent Variables

Code	Independent Variable	Description	Data Type
Personal Spirituality			
I	Intrinsic	Intrinsic spirituality index	Continuous
E _p	Extrinsic-personal	Extrinsic-personal spirituality index	Continuous
E _s	Extrinsic-social	Extrinsic-social spirituality index	Continuous
Social Responsibility—Customers			
use_preservatives	use preservatives	Whether preservatives are applied to crops to extend shelf life	Dichotomous
red_beans	red beans	Whether ripe beans (vs. green unripe) only are harvested	Dichotomous
Social Responsibility—Employees			
pay_ontime	pay on-time	Whether employees are paid on-time	Dichotomous
pay_min_wage	pay minimum wage	Whether employees are paid minimum wage or higher	Dichotomous

Code	Independent Variable	Description	Data Type
emp_ben	employee benefits	Whether employee benefits are provided	Dichotomous
Social Responsibility—Community			
comm	community	Whether respondent is active in community activities	Dichotomous
church	church	Whether respondent is active in church activities	Dichotomous
Stewardship			
pest	pesticide	Type of pesticide applied	Ordinal
fert	fertilizer	Type of fertilizer applied	Ordinal
intercrop	intercrop	Whether inter-cropping is applied	Dichotomous
crop_rot	crop rotation	Whether crop rotation is applied	Dichotomous
compost	composting	Whether composting is applied	Dichotomous
rest_land	rest land	Whether portions of the farm land are rested	Dichotomous
Intervening Variables			
age	age	Age of respondent	Continuous
attended_seminar	attended seminar	Indicates whether respondent has attended seminars on agriculture	Dichotomous
educ	education	Indicates respondent's level of education	

TABLE 2: Independent Variables

Hypotheses of the Study

The following section lists the hypotheses of this study and cites previous research that supports them.

Hui (2008) proposed a concept of faith-based and -driven CSR that produces corporate sustainability. In this model, “faith-based” is defined by Christian values that in turn influence CSR obligations toward stakeholders. The result of such faith-based, faith-driven CSR is corporate sustainability. Research to test Hui’s concept, however, has yet to be conducted.

H1a: There is a positive association between farm owners’ personal spirituality and their farms sustaining their needs. {P, SN}

H1b: There is a negative association between farm owners’ personal spirituality and plans to sell their farm. {P, SF}

H1c: There is a negative association between farm owners’ personal spirituality and plans to convert their farm to nonagricultural land. {P, C}

Previous studies have also reported links between social responsibility and business performance. Choi and Gray (2008) found that most of the successful entrepreneurs they studied prided themselves for having created a strong organizational culture that, in return, supported the growth of their companies and their missions. For instance, most of the organizations created by these entrepreneurs reflected their unconventionally strong and genuine concern for the well-being of their employees, with many offering employee benefits that far exceeded industry standards. Verschoor (1998) found that companies that commit to ethical behavior toward their stakeholders, as reported in their annual report to shareholders, ranked higher in financial performance than those companies that made no commitment.

H2a: There is a positive association between farm owners’ social responsibility and their farms sustaining their needs. {R, SN}

H2b: There is a negative association between farm owners’ social responsibility and plans to sell their farm. {R, SF}

H2c: There is a negative association between farm owners’ social responsibility and plans to convert their farm to nonagricultural land. {R, C}

Choi and Gray (2008) found that successful entrepreneurs, defined as those who create and build profitable companies, were effective in running efficient and environmentally sound operations. These business owners take extra steps to minimize harm to society, which entails reducing the environmental and social impacts of their processes.

H3a: There is a positive association between farm owners' stewardship and their farms sustaining their needs. {S, SN}

H3b: There is a negative association between farm owners' stewardship and plans to sell their farm. {S, SF}

H3c: There is a negative association between farm owners' stewardship and plans to convert their farm to nonagricultural land. {S, C}

Hansson (2008) studied dairy farms in Sweden and found that while the managerial capacity of farmers had no influence on technical output efficiency, i.e., producing the maximal set of outputs such as crop harvest, their informal education affected efficiency in a positive way.

H4a: Farm owners' informal education has a positive effect on the relationship between farm owner's spirituality and their farms sustaining their needs. {E, (P, SN)}

H4b: Farm owners' informal education has a negative effect on the relationship between farm owner's spirituality and plans to sell their farm. {E, (P, SF)}

H4c: Farm owners' informal education has a negative effect on the relationship between farm owner's spirituality and plans to convert their farm to nonagricultural land. {E, (P, C)}

METHODS

Data collection was limited to coffee farm owners in Amadeo, Cavite. In cases where the farm owners were absent (i.e., out of the country), the assigned farm managers responded in their stead. Data collection took place between November 6 and December 3, 2014.

