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FINANCIAL RISK MANAGEMENT IN SMES: DEVELOPING A NEW PARADIGM

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ABSTRACT

Over the past few decades, various risk management models have been developed and implemented, primarily benefiting large businesses. However, a comprehensive framework for financial risk management tailored to small and medium-sized enterprises (SMEs) remains lacking. This research introduces an innovative conceptual framework for financial risk management in SMEs, focusing on two key dimensions: organizational structure and the risk management process. Each dimension comprises several components, with each component containing one or more elements. Using Principal Component Analysis (PCA), weighting factors are determined to calculate scores at different levels. To address the imbalance between dimensions, a disparity factor is incorporated into the result. Additionally, the study highlights the positive impact of the risk manager's educational background as a significant factor influencing both the dimensions and financial risk management outcomes.

KEYWORDS: Financial Risk Management Framework, Empirical Study and Analysis, Principal Component Analysis (PCA), Disparity Factor Assessment, Risk Management Procedures

1. INTRODUCTION

Serveas and Tamayo (2009) pointed out that insufficient financial risk management, which combines several business risks and has a big influence on a company's financial health and future prospects, is the reason behind 15% of bankruptcies. Although a lot of research has been done on SME Risk Management techniques in many countries (Henschel, 2008; Henschel & Gao, 2011; Bodnar et al., 2011), there is still a lack of progress in the field of financial risk management in SMEs.

This view is supported by research, which shows that risk's positive aspects are frequently disregarded

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(MacCrimmon & Wehrung, 1986; March & Shapira, 1987). This idea is supported by a recent study by Offion et al. (2019), which shows that financial risk has a detrimental effect on SME performance. Due to poor risk management, SMEs—who are more susceptible to liquidation during financial crises (Ozkan, 1996)—face an even higher bankruptcy rate of 18% (Graydon, 2014). Since SME sustainability depends on efficient financial risk management (Fetisovová, 2012), SMEs must give strong risk management procedures top priority (Terungwa, 2011).

SMEs frequently lack the staff, resources, and experience needed to adopt and execute complex risk management strategies, in contrast to bigger firms. Furthermore, SMEs' cash flow problems are made worse by a lack of funding and restricted access to resources (Hussain et al., 2010). Although 75 Per cent of Czech SME entrepreneurs recognize the substantial impact of financial risk, their ability to manage these risks is still insufficient, according to a study by Belas et al. (2018). This implies that SMEs' risk management procedures are underdeveloped (Lima et al., 2020).

Larger businesses, on the other hand, usually have access to specialist teams and a wealth of resources to create, carry out, and maintain efficient risk management plans. Large corporations have used a variety of financial instruments and diversified their operations across several markets since the 1970s in order to control risk. Businesses looked at effective ways to use the many risk management tools that commercial financial institutions introduced in the 1980s (Dionne, 2013). Numerous risk management definitions and models have been put forth over time, most of which are geared at major businesses and particular sectors of the economy (Lima et al., 2020). The creation of organized risk management frameworks has also been aided by groups like ISO, FERMA, and COSO.

2. REVIEW OF LITERATURE:

Risk management's main goal is to find and assess outside variables that can have an impact on an organization's performance and put policies in place to lessen those impacts (Ekwere, 2016). The dynamic process of risk management includes identifying possible loss exposures and choosing the best strategies to mitigate them (Smallman, 1996; Keizer et al., 2002; Rejda, 2011). As stated by Ishizaka et al. (2013) and in accordance with the ISO Risk Management Standard (Ciocoiu & Dobrea, 2010), risk management ought to be an ongoing, dynamic procedure that is incorporated into the entire strategy of a company. Scholars have pointed out in recent years that there is currently no suitable model for assessing financial risk management at the individual SME level. Using broad definitions of risk management elements to classify them, most risk management models now in use are made to examine organizational differences.

There are very few quantitative scoring techniques in the literature that are suitable for risk managers to assess and enhance risk management procedures. Principal component analysis was used by

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Kellermans and Eddleston (2004) to identify components, choose variables, and compute weighting factors for each variable. By linearly dividing intercorrelated variables into components, principal component analysis is arguably the most widely used multivariate statistical technique for extracting meaningful information from huge datasets (Abdi & Williams, 2010; Bro & Smilde, 2014). PCA gives the weights required to compute the component as a weighted average that best describes the fluctuation of the chosen individual variables in addition to identifying the variable combination in components. Additionally, PCA chooses, mixes, and establishes the weighting components that result in a score.

3. METHODOLOGY

A conceptual model has been created in order to assess a company's financial risk management (FRM). FRM is defined by Monda and Giorgino (2013) as "a systematic and integrated approach to managing the entirety of financial risks a company faces." According to Table 1, the model (van den Boom, 2019) incorporates 15 items, seven components, and two dimensions. Every item in the attached questionnaire relates to a certain question. The number of response options for each question is indicated in parentheses, with all responses measured on an ordinal scale.

