

Does religion impact corporate innovation in developing countries?

Religion
impact
corporate
innovation

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Abstract

Purpose – This study aims to examine how religion affects corporate innovation in developing countries.

Design/methodology/approach – Firm- and country-level indicators are used to evaluate the relationship. The study's final sample consists of manufacturing firms from 41 developing countries across different world regions from 2014 to 2018.

Findings – This paper finds that firms operating in more religiously diverse countries with lower religious restrictions are likely to be more innovative. Furthermore, secularization stimulates corporate innovation in contrast to traditional religious societies. Interestingly, results also indicate that religion hinders corporate innovation by restraining its followers' involvement in innovative activities under risk, which downgrades corporate innovation culture.

Research limitations/implications – This study used data from nonfinancial firms from developing countries; therefore, the study's findings could be generalized to other developing economies with caution, as economies operating at different stages of development can have different outcomes from the proposed relationship. The study findings are important for innovative firms, as they can take advantage by segmenting the population based on religious and atheist groups. Results also have some implications for developing countries to foster firm-level innovation through constructing effective policies and ensuring the development of diverse and free religious societies because such societal traits increase corporate innovation and are fruitful for national competitiveness and growth.

Originality/value – This study contributes to institutional economics and corporate innovation by exploring the link between religion and economic development through the innovation channel and analyzing the latest cross-country evidence. It is a pioneering work in empirical comparison of influence on innovations of different religions.

Keywords Religious diversity, Government restrictions on religion, Predominant religion, Atheism, Corporate innovation, Developing countries

Paper type Research paper



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1. Introduction

Research reveals that countries with a high rate of innovation have higher rates of economic growth and higher per capita income (DiRienzo and Das, 2015; Mankiw and Whinston, 1986). Novel ideas, technological advancement, enhanced procedures and the creation of creative goods all contribute to an environment where innovation can thrive (Morck *et al.* (2001). As a multifaceted aspect of society, religion influences economic development, technical progress and creative thinking (Bénabou *et al.*, 2015b). Religion is “a system of organized beliefs, norms, rituals, practices, and symbols designed to facilitate closeness to the sacred (supernatural power) and to improve an understanding of individual relation and obligation towards others for living together in community,” (Yeganeh, 2013).

Religion, being a significant component of society, influences the economic behaviors of individuals, businesses, government agencies and other organizations (Coccia, 2014). It is normative and forms the basis for subsequent endeavors throughout the social, cultural, economic, political and scientific spectrums (Deneulin and Rakodi, 2011). Trust (faith) and social norms (rules) are two examples of how religion influences people, as described in the existing literature. Statistically, those who regularly attend religious services are less likely to engage in questionable behavior (such as committing crimes, engaging in corrupt practices and evading taxes) and more likely to trust others and respect authority. Coordinative and cooperative social norms boost innovation, productivity and economic development because they foster the sharing of ideas and the pooling of resources (Guiso *et al.*, 2003).

The composition of a country's population concerning religion impacts its economy (Cinnirella and Streb, 2015). The literature on cross-country analyses suggests that religious denominations (Islam, Buddhism, Christianity, etc.) tend to influence wealth creation and economic growth (Noland, 2005; Guiso *et al.*, 2003). Corporate decisions result from individual decision-making influenced by activities outside the organization (Hilary and Hui, 2009).

Regardless of its social, economic and political elements, religion is a subject of inquiry that is usually neglected by scholars. Economists are hesitant to analyze religious behaviors due to their subjectivity, coercive doctrines and irrationality. Concerns center on the individual sacrifices at the heart of religions. Although the majority of such sacrifices result in obvious benefits, a few appear to damage some valuable resources (Iannaccone, 1992). As a result of these factors, fewer academics are interested in revealing the phenomena of religion economics. Yet, economic theories analyze religious practices, attitudes and their economic effects. This study fills the void by studying the influence of religiosity and religious affiliation on corporate innovation.

This research explores the effect of religion on innovation at the firm level in emerging countries. As making slight modifications to proven technologies from developed countries lessens the risk of failure or loss, this type of innovation is gaining popularity in developing countries. Therefore, it is important to use a variety of “innovations” to examine creativity in developing countries. Furthermore, the religious diversity in developing countries is lower, with the majority faith being the dominant one. This study contributes to institutional economics and corporate innovation by analyzing the latest cross-country evidence and exploring the link between religion and corporate innovation. It is a pioneering work in the empirical comparison of the influence of different religions on innovations.

The rest of the paper is organized as follows: In Section 2, we review previous literature. Section 3 elaborates on the construction of research hypotheses. Next, we explain the analytical framework of the model, data sources, variable selection and measurement

methodology. Section 5 presents a descriptive analysis and reports the empirical results. We end with the presentation of policy implications and concluding remarks.

2. Review of literature

Certain religious doctrines give their adherents a solid grounding from which to work and improve their environments (Gorski, 2003), while other doctrines tend to emphasize the rejection of material goals and the attainment of rewards in the next life (Landes, 1999). Specifically for the hospitality and tourism sectors, the prior research by Farmaki *et al.* (2020) offered a theoretical framework for examining the interplay between religion and entrepreneurship. According to the results of the study, religious beliefs may foster an environment that is conducive to entrepreneurial endeavors like starting a firm and coming up with novel ideas. Ayob and Saiyed (2020) did similar research among Muslim populations in several nations; the results indicated that the rate of commercial activities, including innovation, is negatively correlated with the percentage of Muslims in a certain area.

Businesses operating in radically different religious contexts have different economic philosophies (Iannaccone, 1998). To investigate such a narrative, Talwar *et al.* (2020) predicted that customer resistance is one of the main causes of the failure of any innovation. Cultural and religious norms have been found to be the primary factors in influencing consumer spending and, in turn, product development. Moreover, Bindabel (2020) investigated the importance of culture as a paradigm in fostering open innovation in the Gulf Cooperation Council countries. The results showed that the respondents generally agreed on how the Shariah compliance company decided on matters of innovation and M&A. Gao *et al.* (2020) also found, through a combination of bibliometric and content analysis, that the ecosystems and diversity of countries continue to have an impact on open innovation.

It is an individual, not the organization itself, who can make decisions. Whatever an individual does outside the workplace (religious activities and cultural norms) unavoidably affects their attitude towards making decisions inside the workplace (Hilary and Hui, 2009). The impact of religion on business choices in Kazakhstan was explored by Amanbayev *et al.* (2021). The results showed that religion has an effect on the entrepreneurial spirit and creative endeavors when it is assumed to be the dominant reasoning in management. Wang and Wang (2021) came to a similar conclusion on the relationship between religion and innovation at the country level.