Secondary data was obtained on August 14, 2014 from the Department of Agriculture in Amadeo, Cavite and used to determine

sample size. Each of the 25 agricultural barangays were considered in formulating the data collection sample set, which was further refined by a combination of convenience and availability. The actual number of respondents was 200.

Primary data was collected by conducting and administering in-person surveys with the assistance of the agricultural chairperson and/or captain from each of the barangays. The survey consisted of a series of questions (primarily about perception) in the Tagalog language. Among the variables measured were personal spirituality, social responsibility, stewardship, sustainability, plan to sell, plan to convert, and education level of the farm owners (Appendix A). The first section pertained to consumers, employees, community activities, land management practices, sustainability, and education.

The spirituality section was a modified version of the scale developed by Gorsuch and McPherson (1989) as a measure of intrinsic and extrinsic (I/E) religious orientation. After tallying the answers in this section, the resulting number was translated into three separate spirituality indices: intrinsic, extrinsic-personal, and extrinsic-social.

The expression used to model the three dichotomous dependent variables was the logit transformation of the multiple logistic regression model (Hosmer, Lemeshow, & Sturdivant, 2013). This expression is given in Equation 1 and is the odds ratio expression (i.e., how much the odds increase multiplicatively with a one-unit change in the independent variable).

$$g(x) = \ln \frac{\pi(x)}{(1-\pi(x))} = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_px_p \quad (1)$$

where

$\pi(x) = \text{Pr}(Y = 1|x)$ is the conditional probability that the outcome is present

p = number of independent variables

x_1, x_2, \dots, x_p is the collection of p independent variables

β_0 = constant

β_p = constant of X_p variable

RESULTS

Profile of Farm Owners

Respondents were characterized by the following:

- age, gender, years of farm experience;
- informal education, formal education, farm role;
- intrinsic spirituality, extrinsic-personal spirituality, extrinsic-social spirituality;
- use of preservatives on crops, harvesting of ripe coffee beans only;
- paying employees on-time, paying at least minimum wage, providing employee benefits;
- community activity, church activity;
- type of pesticides applied, type of fertilizer applied, application of intercropping, application of crop rotation, application of composting, resting farm land;
- sustainability of family needs, plans to sell farm, plans to convert farm to nonagricultural land.

Consequently, only variables listed in Table 2 were used since they were statistically significant.

Key Findings

The two most important findings of this study are the ff:

Personal spirituality is positively associated with business sustainability. As was expected and in agreement with previous studies, the intrinsic spirituality index was positively associated with business sustainability.

Many farm owners in Amadeo are uninformed about sustainable farming methods. Of the three land stewardship practices highly associated with farm sustainability—1) using organic pesticides, 2) resting the land, and 3) applying crop rotation, the first was positively

associated with farms sustaining family needs while the last two were negatively associated with the same. Furthermore, the last two were also positively associated with selling the farm. These results reveal that there is a lack of knowledge in practical farming methods involving the use of organic pesticides, resting the land, and crop rotation, or else there would not be the problem of unsustainable farms.

Other Findings

The social responsibility components of spirituality showed mixed results: farm owners that paid minimum wages or higher were fourteen times more likely to sell their farms; those who provided employee benefits were less likely to sell theirs but thirteen times more likely to convert to nonagricultural land. The same occurred for the stewardship components of spirituality. Regarding pesticide use, for example, the odds of farms sustaining family needs were higher for those who did not use pesticides (1.4x higher), those who used a combination of chemical and organic pesticides (4.5x higher), and those who used organic pesticides (34.1x higher) compared to those who used purely chemical pesticides. This finding can be attributed to the high cost of chemical pesticides which are commercially manufactured; non-chemical pesticides are easily grown and involve minimal cost, such as growing pest-deterrent plants in between crops. There were also unexpected results for those who rested their land and applied crop rotation; these activities were associated with a reduction in the odds of farms sustaining family needs.

Table 3 depicts the hypotheses test results.

