

Original Research

Diversification Strategy and Financial Performance of Insurance Firms: Evidence from Iran

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Abstract

This paper investigates the impact of diversification strategy on firm performance. The paper looks into three dimensions of diversification strategy in terms of staff, product and geographical presence, using return on asset (ROA) and return on equity (ROE) to proxy for financial performance. Using the fixed effects regression estimation method to analyze the data of 30 Iranian insurance companies in the period from 2012-2021, the article finds a significant positive impact of diversification in terms of staff education on ROA, while the relationships between staff diversification in terms of gender and experience with ROA are significantly negative. No significant relationship is found between diversification in terms of geographical presence, insurance policy, and premium with ROA. When ROE measures financial performance, the research reports significantly positive effects of diversification on ROE in terms of education and insurance policy. In contrast, the relationships between diversification in terms of gender and premium with ROE are found to be significantly negative. Meanwhile, the effects of diversification on ROE in terms of geographical presence and experience are insignificant. The paper contributes to the literature on diversification strategy by developing specific models to measure staff, geographic and product diversification strategies in the insurance industry. It also adds to the literature on the diversification-performance nexus by bringing fresh insight into the multiple dimensions of diversification strategies and their impacts on firms' profitability.

Keywords: Diversification, financial performance, insurance industry, Iran.

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Introduction

Diversification has been a strategic choice for firms that wish to expand for several decades, although not all firms follow this pattern of expansion (Le, 2019). Extensive studies have analyzed the relationship between different diversification aspects and firm performance in different industries in many countries (Phung and Mishra, 2016). The literature on firms' diversification reveals the existence of different diversification strategies exercised by corporations are both complex and multi-faceted (Cole and Karl 2016).

Whether an insurance company can benefit from a diversification strategy (for example, offering a diversified product portfolio or geographic locations for underwriting or claim settlement to its policyholders) is still an unanswered question (Le 2019, Krivokapic et al. 2017).

Against this background, the paper aims to examine the impacts of those complex and multi-faceted diversification strategies on insurers' financial performance. Using the data of 30 Iranian insurance companies in the period of 10 years from 2011 to 2021 and the fixed effect estimation method, the paper reports the significant impacts of product, geographic and staff diversification on firms' financial performance.

This study makes three contributions to the literature. First, it provides the diversification strategy literature with measurement models to proxy for staff, geographic and product diversification strategies in the insurance industry. Although earlier studies on staff, geographic and product diversification were partially helpful in advancing the understanding of aforementioned relationships and recognition of different findings and opinions, there was no research investigating the diversification-firm performance nexus in the insurance industry, using all of the measures introduced in this paper. This might be attributed to the difficulty of including all dimensions of diversification strategy in one study or the unavailability of the data for previous researchers. In particular, this research distinguishes diversification strategy into three main dimensions: Staff, geographic, and product diversification. To measure staff diversification, this paper uses three proxies: education, gender and work experience of insurance firms' employees. The total number of sales agents and the firm's branches are calculated and applied to the regression models for geographic diversification. Finally, product diversification is defined by using two measures: the number of policies underwritten in a company, in a line of business, for one year (product diversification policy) and the total premium collected in a company, in a line of business, for one year (product diversification premium). Second, this research adds to the literature on the diversification-performance nexus by bringing fresh insight into the multiple dimensions of diversification strategies and their impacts on firms' profitability. Third, this current research is the first study that examines the diversification in the insurance industry and its impacts on the financial performance of firms in Iran's insurance market. Since the context of this study is the insurance industry of Iran as a whole, the analysis of diversification-financial performance among all types of insurance companies leads to key contributions to both practitioners and scholars, as the vast majority of studies on the subject only investigate health insurers or property-casualty lines of business. The insurance-specific analysis reveals significant perspectives about



the relationship mentioned above, considering the inconclusive results and lack of consensus among researchers in previous studies. Therefore, to improve understanding of diversification strategy in the insurance context, this study completes, combines, and enhances earlier studies by using several measures, an extensive set of secondary data, and introducing new scales that can be justified and applied smoothly in the insurance market.

Theoretical background and hypotheses

Definitions of the diversification strategy

There have been many definitions of diversification since the concept was added to the business and management discipline in the 1950s when the well-known American strategist Ansoff published the "Strategies for Diversification" article in "Harvard Business Review". According to Ansoff's definition (1957), diversification is a business strategy for developing new markets with new products. Penrose (1959) argues that diversification is increasing the number and variety of final products in addition to vertical integration. Other scholars, such as Gort (1962), state that diversification occurs when companies develop new markets which are different from the original markets, which has some overlap with Ansoff's definition.