Diffusion of innovation is influenced by many different elements, including society, population, economy and culture (Rogers, 2010). Silwal (2021) investigated how culture can influence the innovative success of Nepali businesses. Primary evidence from over 200 participants backs up the claim that religious affiliation is a cultural element that affects the rate of innovation. In addition, Tanko and Ismaila (2021) examined the impact of religion and culture on technology in Ghana. This was backed by empirical estimates that also linked cultural and religious standards as crucial predictors of technical efficiency. Boubakri *et al.* (2021) looked into how different cultures influenced business creativity. The impact of national culture on innovation was established when researchers accounted for firm- and country-level control variables.

Several anthropologists and sociologists, based on empirical research, have determined that religious and cultural values account for a sizable portion of the variation among nations in terms of output and development (Harrison and Huntington, 2000). Hu *et al.* (2022) conducted the most recent research on the topic, investigating how variety in Chinese society affects innovation. The findings, which relied on regression models, demonstrated

that nonintrinsic factors (such as religious affiliation) significantly affect the level of innovation and creativity in a culture. Similarly, [Zhang et al. \(2022\)](#) investigated a trust-led innovation strategy with Chinese enterprise-level data. They expected that religion would increase trust, which would therefore encourage creativity. The results show that businesses in provinces with greater trust levels use more innovative inputs and produce more innovative outcomes.

To explore the innovation process, society's faith and customs cannot be overlooked ([Shyan Fam et al., 2004](#)). Hence, [Vlasov et al. \(2022\)](#) examined the effect of sociocultural determinants on knowledge-based innovation in the context of OECD countries. The empirical data supported the hypothesis that religious beliefs and other aspects of social culture had a sizable impact on the development of new forms of knowledge. More so, [Tahir \(2022\)](#) analyzed the impact of religion on the work of Muslim business owners in the UAE. The findings, which are based on in-depth interviews with 50 business owners, confirm that religious beliefs influence many aspects of business, including creativity, efficiency and the way people handle conflicts. Similar results have been found by [Yu et al. \(2022\)](#) by examining the impact of regional religiosity on corporate innovation.

From the detailed review of the literature, we identified the following gaps, and this study aims to cover existing gaps by evaluating the impact of religiosity and religious denomination on corporate innovation:

- Most previous studies used country-level ([DiRienzo and Das, 2015](#); [Yeganeh, 2013](#)) and individual-level ([Azam et al., 2011](#); [Bénabou et al., 2015b](#); [El-Haq et al., 2016](#); [Reade et al., 2018](#)) indicators to measure innovation and creativity. However, this study is focused on corporate-level indicators to estimate innovation, i.e., product innovation, process innovation, R&D investment and technology usage.
- To measure religiosity, previous studies widely depend upon the 5D framework of religiosity ([Azam et al., 2011](#)), World Values Survey ([Bénabou et al., 2015b](#); [Bénabou et al., 2015a](#)), American Religion Data Archive (ARDA) ([Hilary and Hui, 2009](#)) and so on. But this study uses the religious diversity index by Pew Research Center, which is based on religious denominational fractions within a country.
- Previous studies have failed to evaluate the relationship between government restrictions on religion and innovation, and this study aims to uncover such critical liaison by using the religious restriction index. We also aim to examine the indicator for religious diversity and religious freedom and how it impacts corporate innovation.
- This study also examines the relationship between predominant religion, atheism and corporate innovation, which were previously unexplored dimensions.

3. Hypotheses development

Religiosity appears to be linked with social attitudes, as explained by [Guiso et al. \(2003\)](#), such as trust in individuals and institutions, breaking fewer laws, rejecting bribes and paying taxes, which are favorable to high productivity, development and growth. The main instrument of long-run growth is technical development, and more commonly, the whole range of innovation, which drives the advancement of basic knowledge, dissemination of new technology, social changes and economic practices ([Mokyr, 2002](#)). It seems equally significant to observe the degree to which religious principles, ethics and institutes might be detrimental to creativity and innovativeness. The religion–innovation relationship also explains the linkage between religiosity and innovative activities. Religious diversity

(quantify as the rate of different religions within a specific country) creates harmony in society or country (not always the case); in that way, it can be considered that religious diversity leads to tolerant behaviors in society and acceptance of diverse points of view, judgments and ideas. Such kinds of behaviors, points of view and ideas subsequently produce knowledge, creativity, technology and other kinds of innovation (Dunn *et al.*, 2009).

According to the conservative view, creativity and innovation are encouraged by a positive environment and emotional state. Since ethnic conflicts have negative aspects, they would stop employees from acting in creative ways (Anderson *et al.*, 2014). Meanwhile, innovation literature suggests that environmental hazards, negative attitudes, distress and anxiety positively impact creativity and innovation (George and Zhou, 2007). Traditionally, religion has been essential in spreading education (Becker and Woessmann, 2009). Educated people exhibit more willingness to accept changes, generate creative ideas and take risks, which can offset the negative relationship between religiosity and innovativeness.

It is widely accepted that, unlike ordinary types of investments, corporate innovation is a kind of risk-taking attitude with several other distinctive features. Usually, innovative projects are long-term and have multiple stages (Manso, 2011). These projects cost money immediately, but their benefits and returns take a long time to pay off (Aboody and Lev, 2000; Lerner *et al.*, 2011). More importantly, innovative projects involve a high possibility of failure because they depend on several unpredictable future conditions (Holmstrom, 1989). Accompanied by high uncertainty, intangibility and information asymmetry, corporate innovation requires an extremely risk-taking attitude (Hall and Lerner, 2010). It has been argued that religiosity leads to a decline in innovation and R&D intensity through its influence on corporate risk-taking. Literature (Osoba, 2003; FL, 2005; Miller and Hoffmann, 1995) identified a positive relationship between individual-level religiosity and risk-averse behavior. Willingness to tolerate risks is obviously the key to commencing investments, both at the individual and group level, particularly in new technologies (Bénabou *et al.*, 2015b). Based on this discussion, we draw the following hypothesis:

H1. Religiosity has a potential impact on corporate innovation.