No & Code		Variable Combo	Hypothesis	Accept or Reject	Reason
1	H _{1a}	{P, SN}	There is a positive association between farm owners' personal spirituality and their farms sustaining their needs.	Accept	I expected, E _p negative (expected), E _s positive
2	H _{1b}	{P, SF}	There is a negative association between farm owners' personal spirituality and plans to sell their farm.	Accept	E _p is positively associated with SF (expected).

No & Code		Variable Combo	Hypothesis	Accept or Reject	Reason
3	H _{1c}	{P, C}	There is a negative association between farm owners' personal spirituality and plans to convert their farm to nonagricultural land.	Reject	No significant results for I. E _p is positive.
4	H _{2a}	{R, SN}	There is a positive association between farm owners' social responsibility and their farms sustaining their needs.	Accept	No significant model could be constructed for this combination of variables.
5	H _{2b}	{R, SF}	There is a negative association between farm owners' social responsibility and plans to sell their farm.	Reject	Pay_min is pos assoc (unexpected); emp_ben is neg assoc (expected); mixed results
6	H _{2c}	{R, C}	There is a negative association between farm owners' social responsibility and plans to convert their farm to nonagricultural land.	Reject	emp_ben is pos assoc (unexpected).
7	H _{3a}	{S, SN}	There is a positive association between farm owners' stewardship and their farms sustaining their needs.	Reject	pest_org is pos assoc (expected); rest_land and crop_rot are neg (unexpected); mixed results

No & Code		Variable Combo	Hypothesis	Accept or Reject	Reason
8	H _{3b}	{S, SF}	There is a negative association between farm owners' stewardship and plans to sell their farm.	Reject	Rest_land is positively associated (unexpected; maybe idle?)
9	H _{3c}	{S, C}	There is a negative association between farm owners' stewardship and plans to convert their farm to nonagricultural land.	Accept	pest_none negatively associated (expected)
10	H _{4a}	{E, (P, SN)}	Farm owners' informal education has a positive effect on the relationship between farm owner's spirituality and their farms sustaining their needs.	Accept	Relationship between E _s and SN is strengthened with either type of education. Relationship between Ep and SN is also strengthened, although still negatively associated with SN.

No & Code		Variable Combo	Hypothesis	Accept or Reject	Reason
11	H _{4b}	{E, (P, SF)}	Farm owners' informal education has a negative effect on the relationship between farm owner's spirituality and plans to sell their farm.	Accept	Relationship between E _p and SF is strengthened for those who had combo education or informal only. Relationship between E _p and S is weakened for those who had secondary formal education only.
12	H _{4c}	{E, (P, C)}	Farm owners' informal education has a negative effect on the relationship between farm owner's spirituality and plans to convert their farm to nonagricultural land.	Reject	Relationship between E _s and C is slightly weakened for all types of education.

TABLE 3: Hypotheses Test Results

Table 4 shows the logit estimates of business sustainability and depicts the value of the coefficients in equation 1.

Independent Variables	Sustain Odds Ratio	Sell Odds Ratio	Convert Odds Ratio
gender: ref =1 (male)			
2 (female)		0.094*	0.273
		(0.115)	(0.217)
age			
Spirituality			
I	1.106		

Independent Variables	Sustain Odds Ratio	Sell Odds Ratio	Convert Odds Ratio
	(0.145)		
E_p	0.708*	1.623*	
	(.114)	(0.439)	
E_s	1.596***		0.843*
	(0.240)		(.083)
red_beans			
use_preservatives			
pay_min_wage		13.888*	
		(20.534)	
pay_ontime		0.635	
		(0.669)	
emp_ben		0.040***	13.023**
		(0.049)	(14.245)
community			0.643
			(0.435)
church_comm			
fert: ref=0 (used chem)			
1 (used no fertilizer)			
2 (combination) ¹	0.554		
	(0.381)		
3 (organic)			
pest: ref=0 (used chem)			
1 (used no pesticide)	1.406	3.641	0.270*
	(1.453)	(6.063)	(.204)
2 (combination) ¹	4.546	0.137	0.307
	(5.034)	(0.239)	(0.222)
3 (organic)	34.142**	0.389	0.309
	(53.898)	(0.818)	(0.382)

Independent Variables	Sustain Odds Ratio	Sell Odds Ratio	Convert Odds Ratio
rest_land	0.200**	4.846*	
	(0.144)	(4.613)	
compost			
crop_rot	0.190**		
	(0.140)		
intercrop			

TABLE 4: Logit Estimates of Business Sustainability. Standard deviations are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 1 combination = organic and chemical.