However, more narrowed-down definitions of diversification can be found in recent studies. For instance, Su and Tsang's study (2015) states that product diversification (PD) exists when companies have operations in several industries or product markets. One of the other aspects of diversification, i.e., geographic diversification (GD), has been discussed by many scholars. Subramaniam and Wasiuzzaman (2019) argue that geographic diversification is the diversification of a business across multiple locations to increase profitability for the firm. Yildirim and Efthyvoulou (2018) divide geographic diversification into two categories: intra-regional GD, which refers to diversification within a region where a firm is already operating, and inter-regional GD, which highlights diversification across the regions that are new to the firm. In addition to PD and GD, staff diversification (SD) is another aspect of diversification studied in this paper. Staff (workforce) diversification is defined by Saxena (2014) as differences among employees in terms of age, cultural background, physical abilities and disabilities, race, religion, gender, and sexual orientation. Bruna et al. (2021) studied the impact of gender diversification on corporate performance and considered gender as one of the aspects of staff diversification. In another study, Cennamo and Gardner (2008) argue that a diverse workforce comprises employees from different cultures with different characteristics, aspirations, and expectations. Finally, Hofhuis et al. (2016) claim that employee differences indicate workforce diversity.

Hypotheses

The extant empirical literature has shown different and even contradictory results for the impacts of diversification strategy on the financial performance of firms (Nigam & Gupta, 2023). In addition, some scholars, such as Datta et al. (1991) and Lin and Chang (2015), demonstrated that the diversification-financial performance relationship is a contextually dependent concept. Therefore, this section aims to formulate different



hypotheses that can explain all the existing relationships between different aspects of diversification strategy and financial measures of firms' performance (ROA and ROE). Table 1 summarizes some of the previous studies on the diversification-firm performance field.

Type of Diversification-performance Relationship	Advocators			
Low level of diversification, better financial performance	Clark et al. (1994) Rogers (2001) Liebenberg et al. (2008) Berger et al. (2010)			
High level of diversification, better financial performance	Grant (1988) Meador et al. (1997) Pandya and Roa (1998) Hyland and Diltz (2002) Estes, K. (2014) Ai et al. (2018) Omosa et al. (2022)			
Related diversification, better financial performance	Bettis (1981) Hill (1987) Becerra (2009) Park and Jang (2013) Seifzadeh (2017) Gyan & Jan-Bezemer (2022)			
Unrelated diversification, better financial performance	Hitt and Ireland (1986) Doukas and Travlos (1988) Elsas et al. (2010) La Rocca and Staglianò (2012)			
Inconsistent relationship between diversification and financial performance	Capar and Kotabe (2003) Elango et al. (2008) Stantarelli and Tran (2013) Ekkayokkaya and Paudyal (2015) Stantarelli and Tran (2016) Stetz & Scifres (2018) Arte & Larimo (2022) Nigam & Gupta (2023) Alfar et al. (2023)			
No relationship between diversification and financial performance	Servaes (1996) Ravichandran et al. (2009) Iqbal et al. (2012)			

Table 1. Diversification-Performance Relationship Summary



The relationship between product diversification and firms' financial performance

Using the data extracted from the annual reports of Iran's central insurance, the number of policies underwritten and premiums collected in each line of business are used to measure product diversification. The reason for measuring product diversification by these two measures is to account for the nature of insurance contracts in different lines of business. In some insurance lines, such as auto and travel insurance, while the number of individual policies underwritten by a firm can be high, the total premium collected is not too much due to the small sums insured. On the other hand, in some other lines of business, such as engineering insurance, the number of policies is considerably lower than other popular lines, while the total generated premium is high due to the value of each project (also called sum insured). Therefore, this study uses both measures to investigate how product diversification impacts insurers' financial performance in Iran.

• PD_{policy} = the number of policies underwritten in one line of business in one year divided by the total number of underwritten policies in all business lines in the same year.

• PD _{premium} = the premiums collected in one line of business in one year divided by the total premium collected in all lines of business in the same year.

According to the Modern portfolio theory (MPT), insurance companies benefit financially from a diversified portfolio of risks or insurance products (Alzobi 2020, Lee 2020, Duijm and Beveren 2020, and Dong and Wong 2000). Other scholars have also reported a positive relationship between product diversification and firms' financial performance in the insurance context in different territories (Ortynski 2019, Peng et al. 2017, Krivokapic et al. 2017, Cole and Karl 2016, Shi et al. 2016, Meador et al. 2000). Accordingly, it is expected that product diversification increases the profitability of Iranian insurers. Therefore, the following hypotheses are proposed in this thesis:

Hypothesis 1 (H1): Product diversification policy is positively associated with the financial performance of firms in the insurance industry.

