

Empirical Examination of Enterprise Risk Management's Value Creation Mechanism

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Abstract: - This paper espouses an enterprise risk management (ERM) implementation framework which encompasses 3 dimensions that comprised of 7 areas, which in turn, made up of 14 elements. This paper also empirically examines the value creation transmission mechanism of ERM implementation. Unlike the neo-classical finance theory, the espoused ERM framework underscores the idea of managing firms' unsystematic (specific) risk that leads to the enhancement of shareholders' value. The mechanism through which the firms' value enhancement takes place is theorized by a strategic conceptualization of risk premium model. The model cites managing the firm's four classes of risks, namely macroeconomic, tactical, strategic, and normative risks. Hence, this paper investigates the validity of the theorized value creation transmission mechanism of the proposed ERM framework via the strategic conceptualization of risk premium model.

Key-Words: - CAPM, enterprise risk management, value creation mechanism, strategic risk premium

1 Introduction

This paper posits that implementation of enterprise risk management (ERM) program by firms can create value for shareholders with the notion of managing firms' systematic and unsystematic (specific) risk via an ERM implementation framework that leads to the enhancement of shareholders' value. The mechanism through which the firms' value enhancement takes place is theorized by a strategic conceptualization of risk premium model. The model cites managing the firm's macroeconomic (systematic) risk as well as three classes of unsystematic risk, namely tactical risk, strategic risk, and normative risk. Hence, this paper investigates the validity of the theorized value creation transmission mechanism of an ERM implementation framework underpinned by the strategic risk premium model.

The ERM conceptual framework is such that its implementation will lead to some tangible and intangible benefits to the firm in ways of optimizing the risk/return profile of the company, reducing earning volatility, strengthening management's confidence in business operations and risk monitoring, creating smooth governance procedures, enriching corporate reputation, improving clarity of

Organization-wide decision making and chain of command, encouraging corporate entrepreneurship, and boosting enterprise's profitability [1] [2] [3]. These benefits derived from ERM implementation, in turn, will define the distinctive competitiveness of the firm.

The above benefits will lead to lower cost of capital and contribute to improved business performance, i.e. improved price-to-earnings ratio of share price. The lowering of cost of capital is due to risk premium reduction as a result of the firm lowering its systematic and idiosyncratic or unsystematic risk profile. The improved price-to-earning ratio of the firm's share prices on the other hand, happens because investors are willing to pay a higher price for the company's share at a given level of earning-per-share (EPS) due to the firm's perceived lower risk profile. These two causal relationships represent the value creation from ERM program.

2 The Proposed ERM Implementation Framework

We propose an ERM implementation framework to encompass 3 dimensions (i.e. structure, governance

Table 1: Dimensions and Areas of ERM Implementation

Dimension	Areas	Element / Statement	
Structure	ERM Definition	i1	Provides common understanding of the objectives of each ERM initiative
		i2	Provides common terminology and set of standards of risk management
	Performance measurement	i11	Identifies key risk indicators (KRIs)
		i12	Integrates risk with key performance indicators (KPIs)
Governance	Information and roles	i3	provides enterprise-wide information about risk
		i9	Enables everyone to understand his/her accountability
	Compliance	i5	Reduces risk of non-compliance
		i6	Enables tracking costs of compliance
Process	Integration of business strategy and objectives	i4	Integrates risk with corporate strategic planning
		i8	Integrated across all functions and business units
		i10	ERM strategy is aligned with corporate strategy
		i13	Aligns ERM initiatives to business objectives
	Risk identification and response	i14	Provides the rigor to identify and select risk responses (i.e. risk- avoidance, reduction, sharing and acceptance)
	Risk quantification	i7	Quantifies risk to the greatest extent possible

and process), which further extends out to 7 areas. These 7 areas are in turn operationalized by 14 implementation elements. For instance, the *structure* dimension is articulated to be covering two areas, i.e. ERM definition, and performance measurement, and these two areas are operationalized by four implementation elements. Similarly, the *governance* dimension is to cover two areas (i.e. information and roles, and compliance) with four implementation elements. On the other hand, the *process* dimension is to include three areas (i.e. integration of business strategy and objectives, risk identification and response, and risk quantification) and with six implementation elements. Table 1 presents the relevant implementation elements (i1 to i14) operationalizing the proposed ERM framework which correspond to the relevant areas in the respective dimensions.