The following summarizes the main findings in terms of farms sustaining family needs, the selling of farm land, and conversion to nonagricultural land.

Sustainability of Family Needs. Extrinsic-personal spirituality was negatively associated with sustaining family needs while extrinsic-social spirituality was positively associated with the same. In terms of pesticide usage, using purely organic pesticides or a combination of chemical and organic was positively associated with farms that could sustain family needs compared to those who used purely chemical pesticides. Those who rested the land and applied crop rotation were less likely to have their farms sustain their family needs.

Selling the Farm. Extrinsic-social spirituality was positively associated with selling. Paying minimum wage was positively associated with selling while providing employee benefits was negatively associated with it. Finally, resting the land was positively associated with selling.

Converting the Farm to Nonagricultural Land. Extrinsic-social spirituality was negatively associated with land conversion; providing employee benefits was positively associated. Not using pesticides, on the other hand, was negatively associated.

Education as a Moderating Variable. In the sustainability model, education was found to have no effect on the relationship between spirituality variables and farms sustaining family needs, and so did not serve as a moderating variable.

DISCUSSION

Discussion of results is organized in terms of farms sustaining family needs, selling, and conversion to nonagricultural land.

Sustainability of Family Needs

Although no studies that correlate extrinsic spirituality to that of sustainability were found, the results for both the extrinsic-personal and extrinsic-social spirituality indices were as expected: the former was negatively associated with sustainability of family needs while the latter was positively associated. The latter, though extrinsic, espoused a type of spirituality that is concerned about the community, including the family. Thus, farmers who care about their families are motivated to work their farms so that they can sustain their families' needs.

The stewardship variables can be explained as follows: organic pesticides are not usually purchased; rather, they are often made from a combination of farm crops such as garlic and peppers, thereby significantly reducing farm costs. This explains the very high odds of sustaining family needs (34.1 times more likely) compared to those who use chemical pesticides. Moreover, the use of chemical pesticides leads to acidic soil—a very common complaint among respondents, who claimed that soils are damaged and require more and more fertilizer to yield decent harvests (“maasim ang lupa at matumal ng mamunga ang kape” [the soil is acidic and the coffee yields are low]). This ultimately reduces the likelihood of farms sustaining family needs.

Resting the land can be associated with large portions of land made idle, reducing the variety of crops that are harvested and ultimately lowering farm income. Crop rotation may entail additional expenses, such as seeds, pesticides, fertilizer for different crops, and tools for the processing of compost material, which further lower net income.

Selling the Farm

Paying minimum wage or higher can indicate that costs are exceeding farm income. Other factors, such as lack of business management (e.g., operations costs and personnel management), may explain why those who pay minimum wage or higher have higher odds of selling their farms. Extrinsic-personal spirituality-oriented individuals may have much to gain personally (e.g., financially) by selling their farm. Male respondents, making up 70.8% of the total sample size, are associated with higher odds of having plans to sell. Providing employee benefits

and paying employees on time measure social responsibility toward employees and are associated with a reduction in the likelihood of selling the farm.

Converting the Farm to Nonagricultural Land

The extrinsic-social spiritual orientation pertains to social aspects of spirituality. Perhaps a link between farm life and social activities exists that could be weakened or severed when farming is no longer a part of one's activities, thus the negative association between extrinsic-social spirituality vis-à-vis farm conversion. And perhaps there are significant cost savings in the case of those who do not use pesticides being less likely to convert—the farms become more sustainable and less likely to be converted to nonagricultural lands provided they are not infested with pests.

Conclusions

These findings showed that personal spirituality played a role in all three sustainability models. The intrinsic spirituality index was associated with the likelihood of farms sustaining family needs while the extrinsic-personal spirituality index was associated with a decrease in the likelihood of farms sustaining family needs and an increase in the likelihood of farms being sold. Extrinsic-social spirituality was associated with an increase in the likelihood of farms sustaining family needs and a decrease in the likelihood of farms being converted to nonagricultural land.

There were social responsibility component variables that displayed mixed behaviors for the sell and convert components of sustainability. Those who paid minimum wage or higher were fourteen times more likely to sell their farms, while those who provided employee benefits were less likely to sell (as expected) but more likely to convert their lands to nonagricultural uses.