Hypothesis 2 (H2): Product diversification premium is positively associated with the financial performance of firms in the insurance industry.

The relationship between geographic diversification and firms' financial performance

The total number of agents and branches in one year across the country (Iran) has been used to construct geographic diversification variable. It is a good indicator of geographic dispersion, specifically for traditional markets like Iran, where most people still prefer traditional methods, such as face-to-face or in-office purchases, to modern methods, such as online purchasing (Haghighi et al., 2016). For more clarification, it is worth mentioning that in 2018, total auto insurance premiums written online in Iran were less than 1% of the total premium collected in the same line of business, while in a developed economy like the UK, the number for the same year was 58.7% (Rudden, 2023).



• Geographic diversification = number of sales agents of a firm in one year + number of branches of a firm in the same year (total number of sales agents and branches that sell insurance products for a firm in one year)

Kaže (2010) highlights the significance of consumers' values and purchasing habits in choosing a particular distribution channel in the insurance context. Haghighi et al. (2016) explain that creating a friendly face-to-face relationship with potential customers leads to positive purchasing decisions and increases sales in Iran. Their research shows that traditional purchasing behaviour is still preferable for Iranians, compared to online shopping, which can be attributed to cultural values and preferences. Therefore, being physically present (as insurance firms' branches or sales agents) in different geographic areas is critical for Iranian insurers. Similarly, other researchers, such as Che et al. (2017) and Krivokapic et al. (2017), argue that a positive relationship exists between geographic diversification and firms' performance in different countries. Therefore, the hypothesis (H3), which partially helps answer the main research question of this article, is formulated as follows:

Hypothesis 3 (H3): Geographic diversification is positively associated with the financial performance of firms in the insurance industry.

The relationship between staff diversification and firms' financial performance

The Central Insurance of Iran's annual report has categorized staff working in the insurance industry based on gender, work experience in the insurance sector and education. Therefore, in this chapter, insurance firms' staff have been divided into male or female (based on gender), above ten years or below ten years of work experience and master's degree and above or bachelor's degree and below for education.

• Staff Diversification _{Gender}: Staff has been categorized based on gender, i.e., male or female.

• Staff Diversification _{Experience}: Staff with more than ten years of work experience or less than ten years of work experience.

• Staff Diversification _{Education}: Staff with master's degree and above or those with bachelor's degree and below.

The existing literature suggests a positive relationship between staff diversification and firms' performance. For example, Triguero-Sanchez et al. (2018) state that diversified staff lead to higher performance in Spanish firms. In addition, Armstrong et al. (2010) show that staff diversity is positively associated with firms' performance in manufacturing and service firms in Ireland. However, few researchers have studied the relationship between staff diversification and firms' financial performance in the insurance industry. Similar to the findings of other industries, Nnadi and Chinedu (2019) argue that staff diversity is essential in improving deposit insurance companies' performance in Nigeria. Accordingly, it is expected that a positive relationship exists between staff diversification and the financial performance of Iranian insurance firms, and the following hypotheses are proposed:



Hypothesis 4 (H4): Staff diversification _{Gender} is positively associated with the financial performance of firms in the insurance industry.

Hypothesis 5 (*H*5): *Staff diversification* _{Experience} *is positively associated with the financial performance of firms in the insurance industry.*

Hypothesis 6 (*H6*): *Staff diversification* $_{Education}$ *is positively associated with the financial performance of firms in the insurance industry.*

The relationship between product, geographic, and staff diversification and firms' financial performance

Firms may wish to pursue several diversification strategies to increase their profitability simultaneously. For example, Krivokapic et al. (2017) state that product and geographic diversification strategies are positively associated with firms' profitability. Therefore, according to the above discussions and hypotheses, this study proposes that the compound model of diversification strategies increases the profitability of diversifiers. Hypothesis 7 is formulated as below:

Hypothesis 7 (H7): Diversification *Product, Geographic and Staff is positively associated with the financial performance of firms in the insurance industry.*

Accordingly, the theoretical models of product, geographic and staff diversification relationships with the financial performance of insurance companies in Iran are illustrated below in Figure 1.