Existing literature (Byrne *et al.*, 2011; Griebel *et al.*, 2014) suggests that an individual (believer) transmits religious values to activities, including corporate practices and workplace environment, as religion shapes individual lifestyle and behavior in a religious society (Gursoy *et al.*, 2017). Earlier studies identified religion as a corporate governance indicator to control unethical business activities (McGuire *et al.*, 2011). However, modernization theory argues that economic development leads to secularization, and modern society (without religion) depends on human rationality to attain socioeconomic growth (Wilson and Bruce, 2016). Secular and legal states maximize their residents' well-being through technological expertise, industrialization and economic growth (Inglehart and Welzel, 2005; Inglehart and Baker, 2000).

Innovation diffusion explains how individuals and organizations accept new technology (Hall, 2004). Cognitive managerial behavior is required to launch and promote innovative products in more religious environments in accordance with religious norms and beliefs (Rehman and Shahbaz Shabbir, 2010). The strong relationship between individual religious beliefs and the diffusion of innovative products can be observed in the doll toy case in Saudi Arabia (Murphy, 2003) and the birth control case in Catholic Church (Brushaber, 1991). Spiritual groups renounce innovations they consider dangerous to traditional approaches and religious practices, as evident in some groups relinquishing modern medicine, considering it an intervention in God's will (Kalliny and Hausman, 2007).

Religious cultures create diverse ethical restrictions that lead to different behaviors and technological/economic performance across countries. Religion influences culture and acceptance of technological innovations in society (Herbig and Palumbo, 1994). However, other intrinsic elements, including democratization, economic governance, demographic transformation, nationwide and regional innovation system, cultural and societal openness and the rule of law. (Coccia, 2014), also impact innovations. Based on these arguments, we draw our hypothesis:

H2. Religious denominations (Christianity, Islam, Buddhism, Hinduism, unaffiliated, etc.) impact corporate innovation.

4. Methodology

4.1 Data sources

To analyze the impact of religion on corporate innovation, we use country-level data from the CIA country-wise factbook and Pew Research Center and firm-level data from the Enterprise Survey conducted by the World Bank, which has a demonstrative sample of service and manufacturing sectors and uses a stratified sampling technique. A wide range of information is gathered, including firm innovation, size, year of starting operation, competitors, legal status, governance structure, ownership construction, sales, capacity and supplies. The sample is restricted to the manufacturing sector and includes only developing countries (see Table 1).

4.2 Variables selection and measurements

4.2.1 Dependent variable. The dependent variable of the study is corporate innovation. Most studies quantify innovation using R&D expenditures and patents (Kogan et al., 2017; Cooper et al., 2017; Oluwatobi et al., 2015; Silve and Plekhanov, 2015). Due to its availability, financial statements’ R&D expenditure is commonly used to measure corporate innovation. It is flawed. First, R&D expenditure only describes one apparent quantitative input (Aghion et al., 2013) and cannot explain multiple business innovation characteristics (Manso et al., 2017). Second, accounting rules make R&D expenditures difficult to capitalize or expense (Acharya and Subramanian, 2009). Thirdly, according to COMPUSTAT database information, financial statement R&D expenditures are unreliable, which can pose a major measuring difficulty (He and Tian, 2018).

Scholars are seeking other ways to quantify business innovation due to R&D expense concerns. Patents have become a proxy for corporate innovation in recent years. Patents,

Table 1.
List of sample
countries

Region	Countries
Africa	Ghana, Kenya, Rwanda, Senegal and Zimbabwe
East Asia Pacific	China, Mongolia, Myanmar, Philippine and Vietnam
Europe and Central Asia	Georgia, Hungary, Romania, Turkey and Ukraine
Latin America and Caribbean	Argentina, Colombia, Ecuador, Mexico, Panama and Venezuela
Middle East and North Africa	Egypt, Jordan, Lebanon, Morocco and Yemen
Non-OECD	Barbados, Croatia, Lithuania, Russia and Uruguay
OECD	Chile, Czech Republic, Estonia, Israel and Poland
South Asia	Bangladesh, India, Nepal, Pakistan and Sri Lanka

Source: Authors’ computations

like R&D, are heavily criticized. Patents do not measure innovation in developing countries for various reasons. First, developing countries lack consistent innovation statistics (Wolfram *et al.*, 2018). Second, emerging countries' enterprises innovate by copying and modifying existing innovations from developed countries (Rosca *et al.*, 2017). Thus, corporate innovation in developing countries must be explained broadly. Therefore, we use the World Bank Enterprise Survey data to measure firm-level innovation in developing countries.

There are several reasons why the World Bank Enterprise Survey is a good tool for measuring corporate innovation: Firstly, this survey covers a wide range of innovation activities, including research and development, product innovation, process innovation and organizational innovation. This allows for a more complete picture of innovation activities within firms. Secondly, this survey uses a standardized methodology across countries, ensuring that the results are comparable across different regions and industries. Thirdly, this survey is conducted with a large sample size of firms in each country, which allows for more accurate and representative results. Lastly, this survey is conducted periodically, which enables researchers to track changes in innovation activities over time.

The first proxy, index core, identifies actual firm-level innovation. Index core is a combination of two innovative core activities the firm conducts, i.e. product innovation and process innovation. Index value ranges from 0 (no core innovation) to 2 (full core innovation). A higher value of index core indicates a higher undertaking of core innovative activities. Past studies (Ayyagari *et al.*, 2012; Xiao and Zhao, 2012; Barasa *et al.*, 2017) have used similar indicators to measure corporate innovation:

$$Index\ Core_{itk} = \sum (Product\ Innovation_{itk}, Process\ Innovation_{itk})$$

We create two additional novel proxies to measure corporate innovation and robust analysis. Index 2 is an aggregate measure of two basic innovation indicators, i.e. R&D investment and use of technology. They represent the actual capacity of a firm to innovate. Index 2 has a value range from 0 (no baseline innovation) to 2 (full baseline innovation):

$$Index\ 2_{itk} = \sum (R\&D\ Investment_{itk}, Technology\ Usage_{itk})$$

Index 4 contains all measures of firm-level innovation: product innovation, process innovation, R&D investment and technology usage. Index 4 ranges from 0 (no innovation) to 4 (full innovation); a higher index value is associated with higher firm innovation. Such composite indexes are unique but separate indicators used in previous literature (Sivak *et al.*, 2011):

$$Index\ 4_{itk} = \sum (Product\ Innovation_{itk}, Process\ Innovation_{itk}, R\&D\ Investment_{itk}, Technology\ Usage_{itk})$$

4.2.2 Independent variables. We use six proxies to explain countries' religions: The first proxy is the "Religion Diversity Index developed by Pew Research Center," calculated based on shares of 8 major world religious groups, i.e. "Buddhism, Christianity, folk or traditional religions, Hinduism, Islam, Judaism, other religions considered as a group, and the

religiously unaffiliated.” A higher index value represents high religious diversity in a country. Previous studies have used a similar variable with different estimates, e.g. [Bénabou et al. \(2015b\)](#) used World Value Survey, and [Hilary and Hui \(2009\)](#) used ARDA. The main purpose of using this variable is to evaluate the religiosity level in sample countries, which, according to the previous studies ([Recio-Román et al., 2019](#); [Gursoy et al., 2017](#); [Bénabou et al., 2015b](#)), has an impact on corporate innovation.