These findings also indicated that the stewardship component of spirituality played a role in the three sustainability models. For the first model (sustaining family needs), three types of pesticide usage—a) no pesticides, b) a combination of chemical and organic pesticides, and c) organic-only pesticides—were significantly associated with the likelihood of farms sustaining family needs. There are benefits that follow from using non-chemical pesticides: those who apply these types of pesticides not only reduce their farm operating costs but also contribute to a healthier local environment, thereby helping to reduce

pollution in as well as healing the greater surrounding areas; other beneficial consequences include sparing consumers from the harmful residual effects of chemicals on crops that eventually end up consumed in food, thus contributing to the well-being of the community. The use of non-chemical pesticides also eliminates the acidity damage to farm soil caused by chemical variants (a condition of farm soil prevalent in Amadeo, Cavite that significantly decreases the yield of coffee trees). Finally, organic pesticides are in complete harmony with farm soil.

Other stewardship predictor variables in the sustainability model were resting the land and crop rotation; to the contrary, however, these variables were associated with a reduction in the likelihood of farms sustaining family needs.

The stewardship component also played a role in the second model, where resting or applying Sabbath to the land was associated with an increase in the likelihood of selling the farm. Finally, “no pesticides” in the third model was associated with a reduction in the likelihood of farms being converted to nonagricultural land.

In conclusion, this study showed that farm owners’ personal spirituality and land stewardship were important factors that increased the likelihood of farms sustaining their families’ needs. As Francis states in his encyclical *Laudato si’*, an internal spiritual conversion is required to bring about responsible behavior that would aid in the healing of our Sister and Mother Earth who cries out because of the violence committed against her. The farmland of Amadeo, Cavite is our Sister, our Mother Earth. It is time to come to her aid, and this can be accomplished through ecological and spiritual conversion.

What follows are recommendations for both local policies and future research.

LOCAL POLICY RECOMMENDATIONS

1. Given a strong correlation between non-chemical pesticides and sustainability, promote the use of non-chemical (organic) pesticides, e.g., through programs that assist farmers in technology, education, and the materials needed to grow and maintain supplies of organic pesticides.

2. Address the need of farmers to gain business management skills that will enable them to maximize profits and ultimately achieve sustainability in their coffee farms. Because there is a strong correlation between paying minimum wage and selling the farm, as well as between providing employee benefits and land conversion, training should also include employee performance management to maximize productivity.
3. Because of the strong correlation between resting the land and applying crop rotation vis-à-vis farms not sustaining family needs, as well as resting the land vis-à-vis the likelihood of selling the farm, offer educational programs concerning proper crop rotation and resting of soil to maximize farm performance so that it ultimately leads to sustainability.
4. A related recommendation is for church organizations to develop the spiritual (as opposed to religious) growth of their members. Such development would entail a profound interior and ecological conversion, “whereby the effects of the encounter with Jesus Christ become evident in their relationship with the world around them” (Francis, 2015: 217).
5. Since there is a positive association between extrinsic-social spirituality and farms sustaining family needs, establish communities that focus on the combination of faith and farming and that serve as a locus for faith development, and as an avenue for raising and addressing farming concerns, especially those related to farming sustainability in the local area. Through faith, these communities would ideally grow and experience a conversion that is necessary to effect a lasting ecological conversion (Francis, 2015: 219).
6. Given recent commercial developments that have compromised the farmlands of Amadeo and turned them into low-cost housing projects, non-governmental organizations and intermediate groups should put pressure on governments to develop more rigorous regulation procedures and controls regarding the preservation of farmlands. “Unless citizens control political power—national, regional and municipal—it will not be possible to control damage to the environment.

Local legislation can be more effective, too, if agreements exist between neighboring communities to support the same environmental policies” (Francis, 2015: 179). Note that some of these development projects have not taken into consideration the degrading effect they would have on ecology which could ultimately contaminate water, plant, and animal species—necessary components of the local farmlands.