Figure 1. Theoretical model of the relationship between diversification strategy and firms' financial performance

Methodology

Research sample and data

This paper uses the research sample of 30 Iranian insurance companies from 2012-2021. The data is obtained from the market annual reports database of Central Insurance of Iran (CII), which is the regulatory and statutory body of Iran's insurance market. Availability and access to this database are of particular benefit to this study. The requirements of reporting to the regulatory and statutory body of Iran's insurance market are such that these reports provide not only standardized financial information and financial ratios of all Iranian insurance companies but also detailed information on different lines of business, including the number of policies and written premiums. Besides, there is additional data about firm size, staff's gender, education and work experience, and the number of agents and branches that sell insurance products for each firm. The data required for measuring product diversification, gender diversification and staff diversification, ROA and ROE, was extracted from CII annual reports for all of the insurance companies (30 firms) operating in Iran for 10 years (2012 to 2021), including 300 observations in total which is an unbalanced dataset.

Measures

Measurement of diversification

There are several ways to measure the degree of diversification of a firm, a market, or an industry. Herfindahl Hirschman index (also known as HHI), Jacquemin and Berry's entropy measures, and Rumelt's classification system are among the famous methods used



for diversification measurement (Persson and Lindgren 2005). However, the Herfindahl Hirschman index is the most common method used for measuring the level of focus or diversification of firms (Hanson et al. 2019, Brezina et al. 2016, Sarmento and Nunes 2015, Djolov 2013) while using panel data. HHI has also been used in measuring the relationship between diversification strategy and a firm's financial performance or profitability in the insurance context (Ng, M. K. 2020, Dauda 2018, Krivokapic et al. 2017, Cole and Karl 2016). It should be mentioned that as the Herfindahl Hirschman Index is a measure of concentration, one minus HHI demonstrates a diversification ratio (Kim et al. 2019, Rubio-Varas and Muñoz-Delgado 2019 and Chikoto et al. 2016). Following the literature, in this paper, for measuring the concentration ratio based on insurance products, the HHI index (product concentration ratio) is defined as below:



DIV product-premium = 1 - HHI product-premium

Hence, the measure of product diversification *premium* may range only from zero to one.

Where:

DPWj is the monetary value of direct premium written (DPW) by an insurance company in product line *j* in a given year.

 $\sum_{j=1}^{N} DPW_{j}$ is the monetary value of a direct premium written by an insurance company in all lines of business in a given year.

Moreover, DIV *product-premium* is product diversification based on written premium, equal to 1 minus concentration ratio (HHI).

Similarly:



DIV *product-policy* = 1 – HHI *product-policy*

Hence, the measure of product diversification *policy* may range only from zero to one.

Where:

 NPW_j is the number of insurance policies written (NPW) by an insurance company in product line j in a given year.



 $\sum_{j=1}^{N} NPW_j$ is the number of insurance policies written (NPW) by an insurance company in all lines of business in a given year.

Furthermore, DIV *product-policy* is product diversification based on the number of policies equal to 1 minus concentration ratio (HHI).

However, for other aspects of diversification that are studied in this paper, i.e., geographic and staff diversification, the HHI index is not used. Instead, as for each variable, there is only one value associated with a given year (for example, the number of agents and firms' branches in an insurance company for a given year or the number of males in an insurance company for a given year), the corresponding values have been inserted into the model directly.

Measurement of firm performance

To measure the financial performance of firms, return on assets (ROA) and return on equity (ROE) were used. These variables are the most popular indicators of financial performance in the diversification-performance literature (Krivokapic et al., 2017, Elango et al., 2008, Wang et al., 2007).

Control variables

Different insurance firms operate in Iran's insurance industry, considering the age, size, ownership structures, and types. Besides, the variables mentioned above have been extensively used for measuring the relationship between diversification and financial performance of firms (Subramaniam and Wasiuzzaman 2019, Lee 2017, Krivokapic et al. 2017, Su and Tsang 2015, Foong and Idris 2012 and Elango et al. 2008).

The firm's age is defined as the years it has been operating since its establishment. At the time of data collection, the oldest and youngest Iranian insurance companies in Iran were 86 and 4 years old, respectively.

Although there are different ways to measure the size of a firm in the literature, firm size is usually represented by the number of employees (Lin et al. 2021, Ibhagui and Olokoyo 2018, Rogers 2004). Therefore, the same measure is used in this paper to indicate an insurer's size.

Iranian insurers are divided into public, private and semi-private firms for ownership structure. Among the 30 domestic insurers operating in Iran's market, only 1 firm is publicly owned, 3 are semi-private, and 26 are private (Annual Industry Report, Central Insurance of Iran, 2021).