The second proxy is the “Government Restriction on Religion Index developed by Pew Research Center.” Pew Research Center codifies 20 indicators of government-level restrictions on religion to generate GRI, a variable with a value range of 0 to 10 “from lowest to the highest level of government restrictions,” used previously to determine the economic consequences of religious restriction by [Esteban et al. \(2014\)](#). This proxy helps to understand the restriction level among developing countries and its subsequent impact on corporate innovation.

The third proxy is an interactive variable derived by multiplying religious freedom (inverse of government restriction) by the religious diversity index, which examines the collective impact of religious diversity and freedom on corporate innovation. A higher value indicates a more religiously diverse and free society, which, as per literature ([Herbig and Palumbo, 1994](#); [Coccia, 2014](#)), does have a deep impact on innovation, creativity and change. Similarly, our fourth proxy is a dummy variable based on the third proxy, i.e. religious diversity and freedom, and represents a value of “1” if the corresponding index value of religious diversity and freedom is higher than the sample median and “0” otherwise. This proxy divides the full sample into higher and lower levels of religious diversity and freedom and helps better understand its subsequent impact on corporate innovation.

The fifth and sixth proxies for country-level religion are the group of different indicators representing the major population’s religion in a country. For each group, we use a dummy variable of “0” and “1.” Developing these proxies aims to segment the sample countries based on dominant religions and atheism and understand their impact on corporate innovation. Similar variables are also used in the previous studies of [Yeganeh \(2013\)](#) and [Wilson and Bruce \(2016\)](#) to examine the impact of religious and cultural determinants on national competitiveness.

4.2.3 Control variables

- *Firm size:* We control for firm size and divide sample firms into three categories based on the number of employees; small size firms (5–19), medium size firms (20–99) and large size firms (>100) employees. The dummy variable is “1” if a firm is small/medium/large and 0 otherwise ([Jiménez and Sanz, 2011](#); [Ayyagari et al., 2012](#)).
- *Firm age:* Firm age is measured using the log value of the difference between the year of firm incorporation and the survey year ([Ayyagari et al., 2012](#); [Pamukçu and Utku-I smiha, 2009](#)).
- *Market competition:* We control competition with the number of competitors operating in the main market as a direct measure of market competition. It is categorized into low-level (<10), mid-level (11–20) and high-level (>20) ([Aghion et al., 2002](#); [Allen and Gale, 2000](#)).
- *Firm ownership status:* It is in three dummy variable classes, i.e. domestic, foreign and government ownership, based on major shares by domestic, foreign and government investors in firms’ ownership structures ([Ayyagari et al., 2012](#); [Lin et al., 2010](#)).

- *Firm legal status*: This has three categories of dummy variables and takes the value of “1” if a firm is sole proprietor/partnership/company and 0 otherwise (Barasa *et al.*, 2017; Ayyagari *et al.*, 2012).
- *Managerial experience*: Managerial experience is the log value of top managers’ working experience (Baik *et al.*, 2011; Demerjian *et al.*, 2012).
- *Gross domestic product*: Log value of GDP per capita is the country-specific control variable (Ayyagari *et al.*, 2012; Xiao and Zhao, 2012).

4.3 Models description and estimating tools

Based on the nature of the dataset and earlier literature (Ayyagari *et al.*, 2012; Xiao and Zhao, 2012), we used the ordered probit model to examine the hypotheses. Our sample countries exhibit all major religions, as the CIA factbook explains. All regression models contain robust standard error technique:

$$Innovation_{itk} = \beta_0 + \beta_1 Religion_k + \sum_{j=1}^{11} \beta_j Control Variables_{itk} + \varepsilon \quad (1)$$

$$Innovation_{itk} = \beta_0 + \sum_{j=1}^6 \beta_j Dominant Religion_k + \sum_{j=1}^{11} \beta_j Control Variables_{itk} + \varepsilon \quad (2)$$

$$Innovation_{itk} = \beta_0 + \beta_1 Atheism_k + \sum_{j=1}^{11} \beta_j Control Variables_{itk} + \varepsilon \quad (3)$$

Where:

Innovation = Index Core, Index 2, Index 4

Dominant Religions = Buddhism, Christianity, Hinduism, Islam, Judaism, Others and Atheism

Control Variables = Firm Size, Firm Age, Market Competition, Ownership Status, Legal Status, Managerial Experience, GDP Per Capita

5. Empirical analysis

For empirical examination, we use Enterprise Survey for firm-level data and CIA Factbook, World Development Indicators and Pew Research center data for country-level indicators. Table 2 displays descriptive statistics of the dataset, comprising mean, standard deviation, minimum and maximum value.

Table 3 displays the pairwise correlation analysis results between all the study variables. The significant purpose of correlation analysis is to confirm the absence of multicollinearity between any two explanatory variables, for which the correlation coefficient value between any two variables should not exceed 0.80. We notice that all the correlation coefficient values are well below the threshold limit, suggesting no multicollinearity among the variables. Furthermore, the sign of the correlation coefficient only indicates the direction of the relationship between two variables (pairwise). The magnitude of the correlation coefficient indicates the strength of the relationship between the two variables.