REFERENCES

- Allport, G. W., & Ross, J. M. 1967. Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, 5: 432–443.
- Choi, D. Y., & Gray, E. R. 2008. The venture development processes of “sustainable” entrepreneurs. *Management Research News*, 31(8): 558–569.
- Day, N. E., & Hudson, D. 2011. US small company leaders’ religious motivation and other directed organizational values. *International Journal of Entrepreneurial Behaviour & Research*, 17(4): 361–379.
- Francis. 2015. *Laudato si’*. Available at http://w2.vatican.va/content/francesco/en/encyclicals/documents/papafrancesco_20150524_enciclica-laudato-si.html.
- Galbraith, C. S., & Galbraith, D. M. 2007. An empirical note on entrepreneurial activity, intrinsic religiosity and economic growth. *Journal of Enterprising Communities: People and Places in the Global Economy*, 1: 188–201.
- Gorsuch, R., & McPherson, S. 1989. Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion*, 28(3): 348–354. Retrieved from <http://www.jstor.org/stable/1386745>.
- Hansson, H. 2008. How can farmer managerial capacity contribute to improved farm performance? A study of dairy farms in Sweden. *Food Economics - Acta Agriculturae Scandinavica, Section C*, 5(1): 44–61.
- Hoge, R. 1972. A validated intrinsic religious motivation scale. *Journal for the Scientific Study of Religion*, 11: 369–376.
- Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. 2013. *Applied logistic regression*. Hoboken, NJ: John Wiley & Sons.
- Hui, L. T. 2008. Combining faith and CSR: A paradigm of corporate sustainability. *International Journal of Social Economics*, 35(6): 449–465.
- Karns, G. L. 2011. Stewardship: A new vision for the purpose of business. *Corporate Governance*, 11(4): 337–347.
- Kirkpatrick, L. 1989. A psychometric analysis of the Allport-Ross and Feagin measures of intrinsic-extrinsic religious orientation. *Research in the Social Scientific Study of Religion*, 1: 1–31.
- Koenig, H. G., & Büssing, A. 2010. The Duke University religion index (DUREL): A five-item measure for use in epidemiological studies. *Religions*, 1(1): 78–85.
- McCuddy, M. K., & Pirie, W. L. 2007. Spirituality, stewardship, and financial decision-making: Toward a theory of intertemporal stewardship. *Managerial Finance*, 33(12): 957–969.

- National Economic and Development Authority. 2018. *Calabarzon Regional Profile*. Available at <http://calabarzon.neda.gov.ph/regional-profile/> (accessed May 15, 2018).
- Pirie, W. L., & McCuddy, M. K. 2007. A preliminary test of the validity of a proposed intertemporal stewardship theory. *Managerial Finance*, 33(12): 970–979.
- Tyndale House Publishers. 2013. *Holy bible: New living translation*. Carol Stream, IL: Tyndale House Publishers Inc.
- Van Wijk, G. 2010. *Spirituality as ingredient for development of sustainable land management programs? A literature study on the influence of spirituality on land management decisions*. Unpublished masteral thesis, Wageningen University. Available at <http://edepot.wur.nl/155328>.
- Verschoor, C. 1998. A study of the link between a corporation's financial performance and its commitment to ethics. *Journal of Business Ethics*, 17: 1509–1516. Available at <http://link.springer.com/article/10.1023/A:1006020402881>.

Margaret Arevalo Eusebio runs and manages a family corporation in General Trias, Cavite. Her current interests are in sustainable organic farms in conjunction with environmental stewardship and the correlations between business sustainability and spirituality. Aside from organic farming, her interests include computer programming, astronomy, and geology.

APPENDIX A: QUESTIONNAIRE

Consumers

1. Do you use anti-ripening agent on other crops to extend shelf life?	<input type="checkbox"/> y	<input type="checkbox"/> n
2. As much as possible, I harvest only mature, red, coffee beans.	<input type="checkbox"/> y	<input type="checkbox"/> n

Employees

- I pay my employees on-time. y n
- How much do you pay your employees daily? _____
- Check all items that apply to your employees:
 - Free housing
 - Allowance in cash. How much? P_____.
How often? daily weekly monthly
 - Allowance in kind. Describe: _____.
How often? daily weekly monthly
 - Expense for children's education covered partially or in full.
 - Financial assistance for:
 - employee or immediate family member's illness
 - death in family
 - wedding

other social events (describe) _____
 Other benefits: _____

Community Activities

1. I am involved in community relations projects (describe activity).

2. I am involved in church community activities (describe).

Land Management Practices

1. I use only chemical pesticides.	<input type="checkbox"/> y	<input type="checkbox"/> n
2. I use only chemical fertilizers.	<input type="checkbox"/> y	<input type="checkbox"/> n
3. I use only organic pesticides.	<input type="checkbox"/> y	<input type="checkbox"/> n
4. I use only organic fertilizers.	<input type="checkbox"/> y	<input type="checkbox"/> n
5. I use a combination of organic and chemical pesticides.	<input type="checkbox"/> y	<input type="checkbox"/> n
6. I use a combination of organic and chemical fertilizers.	<input type="checkbox"/> y	<input type="checkbox"/> n
7. I have additional crops besides coffee.	<input type="checkbox"/> y	<input type="checkbox"/> n
If yes, continue.		
1. What kind of crops? (describe)		