According to their core business, Iranian commercial insurers are divided into 3 categories: direct insurers, reinsurers and protection and indemnity (P&I) clubs. All three types of insurance companies are currently operating in Iran, including direct insurers (26 firms), reinsurers (2 firms) and protection and indemnity (P&I) clubs (2 firms). Since the core business of each of the 3 categories is unique and different to the others, the type of



insurance company is used as another control variable in this study. A summary of variable definitions is illustrated in Table 2.

Variable	Definition
product diversification	One minus the product Herfindahl Hirschman index
geographic diversification	total number of agents and branches that sell insurance products for a firm in one year
staff diversification	staff diversification _{Gender} : number of staff based on their gender, i.e., male or female, in one company staff diversification _{Experience} : number of staff with more than 10 years of work experience or less than 10 years of work experience in one company staff diversification _{Education} : number of staff with master's degree and above or bachelor's degree and below in one company
Firm's size	LOG (SIZE), where the size of a firm is the total number of employees who work for an insurer in one year
Firm's age	LOG (AGE+1), where the age of a firm is the number of years that an insurance firm is operating in the market
Firms' ownership	public, private, and semi-private insurers
Firms' type	Direct insurers, reinsurers, and protection and indemnity (P&I) clubs

Table 2. Descriptions of variables

Model specifications

Given that panel data regression is utilized, the general model is formulated as below:

Financial performance $_{it} = \alpha_0 + \beta_1$ Diversification $_{it} + \beta_2$ Size $_{it} + \beta_3$ Type $_{it} + \beta_4$ -Ownership Structure $_{it} + \beta_5$ Age $_{it} + \epsilon_{it}$ (1)

Where ROA and ROE measure the financial performance of insurer *i* in year *t*, diversification is the vector with various measures of diversification strategy (product, geographic and staff) in insurance company *i* during year *t*. Size, type, ownership, and age are control variables for insurer *i* in year *t*. Finally, ε_{it} is the error term.

Diagnostic tests

Table 3 shows the correlation among the independent variables with the VIF value calculated for when firm performance is measured with ROE and ROA. There is no evidence of multicollinearity in the models as all of the VIF values are located between 1 and 5 ($1 < VIF \le 5$) as per guidance by econometrics literature (e.g., Kroll and Song 2013, Dalkani et al. 2012, and Asghari Zakaria et al. 2006).



	Variable	1	2	3	4	5	6	7	8	VIF (ROF)	VIF (ROA)
										(KOL)	(KOA)
1	Diversification education	1.000	0.151	-0.050	-0.281	-0.140	-0.147	-0.153	-0.348	1.57	1.31
2	Diversification experience	0.151	1.000	-0.149	0.130	0.053	-0.028	0.267	0.144	1.16	1.25
3	Diversification gender	-0.050	-0.149	1.000	-0.191	-0.072	-0.087	-0.121	-0.215	1.20	1.23
4	Diversification geographic	-0.281	0.130	-0.191	1.000	0.487	0.433	0.631	0.930	1.22	1.26
5	Diversification policy	-0.140	0.053	-0.072	0.487	1.000	0.550	0.151	0.379	3.14	3.19
6	Diversification premium	-0.147	-0.028	-0.087	0.433	0.550	1.000	0.231	0.380	2.38	2.07
7	AGE	-0.153	0.267	-0.121	0.631	0.151	0.231	1.000	0.682	2.66	2.60
8	SIZE	-0.348	0.144	-0.215	0.930	0.379	0.380	0.682	1.000	2.66	2.56

Table 3. Correlation matrix and VIF values

Data analysis methods

Econometric literature suggests several estimation methods to analyze multiple-level data, including panel data. Pooled ordinary least square (pooled OLS) models can be adopted by researchers when different samples are selected for years or periods of the panel data. On the other hand, using fixed-effects or random-effects models is popular while observing the same sample of individuals, cities, firms, etc., over a period of time (Wooldridge, 2010). This paper adopts the fixed effects method among the two estimation methods (fixed effects versus random effects) according to the data size.

Findings

Descriptive statistics

Descriptive statistics for the variables describing the relationship between firms' diversification strategy and financial performance are presented in Table 4.