It should be noted that our present study has three dependent variables (i.e. the index core, the index 2 and the index 4), which culminate in three different models. Specifically, all

Variable	Observation	Mean	SD	Min	Max
Index core	24,166	0.839	0.850	0	2
Index2	24,166	0.436	0.608	0	2
Index4	24,166	1.272	1.241	0	4
Religion diversity index	24,166	3.196	1.902	0.010	7.700
Government restriction index	24,166	5.007	2.209	0.300	9.100
Religion diversity index * religious freedom	24,166	1.056	2.280	0.002	19
High religious diversity and freedom	24,166	0.544	0.498	0	1
Buddhism	24,166	0.030	0.171	0	1
Christianity	24,166	0.329	0.469	0	1
Hinduism	24,166	0.306	0.461	0	1
Islam	24,166	0.246	0.430	0	1
Judaism	24,166	0.009	0.093	0	1
Other	24,166	0.005	0.070	0	1
Atheism	24,166	0.076	0.265	0	1
Firm size (medium)	24,166	0.391	0.488	0	1
Firm size (large)	24,166	0.255	0.436	0	1
Firm age (log)	24,166	2.768	0.790	0	5.347
Market competition (low)	24,166	0.337	0.473	0	1
Market competition (medium)	24,166	0.067	0.250	0	1
Ownership (foreign)	24,166	0.046	0.209	0	1
Ownership (government)	24,166	0.005	0.074	0	1
Legal status (partnership)	24,166	0.290	0.454	0	1
Legal status (company)	24,166	0.352	0.478	0	1
Managerial experience (log)	24,166	2.689	0.746	0	4.248
GDP per capita (log)	24,166	3.531	0.418	2.782	4.575

Table 2.
Descriptive statistics **Source:** Authors' computations

the variables of innovation show a positive correlation with the variables representing religious diversity (i.e. religious diversity index and religious diversity and freedom). Moreover, the said innovation-related variables present negative correlations with the government restriction index. Moreover, different religions representations have diverse correlation results with innovation related variables.

The ordered probit regression analysis technique with robust standard error tests the hypotheses. After controlling for a diverse range of firm, market and country-level variables (Table 4), we find a significant positive relationship between religious diversity and firm-level innovation (measured as index core). Results elaborate that a diverse religious society creates cooperation in work, collaboration of ideas, sharing of information and acceptance of viewpoints in countries. These societal qualities stimulate knowledge, which subsequently enhances innovation. The outcome is consistent with past studies (Yeganeh, 2013; DiRienzo and Das, 2015; Cimmirella and Streb, 2015) and parallel to our study hypothesis.

The government religion restriction index argues that higher state restrictions on religion negatively impact corporate innovation by hampering individual/societal openness, creating anxiety, obstructing creativity and fettering new ideas, consequently reducing innovation. Results are verified with the interactive variable “religious diversity and religious freedom,” which shows a positive and statistically significant relationship with corporate innovation, likely to be more pronounced in countries with high religious freedom and diversity. Dummy variables of predominant religions are used to estimate the impact on firms’ innovative performance. Results in Table 4 reflect an interesting phenomenon: in comparison to countries with unaffiliated religious populations, countries with any

	IndexCore	Index2	Index4	RDI	GRI	RDF	HRDF	BUD	CHR	HIN	ISL	JUD	OTH
Index2	0.438 ^a												
Index4	0.899 ^a	0.788 ^a											
RDI	0.166 ^a	0.064 ^a	0.145 ^a										
GRI	-0.132 ^a	-0.083 ^a	-0.132 ^a	0.109 ^a									
RDF	0.072 ^a	0.031 ^a	0.065 ^a	0.276 ^a	0.275 ^a								
HRDF	0.184 ^a	0.108 ^a	0.179 ^a	0.648 ^a	-0.010	0.005							
BUD	-0.046 ^a	-0.073 ^a	-0.067 ^a	0.163 ^a	0.057 ^a	-0.211 ^a	-0.123 ^a						
CHR	0.090 ^a	0.075 ^a	0.098 ^a	-0.154 ^a	-0.555 ^a	0.249 ^a	0.608 ^a	-0.117 ^a	-0.465 ^a				
HIN	0.052 ^a	0.013 ^b	0.043 ^a	0.279 ^a	-0.109 ^a	-0.056 ^a	0.580 ^a	-0.100 ^a	-0.399 ^a	-0.379 ^a			
ISL	-0.202 ^a	-0.124 ^a	-0.199 ^a	-0.596 ^a	0.449 ^a	-0.208 ^a	-0.062 ^a	-0.016 ^a	-0.065 ^a	-0.062 ^a	-0.053 ^a		
JUD	-0.040 ^a	-0.016 ^a	-0.035 ^a	0.064 ^a	0.028 ^a	-0.011 ^c	0.064 ^a	-0.012 ^b	-0.049 ^a	-0.047 ^a	-0.040 ^a	-0.007	-0.020 ^a
OTH	-0.001	0.003	-0.001	0.167 ^a	0.035 ^a	0.006	0.262 ^a	-0.050 ^a	-0.200 ^a	-0.190 ^a	-0.164 ^a	-0.027 ^a	-0.013 ^b
SEC	0.123 ^a	0.097 ^a	0.131 ^a	0.586 ^a	0.390 ^a	0.002	0.051 ^a	-0.032 ^a	-0.033 ^a	0.081 ^a	-0.043 ^a	0.005	0.020 ^a
F\$im	0.023 ^a	-0.004	0.013 ^b	0.066 ^a	0.033 ^a	-0.015 ^a	0.022 ^a	-0.021 ^a	0.028 ^a	-0.033 ^a	-0.012 ^c	-0.015 ^a	0.030 ^a
FSI	0.117 ^a	0.207 ^a	0.181 ^a	-0.025 ^a	-0.009	-0.017 ^a	0.037 ^a	-0.037 ^a	0.090 ^a	-0.012 ^c	-0.005	0.027 ^a	0.029 ^a
FA	0.085 ^a	0.071 ^a	0.093 ^a	-0.119 ^a	-0.198 ^a	0.072 ^a	0.134 ^a	0.071 ^a	0.023 ^a	-0.050 ^a	0.078 ^a	0.029 ^a	0.038 ^a
McI	-0.013 ^c	0.003	-0.008	-0.064 ^a	0.105 ^a	-0.079 ^a	0.010	-0.006	-0.076 ^a	0.081 ^a	0.021 ^a	0.028 ^a	0.029 ^a
McM	-0.022 ^a	-0.030 ^a	-0.029 ^a	-0.002	0.039 ^a	-0.039 ^a	0.010	0.002	0.129 ^a	-0.133 ^a	-0.007	0.012 ^c	0.001
OSf	0.056 ^a	0.122 ^a	0.098 ^a	-0.057 ^a	-0.089 ^a	0.043 ^a	-0.035 ^a	0.002	0.012 ^c	-0.036 ^a	-0.025 ^a	-0.001	0.027 ^a
OSg	0.013 ^b	0.023 ^a	0.019 ^a	0.086 ^a	0.070 ^a	-0.005	0.022 ^a	-0.003	-0.012 ^c	-0.036 ^a	-0.039 ^a	-0.041 ^a	0.023 ^a
LSp	0.118 ^a	0.062 ^a	0.112 ^a	0.112 ^a	0.000	0.001	0.196 ^a	-0.066 ^a	-0.141 ^a	0.166 ^a	-0.029 ^a	0.004	-0.039 ^a
LS ^c	-0.015 ^b	0.093 ^a	0.035 ^a	-0.188 ^a	-0.098 ^a	0.060 ^a	-0.273 ^a	-0.070 ^a	0.422 ^a	-0.303 ^a	-0.029 ^a	0.004	-0.039 ^a
ME	0.057 ^a	0.024 ^a	0.052 ^a	-0.126 ^a	-0.054 ^a	0.054 ^a	-0.111 ^a	-0.042 ^a	0.140 ^a	-0.241 ^a	0.101 ^a	0.052 ^a	0.014 ^b
GDPPC	-0.014 ^b	0.065 ^a	0.022 ^a	-0.026 ^a	-0.017 ^a	0.157 ^a	-0.193 ^a	-0.095 ^a	0.518 ^a	-0.567 ^a	-0.098 ^a	0.231 ^a	-0.038 ^a

