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Validating a Proposed Measurement Instrument for Evaluating Risk Control Through Exploratory Factor Analysis

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Abstract: Just a little part of SMEs are fruitful in accomplishing uncommon execution and feasible development, The writing shows that there is as yet a hole for viable approaches to build the size of that division. The target of the current examination is to propel a thought of utilizing exploratory factor analysis (EFA) to compute the risk control. Data are collected through structured questionnaires. Hundred respondents of SME owners in Medan, Indonesia were involved in pillot test. Based on the test and EFA, the reliability of the measurement scale, measured using Cronbach's alpha value is computed. Factors that are not reliable, those that exhibit values of Cronbach's alpha less than 0.6 are deleted. Items in factors that lower the value of factor reliability are deleted. These and other methods of data analysis are performed on Statistical Package for Social Sciences 21 (SPSS 21) platform. The EFA is performed as the result of Keiser-Mayer-Olkin test of sampling adequacy and Barlett's test for sphericity bear positive results. The EFA is a type of multivariate statistical method that extracts and group variables from the data into a few factors that form the theoretical evaluation model for measuring the risk control. The outcome of the research is an inventory of items that can be used to determine the health of SMEs in terms of individual item means, mean of each factor and overall mean of factors.

Key words: Risk Control · Indonesian SMEs · EFA · SMEs and North Sumatera SMEs

INTRODUCTION

Small and medium enterprises, those that employ fewer than 20 people are critical components of local asian economies. In Indonesia, employees working for SMEs represent round about 90 percent of the total population. The figure is like that of other non-industrial nations in Asia [1]. SMEs in Indonesia, are the most dynamic yet most threatened businesses in the global economy.

Indonesia's economy will be a lot more grounded if the quantity of little and medium ventures in the nation could become significantly more. The Clergyman for State Claimed Endeavors (SCEs), Mr. Dahlan Iskan said that the current number of little and medium endeavors in Indonesia has reached 3.1% of the complete populace of organizations in 2017 or It was estimated to reach 62, 922, 617. It was believed the large market presence offered a huge potential in boosting the local economy [2].

The target of the current examination is to propel a thought of utilizing exploratory factor analysis (EFA) to compute the risk control.

Literature Review: Risk-control propensities differ from business to business and from individual to individual, although it is clear that without it, entrepreneurship would not be an object of fascination to the same extent as it is today. Risk-control propensity could effectively be conceptualized as an individuals' orientation toward taking chances in any decision-making scenario. The tactical risk management aims to handle the tactical decisions of the business and thereby takes responsibility for handling the risks associated with the yearly planning. The operational risk management is related to the daily operations of the business [3]. Langlois and Cosgel [4] make a distinction between risk and uncertainty, where uncertainty is a factor that is uncontrollable, while risk is fully computable. He argues that the role of an entrepreneur is handling this factor of uncertainty, which is not computable.

According to Awang [5], when the value of KMO measure of sample adequacy reaches 0.6 and the Bartlett's chi-square sphericity is relevant at $\alpha<0.05$, than correlation matrix factor ability is supposed. EFA gives

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out communality values that can show the validity of measurement instrument of the instrument and its constructs.

According to Tabachnick and Fidell [6], a communality value of above 0.3 is required for all items. This study also takes another step into account, i.e., computing the anti-image association of all objects, which must be above 0.5 [7].

Research Design: The research proposes a self-administered measurement instrument as candidate for evaluating the performance of SMEs. It consists of simple statements where survey participants provide their responses on a Likert Scale of 1 (lowest) to 10 (highest). A pilot study is conducted involving a hundred SMEs players in Medan, Indonesia. The researcher manage to collect 100 usable questionnaires and applies EFA to analyse the metric data extracted from them.

RESULTS AND DISCUSSION

Descriptive Statistic: Table 1 shows the descriptive statistics with respect to the six risk control

The result shows six measures of risk control, i.e., R_1 to R_6 with moderate mean ranging from 7.18 (R_5) to 8.61 (R_4).

KMO and Bartlett's Test: The aftereffect of KMO and Bartlett's test are appeared in Table 2.

The Kaiser-Meyer-Olkin esteem in Table 2 is 0.640 which surpasses suggested worth of 0.60. This demonstrates that over 64% of the fluctuation in the deliberate variable is basic difference. The Bartlett's trial of sphericity esteem is genuinely huge (chi-square with level of opportunity 15 = 624.317, p = 0.000). This implies that there are solid connections among the things The Kaiser-Meyer-Olkin and Bartlett's trial of sphericity esteems recommend that the information on risk control in this investigation are appropriate for factor examination.

Communalities: Table 3 shows the communality value of each risk control item

The outcome shows that the commonness each of the six things is moderately high, going between 0.520 (R_6) and 0.944 (R_3). This implies that the factors fit well with one another.

Table 4 shows EVA output of total variance explained for the risk control items.

The result shows that EFA one dimension corresponding to eigenvalue exceeding 1.0. The validity of the construct, risk control is determined using factor loading and every item associated with the construct is examined.

Table 1: Descriptive Statistics

	Mean	Std. Deviation	Analysis N
R_1	7.84	1.398	100
R_2	7.85	1.329	100
R_3	8.60	1.015	100
R_4	8.61	0.984	100
R_5	7.18	1.298	100
R_6	8.18	0.809	100

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	Bartlett's Test of Approx. Chi-Square Sphericity.	df.	Sig.
0.640	624.317	15	0.000

Table 3: Communalities

	Initial	Extraction
R_1	1.000	0.796
R_2	1.000	0.824
R_3	1.000	0.944
R_4	1.000	0.941
R_5	1.000	0.606
R_6	1.000	0.520

Table 4: Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Components	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.699	44.985	44.985	2.699	44.985	44.985
2	1.931	32.175	77.161	1.931	32.175	77.161
3	0.624	10.402	87.562			
4	0.525	8.749	96.311			
5	0.217	3.621	99.932			
6	0.004	0.068	100.000			

Table 5: Component Matrix[a]

Item	Factor loading
R_1	0.648
R_2	0.655
R_3	0.749
R_4	0.729
R_5	0.775
R_6	0.668

The six things have a factor stacking over the suggested worth of 0.60, showing the legitimacy of the scale and there are no erased things. implying that the develop is reasonable for additional examination. As indicated by Hair *et al.* [8] the factor stacking of ±0.30 fulfill the insignificant guideline while loadings above ±0.50 are for all intents and purposes critical.

CONCLUSION

The goal of this examination is to create a measurement instrument that gauges the risk control of SMEs in Indonesia and test its validity with EFA. The KMO and Bartlett's test on data from a pilot survey return values that show sampling adequacy. The pilot test performed with EFA gives high communality values indicating that the instrument has validity. It also has internal consistency as evident from Cronbach's alpha value that exceeds the standart cut-off point.

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