	ROA	ROE	AGE	SIZE
Mean	4.57	16.89	15.14	646.43
Median	3.41	17.10	10.00	380.50
Maximum	17.26	43.31	86.00	4614.00
Minimum	-0.52	-5.76	0.00	5.00

Table 4. Descriptive statistics

Hypothesis testing results

Table 5 shows the regression results of Equation (1) when firm performance is measured with ROA. It can be seen from Table 3 that the relationship between diversification _{education} and ROA is significantly positive, while the relationship between diversification _{gender} and diversification _{experience} with ROA is significantly negative. On the other hand, no meaningful and significant relationship is found between diversification _{geographic}, diversification _{policy} and diversification _{premium} with ROA in this model. In



addition, considering the control variables, the firms' size is negatively associated with ROA in this model, i.e., smaller companies benefit from higher ROA than larger firms.

Variable Coe		cient	Std. Error	t-Statistic	Prob.			
DIV_EDUCATION	5.794	695	2.418952	2.395540	0.0173			
DIV_GENDER	-16.18028		4.226553	-3.828245	0.0002			
DIV_EXPERIENCE	-2.390	613	1.109469	-2.154736	0.0321			
DIV_GEO	9.97E	2-05	6.71E-05	1.487040	0.1382			
DIV_POLICY	-1.862	296	2.214107	-0.841105	0.4011			
DIV_PREMIUM	-0.038	3342	1.482462	-0.025864	0.9794			
GENERAL_INSURER	2.610	892	1.981491	1.317640	0.1888			
GOVERNMENT	-1.005	5114	1.306923	-0.769069	0.4426			
LOG(SIZE)	-0.837	/521	0.301175	-2.780844	0.0058			
LOG(AGE+1)	-0.258	3951	0.493986	-0.524207	0.6006			
С	14.87	396	2.747973	5.412703	0.0000			
	Effect	s Speci	ification					
Period fixed (dummy variables)								
Weighted Statistics								
R-squared	R-squared 0.340545 Mean dependent var 0.582281							
Adjusted R-squared	0.292	355	S.D. depe	endent var	1.239627			
S.E. of regression	1.018	982	Sum squa	red resid.	269.9642			
F-statistic	7.066	590	Durbin-W	atson stat	1.966096			
Residual	Cross-	Section	Dependen	ce Test				
Null hypothesis: No cro	ss-secti	on dep	endence (co	orrelation) in	weighted			
		residua	ıls					
Equation: EQ_ROA_P_ALL								
Periods included: 10								
Cross-sections included: 30								
Total panel observations: 300								
Note: non-zero cross-section means detected in data								
Cross-section means were removed during the computation of correlations								
Test Statistic d.f. Prob								
Test		Statis	stic	d.f.	Prob.			

Table 5. Results of the impact of diversification staff, geographic and product on ROA

The regression results of Equation (1) when firm performance is measured with ROE are presented in Table 6. This table shows that the relationship between diversification education and diversification policy with ROE is positive, while the relationship between diversification gender and diversification premium with ROE is negative. On the other hand, no meaningful and significant relationship is found between diversification geographic, diversification experience with ROE in this model. In addition, considering the control variables, the firms' age and ownership structure are positively and negatively associated with ROE in this model, i.e., older companies benefit from higher ROE. At the same time, public insurers' ROE is less than private and semi-private firms.



Variable	Coeff	icient	Std I	Frror	t_Statistic	Proh		
	18.00)522	8 650820 2 10240		2 102/00	0.0202		
DIV_EDUCATION	20.2	0597	12 52078		2.193499	0.0292		
DIV_GENDER	-29.5	1927	13.33078		-2.103807	0.0312		
DIV_EAPERIENCE	-2.08	1827	4.275	216	-0.020085	0.3314		
DIV_GEO	0.000	749		1000	0.877550	0.3810		
DIV_POLICY	17.6	0/48	7.70	1909	2.292610	0.0227		
DIV_PREMIUM	-16.4	9992	5.914	1348	-2.789812	0.0057		
GENERAL_INSURER	-6.55	2162	6.806	5346	-0.962655	0.3366		
GOVERNMENT	-11.2	8596	4.583	3826	-2.462125	0.0145		
LOG(SIZE)	0.865	5524	1.033	3157	0.837746	0.4029		
LOG(AGE+1)	3.504	4578	1.494	4018	2.345740	0.0197		
С	19.32	2439	8.799	9841	2.195993	0.0290		
	Effe	cts Spe	ecificat	ion				
Period fix	ked (du	nmy v	ariable	es)				
	We	ighted	Statist	ics				
R-squared	R-squared 0.157671 Mean dependent var 0.873771							
Adjusted R-squared	0.090	5116	S.D	. depe	endent var	1.190229		
S.E. of regression	1.03	1033	Sui	n squa	ared resid	276.3875		
F-statistic	2.56	1473	Dur	bin-W	atson stat	1.974355		
Prob(F-statistic)	0.000)489						
Residua	Cross-	Sectio	n Depe	enden	ce Test			
Null hypothesis: No cro	oss-sect	ion dep	penden	ice (co	rrelation) in	weighted		
		residu	als					
E	quation	: EQ_F	ROE_P	_ALL	1			
Periods included: 10								
Cross-sections included: 30								
Total panel observations: 300								
Note: non-zero cross-section means detected in data								
Cross-section means were removed during the computation of correlations								
Test Statistic d.f. Prob.								
Breusch-Pagan LM 340.1202 435 0.91						0.9196		