Table-1: FRM Breakdown in Dimensions, Components and Items

Dimensions	Components	Items	Count
Process of Risk Management	a) Identification	Defining Risk Areas	5
		Prioritizing Risk areas	4
	b) Measurement	Risk area Target	4
		Risk Management	4
		Risk management Software	4
		Satisfaction Software	3
	c) Treatment	Attitude of Risk	4
		Learning Programmes	3
	d) Evaluation	Process Evaluation	5
		Risk Area Policies	5
		Risk Reporting Process	5
		Reporting Outcome Process	4

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Organizational Structure	FRM Policies	Policies of Firm FRM Policies	4
	FRM Sources	Sources Used	4

Second, Dutch SMEs receive a questionnaire that is created with item-related questions. Scores ranging from 1 to 5 were generated from the responses. In addition to FRM-related questions, there are additional questions concerning attributes. Just one risk area inquiry is needed to properly compare the risk management procedures of companies with various risk areas (Kogan & Nikonov, 2009). Some questions and answer categories were changed to get more responses after a test with 30 risk managers. The revised version is then distributed to risk managers at businesses that meet the size requirements set forth by the Commission of the European Communities (2003) (10-249 FTEs).

Thirdly, to provide guidance to specific businesses on how to enhance their risk management performance, scores are computed at the item, component, dimension, and total levels. The weighted average of organization X's dimension scores, adjusted for an imbalance between the two dimensions, is the Financial Risk Management score (FRMx).

$$\mathbf{FRM_x = \sum [FRMp,x, FRMo,x] / 2 \text{ x } Dfx}$$

In order to calculate the FRM dimension scores, "$FRM_{p,x}$" and "$FRM_{o,x}$," weighted averages of specific components ("C") using the proper weighting factors ("W") must be calculated. In particular, the weighting factor for process component iii of organization X is represented by "$W_{p,i,x}$," while the score for process component iii of organization X is indicated by "$C_{p,i,x}$." The scores of related items are used to derive component scores in a similar way. In accordance with the approaches described by Abdi and Williams (2010), Kellermans and Eddleston (2004), and Bro and Smilde (2014), principal component analysis (PCA) was used to identify the weighting components ("W").

$$\mathbf{FRMp,x = \sum (Wp,i * Cp,i,x) / \sum (Wp,i)}$$

4. Data Summary and Statistics:

Out of the 120 surveys that were received between 2013 and 2016, 97 were judged adequate and added to the dataset. As factors of financial risk management, Table 2 lists traits associated with the risk manager's educational background and the degree of decentralization (van den Boom, 2019). According to the table, a risk manager with a master's degree or above is present in 34% of participating companies. Furthermore, 54% (52 out of 97) of companies use centralized risk management for their finances. The two main substantial risk areas that are most mentioned are credit

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risk (79%) and liquidity risk (47%).

Table-2: The dataset includes information on the level of education of risk managers and the degree of decentralization in financial risk management (FRM).

	Degree of Decentralization FRM		
Educational level Risk Manager	**Central**	**Decentral**	**Total**
≥ Bachelor	16	17	33
≤Bachelor	36	28	64
Total	**52**	**45**	**97**

5. RESULTS:

Three sections comprise the presentation of our study's findings. First, we determine the weighting factors in order to build the suggested model. Second, we evaluate the suggested model's robustness by contrasting it with other models. In order to ascertain their impact on financial risk management (FRM) in SMEs, we assess the elements that have already been discovered (van den Boom, 2019).
Determinants of Financial Risk Management:

In accordance with our earlier research (van den Boom, 2019), we use our scoring model to investigate two potential determinants: the risk manager's educational background and the extent of decentralization. Additionally, as potential drivers and control variables, we consider the size and number of subsidiaries. There is a positive correlation between the control variables. Furthermore, all VIFs are less than 1.033, indicating independent variables and non-multicollinearity.

6. CONCLUSION:

In order to assess the degree of financial risk management and investigate its possible drivers, we created a thorough FRM model for this study. The risk management process and the process's organizational integration are the two main pillars of the FRM framework. Each of the 15 risk management items that were found had a weighting factor that matched one of the aspects of the model.

Principal component analysis (PCA) was used to identify the weighting factors, and scores for components, dimensions, and total FRM levels were calculated as weighted averages. A disparity

element was included to take into consideration the unequal efforts made to manage the process and integrate it into the organization. The process, organization, and overall FRM scores that are produced show enough variation to validate the model's capacity to identify significant variations in financial risk management techniques.

Our research is unable to validate the level of decentralization identified in our earlier study as a factor influencing the FRM score. Therefore, we discovered that decentralized enterprises invested more in the process of risk management than in the organizational structure to integrate the process. Our suggested model is useful because it can be used by risk managers to analyze and enhance their FRM using the information provided by the scores at the item, component, and dimension levels.

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