2. I apply crop rotation.	<input type="checkbox"/> y	<input type="checkbox"/> n
8. I apply composting.	<input type="checkbox"/> y	<input type="checkbox"/> n
9. I allow my land to rest.	<input type="checkbox"/> y	<input type="checkbox"/> n
If yes, I allow my land to rest every:		
_____ <input type="checkbox"/> months <input type="checkbox"/> years other (describe) _____		

Sustainability

1. In the last three years, has your farm's revenue exceeded costs?	<input type="checkbox"/> y	<input type="checkbox"/> n
2. Is the farm your only source of income?	<input type="checkbox"/> y	<input type="checkbox"/> n
3. Is your farm able to sustain your family?	<input type="checkbox"/> y	<input type="checkbox"/> n
If no, what are other sources of income? _____		
4. How long have you been operating your farm? _____ years _____ months		
5. Do you plan to transfer your farm to your relatives in your will?	<input type="checkbox"/> y	<input type="checkbox"/> n

If yes, please rank the order of importance of who will be your farm's heir, with 1 as very important and 4 as least important.

- _____ spouse
- _____ equal shares among children
- _____ sibling
- _____ other (please specify)

6. Do you plan to sell your farm?	<input type="checkbox"/> y	<input type="checkbox"/> n
7. Do you plan to convert your farm to non-agriculture use such as for housing subdivision or other commercial use?	<input type="checkbox"/> y	<input type="checkbox"/> n

Education

1. Highest educational attainment (choose one):	
<input type="checkbox"/> none	<input type="checkbox"/> college undergraduate
<input type="checkbox"/> some elementary school	<input type="checkbox"/> bachelor's degree holder
<input type="checkbox"/> elementary school graduate	<input type="checkbox"/> some units in master's degree
<input type="checkbox"/> some high school	<input type="checkbox"/> master's degree holder
<input type="checkbox"/> high school graduate	<input type="checkbox"/> some units in doctorate degree
	<input type="checkbox"/> doctoral degree holder

2. Have you attended seminars on farming? y n
If yes, continue.

a. List last three seminars attended:

b. How many seminars did you attend in the last year? _____

c. When was the last time you attended a seminar?

- Last month
- Two months ago
- Between three and six months ago
- Between seven and 12 months ago
- More than one year ago

APPENDIX B: INTRINSIC/EXTRINSIC RELIGIOUS ORIENTATION SCALES¹

For each statement below, circle the number that best describes you. The choices are: 1) I strongly disagree; 2) I tend to disagree; 3) I’m not sure; 4) I tend to agree; 5) I strongly agree.

	1	2	3	4	5	For researcher only
1. I enjoy reading about my religion.	1	2	3	4	5	I
2. I go to church because it helps me to make friends.	1	2	3	4	5	E _s
3. It doesn’t matter much what I believe so long as I am good.	1	2	3	4	5	I _{reversed}
4. It is important to me to spend time in private thought and prayer.	1	2	3	4	5	I
5. I have often had a strong sense of God’s presence.	1	2	3	4	5	I
6. I pray mainly to gain relief and protection.	1	2	3	4	5	E _p
7. I try hard to live all my life according to my religious beliefs.	1	2	3	4	5	I
8. What religion offers me most is comfort in times of trouble and sorrow.	1	2	3	4	5	E _p
9. Prayer is for peace and happiness.	1	2	3	4	5	E _p
10. Although I am religious, I don’t let it affect my daily life.	1	2	3	4	5	I _{reversed}
11. I go to church mostly to spend time with my friends.	1	2	3	4	5	E _s
12. My whole approach to life is based on my religion.	1	2	3	4	5	I
13. I go to church mainly because I enjoy seeing people I know there.	1	2	3	4	5	E _s

¹15, 16, and 17 are not included for computation of intrinsic spirituality; these have not yet been tested for reliability.

14. Although I believe in my religion, many other things are more important in life.	1	2	3	4	5	I _{reversed}
15. My religion has changed me to become a better person.	1	2	3	4	5	I
16. I believe that religion develops the character of a person.	1	2	3	4	5	I
17. Religion brings about positive work ethic among the faithful.	1	2	3	4	5	I