Table 6. Results of the impact of diversification staff, geographic and product on ROE



Diversification		Firms' Financia	Effective Control	
	Strategy	ROA	ROE	Variables
DIV _{education}		Positively associated	Positively associated	Size: negative Type (direct insurer): negative Age: positive
Staff Diversificati	DIV gender	V _{gender} Negatively Negatively associated associated		Size: negative Type (direct insurer): negative Ownership structure (governmental): negative
	DIV Negatively Insignificant relationship		Insignificant relationship	Size: negative Type (direct insurer): negative
G Div	eographic versification	Positively associated	Insignificant relationship	Size: negative
duct Figation	DIV policy Insignificant relationship		Positively associated	Size: negative Type (direct insurer): negative
Pro	DIV premium	Insignificant relationship	Negatively associated	Size: negative
	Diversification staff, geographic and product	DIV education: Positively associated DIV gender: Negatively associated DIV experience: Negatively associated DIV geographic: Insignificant relationship Product DIV policy: Insignificant relationship Product DIV	DIV education: Positively associated DIV gender: Negatively associated DIV experience: Insignificant relationship DIV geographic: Insignificant relationship Product DIV policy: Positively associated Product DIV	Size: negative Ownership structure (governmental): negative Age: positive

premium: Negatively

associated

premium: Insignificant

relationship

Table 7. Summary of the research findings



Discussion

The findings of this paper are unique and novel. To the best of the author's knowledge, there is no research examining the impacts of diversification strategy in terms of staff, geographical presence and products on the performance of firms in general, and more specifically in the insurance industry. Despite being new, the findings generally align with and support extant literature suggesting the significant impacts of diversification strategies on firms' performance. In particular, the negative relationship between gender diversification and firms' financial performance (both ROA and ROE) can be justified by Iran's cultural, religious, and ethical environment. As Iranian firms have to follow the theocratic government instructions (Islamic laws), gender diversity may create an unfavourable workplace environment for the staff of insurance companies by creating some religious or even legal restrictions for employees while interacting with their colleagues. However, this topic is valuable and could be studied in more detail by other scholars in the future.

In contrast, education diversification demonstrates a positive relationship with ROA and ROE. According to the CII annual report, in 2020, only 24% of insurance companies' staff held a master's degree and above level of education. Therefore, it can be concluded that more educated staff can increase the profitability of Iranian insurers, as they can exercise their knowledge and expertise in favour of their employers. The insignificant relationship between geographic diversification and firms' profitability indicates that although geographic expansion requires intensive investment, it does not meaningfully impact firms' profitability in this context. Therefore, by considering the resource-based view (RBV) theory for diversification, firms are attracted to diversify if they possess extra resources or capabilities which can be delivered into other areas (Hauschild and Knyphausen-Aufseß, 2013). Therefore, geographical expansion is not necessary for financial success, specifically for firms under financial pressure, and managers should allocate their resources to other areas that can generate more profit. Product diversification-firms' performance relationship reveals interesting results. As mentioned previously, product diversification policy is positively associated with insurers' profitability. This result is justifiable by the law of large numbers in insurance. Based on the law of large numbers, if the number of insureds is large enough, the actual loss per event will equal the expected loss per event (Smith and Kane, 1994). Hence, if the number of policyholders increases, the probability of insurers' failure decreases, as they have enough financial resources to cover the incurred losses. In addition to the independent variables, the relationships between control variables and the profitability of Iranian insurers are noticeable. The results indicate a negative relationship between size and ROA. Therefore, the number of employees in Iranian insurance companies needs the immediate attention of the top-level managers. It should be mentioned that despite the existing relationship, in 2021, the overall number of employees in Iran's insurance industry increased by 7% compared to 2020 (CII, 2021). Besides, the ROE of publicly owned insurers is less than that of private and semi-private insurers. Therefore, privatizing 32.3% of the insurance market, which belongs to the government (CII, 2021), can increase firms' profitability. Finally, the relationship between the age of insurers and ROE is positive, which means younger firms have been less profitable compared to older competitors. This might be attributed to the competitive advantages of older firms (such as building customer trust, familiarity with the market forces, or the existence of the law



of large numbers), which they have gained over time. In future research, this area can also be valuable to be studied by insurance scholars and practitioners in-depth to investigate the underlying reasons behind the relationship between the firms' age and profitability.