Notes: ^a $p < 0.01$; ^b $p < 0.05$; ^c $p > 0.1$; Index core (indexcore); index 2 (index2); index 4 (index4); religious diversity index (RDI); government restriction index (GRI); religious diversity and freedom (RDF); high-low religious diversity and freedom (HRDF); Buddhism (BUD); Christianity (CHR); Hinduism (HIN); Islam (ISL); Judaism (JUD); other (OTH); atheism (ATH); firm size (medium) (F\$im); firm size (large) (FSl); firm age (FA); market competition (low) (McI); market competition (medium) (McM); ownership (foreign) (OSf); ownership (government) (OSg); legal status (partnership) (LSp); legal status (company) (LSc); managerial experience (ME); log GDP per capita (GDPPC)

Source: Authors' computations

(continued)

Table 3.
Correlation matrix

Religion
impact
corporate
innovation

	ATH	F5m	F5l	FA	Mcl	MCm	OSf	OSg	LSp	LSc	ME
Index2											
Index4											
RDI											
GRI											
RDF											
HRDF											
BUD											
CHR											
HIN											
ISL											
IUD											
OTH											
SEC											
F5m	0.010										
F5l	0.041 ^a	-0.469 ^a									
FA	-0.109 ^a	-0.008	0.143 ^a								
Mcl	-0.118 ^a	-0.015 ^c	-0.016 ^b	-0.015 ^b							
MCm	-0.055 ^a	-0.004	-0.016 ^b	-0.003	-0.191 ^a						
OSf	0.009	-0.047 ^a	0.140 ^a	0.007	0.014 ^c	-0.022 ^a					
OSg	0.120 ^a	-0.006	0.037 ^a	0.014 ^b	-0.004	-0.012	-0.016 ^a				
LSp	0.076 ^a	0.045 ^a	0.011 ^c	0.016 ^a	-0.017 ^b	-0.001	-0.033 ^a	0.031 ^a			
LSc	-0.121 ^a	-0.022 ^a	0.183 ^a	0.065 ^a	0.136 ^a	-0.001	0.130 ^a	0.015 ^b	-0.472 ^a		
ME	0.015 ^b	-0.032 ^a	0.058 ^a	0.361 ^a	0.022 ^a	-0.009	0.010	-0.002	0.027 ^a	0.120 ^a	
GDP	0.218 ^a	-0.016 ^a	0.023 ^a	0.001	0.028 ^a	-0.046 ^a	0.107 ^a	0.029 ^a	-0.181 ^a	0.469 ^a	0.205 ^a

Table 4.
Ordered probit
regression model
(index core)

Ordered probit regression	Coefficient (model 1)	Marginal effects	Coefficient (model 1)	Marginal effects	Coefficient (model 1)	Marginal effects
<i>Independent variables</i>						
Government diversity index	0.072*** (10.33)	0.024*** (10.40)	-0.063*** (-8.87)	-0.021*** (-8.92)	0.019*** (4.22)	0.006*** (4.23)
Government restriction index						
Religion diversity index and religious freedom						
High religious diversity and freedom					0.287*** (12.63)	0.066*** (12.75)
<i>Control variables:</i>						
Firm size (medium)	0.184*** (8.51)	0.062*** (8.55)	0.204*** (9.40)	0.068*** (9.46)	0.196*** (9.06)	0.066*** (9.10)
Firm size (large)	0.364*** (13.62)	0.123*** (13.80)	0.377*** (14.06)	0.127*** (14.25)	0.367*** (13.72)	0.124*** (13.90)
Firm age	0.051*** (3.82)	0.017*** (3.83)	0.034*** (2.52)	0.011*** (2.52)	0.043*** (3.24)	0.014*** (3.26)
Market competition (low)	0.052*** (2.38)	0.017*** (2.38)	0.066*** (2.98)	0.022*** (2.98)	0.050*** (2.27)	0.016*** (2.27)
Market competition (medium)	-0.009 (-0.25)	-0.003 (-0.25)	0.017 (0.44)	0.005 (0.44)	0.001 (0.01)	0.001 (0.01)
Ownership (foreign)	0.286*** (5.20)	0.097*** (5.21)	0.227*** (4.08)	0.076*** (4.09)	0.269*** (4.85)	0.091*** (4.86)
Ownership (government)	-0.146 (-1.21)	-0.049 (-1.21)	-0.074 (-0.60)	-0.024 (-0.60)	-0.111 (-0.91)	-0.037 (-0.91)
Legal status (partnership)	0.246*** (10.57)	0.083*** (10.64)	0.245*** (10.56)	0.083*** (10.63)	0.252*** (10.87)	0.085*** (10.95)
Legal status (company)	0.076*** (2.76)	0.025*** (2.76)	0.035 (1.29)	0.012 (1.29)	0.048* (1.73)	0.016* (1.73)
Managerial experience	0.069*** (4.97)	0.023*** (4.97)	0.054*** (3.94)	0.018*** (3.94)	0.054*** (3.95)	0.018*** (3.95)
GDP per capita	-0.382*** (-11.26)	-0.129*** (-11.33)	-0.333*** (-9.75)	-0.113*** (-9.80)	-0.385*** (-11.31)	-0.130*** (-11.39)
Year control	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	15,185	15,185	15,185	15,185	15,185	15,185
Wald chi ²	1,036.76	1,002.86	1,002.86	990.83	1,099.15	1,099.15
Prob. > chi ²	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R ²	0.032	0.031	0.031	0.029	0.034	0.034
Log pseudo likelihood	-15,828.79	-15,841.56	-15,841.56	-15,875.84	-15,801.04	-15,801.04

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; z statistics in parentheses. Marginal effects are computed for Index Core = 3

Source: Authors' computations

predominant religion are likely to exhibit a negative impact on corporate innovation. It indicates that religion restricts corporate innovation by restricting its followers' involvement in innovative activities.