The findings of this paper provide three theoretical contributions, as discussed in the introduction. Moreover, this study offers some implications for insurance managers. First, diversification has a broader meaning than product diversification, which regulators, CEOs, and top-level managers of Iranian insurers mainly consider. It is worth mentioning that according to this study, diversification can move much beyond its traditional and early definitions. Hence, staff and geographic diversification might be as crucial as insurers' product diversification. As a result, the findings of this study can help decision-makers in Iran's insurance market draw strategic plans and select competitive strategies at different levels of decision-making. Second, based on the results collected from the Iranian insurance market, the relationship between different aspects of diversification and firms' financial performance suggests different implications. As illustrated in summary Table 7, positive, negative and insignificant relationships have been found in the diversification-firm performance study of Iranian insurers. Therefore, business owners, key decision-makers in insurance firms and regulators should be careful about the different implications of diversification strategies for their companies and the whole insurance industry by considering the costs and benefits of diversification decisions. However, as highlighted earlier and following the literature, the diversification - firms' financial performance relationship is a contextual-dependent concept; hence, this scenario might differ in other industries, economies, or periods.

Conclusion

This paper attempts to answer the research questions about whether significant relationships exist between staff, geographic and product diversification strategies on firms' performance. More specifically, it investigates if diversification contributes to insurers' financial performance in Iran. The paper uses secondary data collected from all Iranian insurance companies from annual reports of Central Insurance of Iran (The insurance market's regulatory body in Iran) for 10 years. This rich database provided valuable and reliable information about different aspects of a diversification strategy for both independent and dependent variables. Firstly, this research developed the diversification measurement index mainly using the HHI index. Through the categorization of staff based on education, gender and experience, 3 measures are constructed for staff diversification. The total number of sales agents and branches is used to indicate the geographic diversification of Iranian insurers. For constructing product diversification measures, the number of policies underwritten in a company, in a line of business, for one year and the total premium collected in a company, in a line of business, for one year is introduced. Furthermore, popular control variables in diversificationperformance studies, such as the firm's age, size, and ownership structure, are incorporated into insurance-specific control variables (firm type) to enable the researcher to understand existing relationships better. Lastly, financial performance data extracted from financial statements of Iranian insurers is indicated by ROA and ROE in this study.

The empirical results of this paper indicate mixed findings on the relationship between different aspects of diversification strategy and firms' financial performance. Specifically,



this paper finds a significant positive impact of diversification in terms of education on ROA, while the relationship between diversification in terms of gender and diversification in terms of experience with ROA is significantly negative. On the other hand, no significant relationship is found between diversification in terms of geographical presence, diversification in terms of insurance policy, and premium with ROA. The relationship between diversification in terms of education and diversification in terms of insurance policy with ROE is found to be significantly positive. In contrast, the relationships between diversification in terms of gender and premium with ROE are found to be significantly negative. Moreover, the paper reports insignificant relationships between diversification in terms of geographical presence and work experience with ROE.

This research has some limitations. The details and size of the dataset are the main limitations of this study since some of the information, such as staff's cultural background, physical abilities and disabilities, race, and religion, was not included in the annual reports used in this study, while those details are among staff diversification definitions (Saxena, 2014). In addition, from a methodological point of view, some econometric models, such as the random effect, could not be applied to this study due to the data size. Moreover, the confirmed data of Iranian insurers was available for only 10 years, while the results could be more robust and reliable if the time period could exceed 10 years. Therefore, the relatively small sample size of Iranian insurance companies and the limited period is acknowledged. Accordingly, the findings need to be interpreted cautiously, specifically in terms of generalization to other countries, industries, or periods. However, the results provide valuable insights for both insurance practitioners and academics. Therefore, future research should attempt to expand the findings and the models used in this paper by collecting a larger sample of companies from larger insurance markets or repeat data collection for a longer time in a specific market and analyzing the results while considering proper intermediating variables. Finally, designing a comparative study among two or more countries can make it much easier to decide about a generalization of diversification and firms' financial performance relationship, significantly contributing to academics and practitioners interested in or working in the insurance industry.

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