According to the results in [Table 5](#), atheism shows a significantly positive relationship with corporate innovation, indicating that firms in economies with atheist populations are likely to be more innovative, reflecting the theory of modernization's stance on the interconnectedness between atheism and economic development. Modernization involves cognitive thinking, scientific progression and technological creativity, all of which boost innovation ([Yeganeh, 2013](#); [Coccia, 2014](#); [Assouad and Parboteeah, 2017](#)).

Results undergo robust testing with two additional proxies for corporate innovation: index 2 and index 4. Results reported in [Tables 6, 7](#) (index 2 as the dependent variable), [8](#) and [9](#) (index 4 as the dependent variable) indicate religious diversity has a positive and government restriction of religion has a negative relationship with firm-level innovations. Moreover, the interactive term of religious diversity and religious freedom reinforces a positive link with corporate innovation. Such liaison is likely more significant in countries with high religious freedom and diversity. Lastly, firms operating in countries with predominant religions are likely to be less innovative.

Empirical findings suggested that religion is the most fundamental and precious element of any religious society and can shape an individual's lifestyle and behavior ([Gursoy et al., 2017](#)). Moreover, it is an individual, not the organization itself, that can make decisions. Whatever an individual does outside the workplace (religious activities and cultural norms), it unavoidably affects their attitude toward making decisions inside the workplace ([Hilary and Hui, 2009](#)). In a broad sense, religiosity is a wide range of sociological terms that are used to denote several characteristics of religious action, devotion and trust (religious doctrine).

Religion is an important module of society and culture. On the one hand, religion is a set of formal and informal ethical limitations on an individual's interests. On the other hand, it brings up better opportunities for the socioeconomic activities of numerous subjects, such as consumers, entities and institutions. ([Coccia, 2014](#)). Religion is a vital force that forms believers' standards and also shapes social, cultural, economic, political and scientific activities ([Deneulin and Rakodi, 2011](#)).

Different religious societies create diverse ethical restrictions that can lead to dissimilar behaviors and technological and economic performance across countries. Religion influences culture and the acceptance of technological innovations in society ([Herbig and Palumbo, 1994](#)). Furthermore, modern society depends on human rationality to attain socioeconomic growth. The secular states maximize the well-being of their residents through technological expertise, industrialization and economic growth ([Inglehart and Welzel, 2005](#)). In other words, secularization and modernization are associated with rational thinking, scientific advancement and technical creativity, all of which augment national competitiveness and innovation.

6. Conclusion

This study is undertaken to examine the impact of religion on corporate innovation. We test this relationship empirically with the World Bank Enterprise Survey's firm-level data (micro) from developing countries and the CIA Factbook and Pew Research Center's country-level data (macro) on religion. We construct three proxies to measure corporate innovation, i.e. the index core, the index 2 and the index 4. Country-level religiosity is measured comprehensively with the religious diversity index, government restrictions on the religion index, religious diversity and freedom, high religious diversity and freedom,

Ordered probit regression	Dependent variable: index core		Marginal effects
	Coefficient (model 2)	Coefficient (model 3)	
<i>Independent variables:</i>			
Buddhism	-0.854*** (-12.62)	-0.287*** (-12.76)	
Christianity	-0.352*** (-9.43)	-0.118*** (-9.49)	
Hinduism	-0.700*** (-16.50)	-0.235*** (-16.83)	
Islam	-0.976*** (-21.58)	-0.328*** (-22.27)	
Judaism	-1.064*** (-9.43)	-0.357*** (-9.46)	
Other	-0.691*** (-4.30)	-0.232*** (-4.31)	
Atheism		0.549*** (15.66)	0.187*** (15.92)
<i>Control variables:</i>			
Firm size (medium)	0.182*** (8.40)	0.176*** (8.21)	0.060*** (8.25)
Firm size (large)	0.345*** (12.83)	0.332*** (12.46)	0.113*** (12.59)
Firm age	0.061*** (4.62)	0.067*** (5.04)	0.023*** (5.05)
Market competition (low)	0.041** (1.94)	-0.010 (-0.50)	-0.003 (-0.50)
Market competition (medium)	-0.011 (-0.29)	-0.077*** (-2.02)	-0.026*** (-2.02)
Ownership (foreign)	0.239*** (4.23)	0.301*** (5.45)	0.102*** (5.46)
Ownership (government)	-0.206* (-1.69)	-0.222* (-1.82)	-0.076* (-1.82)
Legal status (partnership)	0.235*** (10.04)	0.292*** (12.72)	0.099*** (12.86)
Legal status (company)	0.037 (1.29)	0.140*** (5.12)	0.047*** (5.12)
Managerial experience	0.078*** (5.59)	0.067*** (4.86)	0.022*** (4.87)
GDP per capita	-0.385*** (-10.19)	-0.154*** (-5.66)	-0.052*** (-5.67)
Number of observations	15,185		15,185
Wald chi ²	1,167.17		836.76
Prob. > chi ²	0.000		0.000
Pseudo R ²	0.037		0.025
Log pseudo likelihood	-15,750.81		-15,939.46
Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; z statistics in parentheses. Marginal effects are computed for index core = 3			
Source: Authors' computations			

Table 5.
Ordered probit
regression model
(index core)

Ordered probit regression	Coefficient (model 1)	Marginal effects	Coefficient (model 2)	Marginal effects	Coefficient (model 1)	Marginal effects
<i>Independent variables:</i>						
Religion diversity index	0.023*** (3.06)					
Government restriction index						
Religion diversity index and religious freedom		0.002*** (3.06)	-0.027*** (-3.43)	-0.002*** (-3.44)	-0.004 (-0.84)	-0.001 (-0.84)
High religious diversity and freedom					0.250*** (10.17)	0.026*** (10.01)
<i>Control variables</i>						
Year control	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	15,037	15,037	15,037	15,037	15,037	15,037
Wald chi ²	1,163.14	1,162.47	1,162.47	1,162.47	1,241.95	1,241.95
Prob. > chi ²	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R ²	0.049	0.049	0.049	0.049	0.053	0.053
Log pseudo likelihood	-11,646.78	-11,646.30	-11,646.30	-11,646.30	-11,599.38	-11,599.38

Notes: ***p < 0.01; z statistics in parentheses. Marginal effects are computed for index 2 = 3
Source: Authors' computations

Ordered probit regression	Dependent variable: index 2		Marginal effects
	Coefficient (model 2)	Coefficient (model 3)	
<i>Independent variables:</i>			
Buddhism	-0.977*** (-10.88)	-0.102*** (-10.51)	
Christianity	-0.352*** (-8.12)	-0.037*** (-7.84)	
Hinduism	-0.379*** (-7.87)	-0.039*** (-7.59)	
Islam	-0.666*** (-12.70)	-0.070*** (-12.05)	
Judaism	-1.050*** (-8.54)	-0.110*** (-8.26)	
Other	-0.193 (-1.02)	-0.020 (-1.02)	
Atheism		0.434*** (10.49)	0.045*** (9.96)
<i>Control variables</i>			
Number of observations		Yes	Yes
Wald chi ²		15,037	15,037
Prob. > chi ²		1,263.74	1,114.85
Pseudo R ²		0.000	0.000
Log pseudo likelihood		0.055	0.047
		-11,573.06	-11,666.91
Notes: *** <i>p</i> < 0.01; <i>z</i> statistics in parentheses. Marginal effects are computed for index 2 = 3			
Source: Authors' computations			

Table 7.
Ordered probit
regression model
(index 2) [robustness
check]

Table 8.
Ordered probit
regression model
(index 4) [robustness
check]

Ordered probit regression	Dependent variable: index 4			
	Coefficient (model 1)	Marginal effects	Coefficient (model 1)	Marginal effects
<i>Independent variables:</i>				
Religion diversity index	0.055*** (8.61)	0.004*** (8.32)		
Government restriction index		-0.051*** (-7.67)	-0.004*** (-7.53)	
Religion diversity index and religious freedom			0.010*** (2.54)	0.001*** (2.54)
High religious diversity and freedom				0.287*** (13.70) 0.022*** (12.64)
<i>Control variables</i>				
Year control	Yes	Yes	Yes	Yes
Number of observations	Yes	Yes	Yes	Yes
Wald chi ²	15,185	15,185	15,185	15,185
Prob. > chi ²	1,399.79	1,363.34	1,327.18	1,514.50
Pseudo R ²	0.000	0.000	0.000	0.000
Log pseudo likelihood	0.032	0.032	0.030	0.035
	-21,396.96	-21,403.46	-21,431.53	-21,340.52
Notes: *** <i>p</i> < 0.01; <i>z</i> statistics in parentheses. Marginal effects are computed for index 4 = 5				
Source: Authors' computations				

Ordered probit regression	Dependent variable: index 4		Marginal effects
	Coefficient (model 2)	Coefficient (model 3)	
<i>Independent variables:</i>			
Buddhism	-0.942*** (-14.61)	-0.074*** (-13.11)	
Christianity	-0.409*** (-11.01)	-0.032*** (-10.10)	
Hinduism	-0.641*** (-15.47)	-0.050*** (-13.43)	
Islam	-0.923*** (-21.16)	-0.072*** (-17.18)	
Judaism	-1.182*** (-11.57)	-0.093*** (-10.70)	
Other	-0.523*** (-3.26)	-0.041*** (-3.23)	
Atheism		0.567*** (16.06)	0.045*** (13.81)
<i>Control variables</i>			
Number of observations	Yes	Yes	
Wald chi ²	15,185	15,185	
Prob. > chi ²	1,573.89	1,246.07	
Pseudo R ²	0.000	0.000	
Log pseudo likelihood	0.036	0.029	
	-21,298.08	-21,471.37	
Notes: *** $p < 0.01$; z statistics in parentheses. Marginal effects are computed for index 4 = 5			
Source: Authors' computations			

Table 9.
Ordered probit
regression model
(index 4) [robustness
check]

predominant religions and atheism. Results show that religiously diverse countries are likely to engage in more innovation, while government restrictions on religion significantly reduce innovation. Results are verified via religious diversity and religious freedom, which indicate that enterprises operating in countries with high religious freedom and diversity innovate more. Lastly, regression estimates identify that firms in countries with a secular population innovate more than firms operating in religious countries.

Corporate innovation is analyzed to thrive with religious diversity in the developing world, in an environment of cooperation, coordination, information sharing and acceptance of viewpoints that fosters knowledge and idea generation. However, restrictions imposed by authorities on religion generate anxiety and distress, hampering creativity and innovation. Moreover, one predominant religion in a developing country is negatively associated with firm-level innovation as religion restricts followers from engaging in “risky behavior,” thus shaping the overall innovative environment. Compared to countries with predominating religions, firms operating in countries with unaffiliated religious populations innovate more because of modern and secular societies. These societies are cognitively thinking, change-embracing, technologically creative and scientifically advanced.

Based on this study, we hope that the growth of religious diversity, which has been described as harmony, tolerance and an open environment, will lead to new ideas. By making a syndicate, it also helps bring religious views into line and encourages innovation in the developing world. The study’s results are important for innovative companies because they can use the fact that people can be split into religious and nonreligious groups to their advantage. It is likely that religious diversity in the workplace will lead to a more tolerant society that accepts different points of view, judgments and ideas. Such actions, points of view and ideas lead to knowledge, creativity, technology and other types of innovation. Firms must manage innovation well because different religions have different feelings about creativity and new ideas. The results also had some effects on developing countries that want to encourage innovation at the firm level by making good policies and building diverse, free religious societies. Such social traits help companies be more innovative and are good for the growth and competitiveness of a country.

Beside all the aforementioned policy implications, this study has some limitations as well. We only observe firms operating in developing economies; however, future research can be conducted by including developed countries with a religiously diverse population. Another limitation of this study is that the sample firms are drawn from a heterogeneous population of firms operating in different sectors. Different industrial sectors are subject to different economic conditions, and some specific sectors may have a different degree of innovation. Future research can be conducted by focusing on any specific economic sector. Lastly, we used data from nonfinancial firms. Future research can evaluate the role of religion in developing fintech.

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