3 Theoretical Underpinning

We theorize that ERM implementation intensity will determine the amount of benefits received by the firm. The benefits received from such effective execution will have a long-term positive impact in creating value for the corporations' shareholders. This value creation process is achieved via a two-pronged process.

Firstly, shareholders' value is created by way of lowering the corporations' cost of capital which takes

place through a dynamic framework of risk premium reduction mechanism.

Secondly, the value is created by means of a generic improvement of business performance. This improvement encompasses all functional areas such as finance, operations, marketing, human resources, and governance. The final result of this two-pronged value creation process is the higher return of share prices for shareholders. These theoretical relationships are depicted in Figure 1.

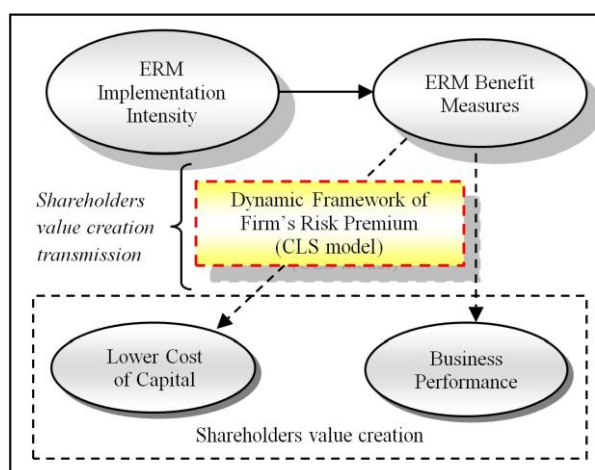


Fig 1. Constructs in the Theorized Causal Relationship Model

3.1 Capital Asset Pricing Model

Ref [4][5][6] introduce Capital Asset Pricing Model (CAPM) by using the concepts of diversification and asset allocation, coupled with the modern portfolio theory as building blocks [7][3]. Variables that are involved in CAPM's formulation are systematic risk, specific risk (unsystematic risk), beta, and risk premium. Core to CAPM's notion is the division of the security's total risk into two parts, namely the systematic risk (also called market risk) and the unsystematic risk (also called firm-specific or unique risk). CAPM explains systematic risk as the component of an asset's price variance that is affected by the movement of the general market. The main sources of systemic risk are fiscal and budgetary policy and overall changes in the market [8]. It is also referred to as market risk. This type of risk cannot be reduced through diversification. The covariance of the market and the asset's price movements is measured by a coefficient called Beta (β). Thus, systematic risk is the risk of holding the market portfolio [7].

Specific risk of an asset, on the other hand, is the other component of the asset's price variance that is unique to itself and has no correlation to the general market movement. This element of specific risk can be eliminated through diversification within an asset class. Systematic risk, however, cannot be diversified away. Nevertheless, it can be hedged. According to CAPM, the marketplace is efficient and compensates investors only for taking systematic risk. Exposure to specific risk (idiosyncratic risk) will not be compensated because CAPM expects investors to diversify that risk away without reducing returns and at no cost in their portfolios' asset class [7]. The expected return of an asset (portfolio) under CAPM is given by:

$$E(R_i) = R_f + \beta^m_i [E(R_m) - R_f]$$

Where $E(R_i)$ is the expected return on asset $_i$; R_f is the return on a risk-free asset; β^m_i measures the covariance of asset $_i$'s return to that of the market; $E(R_m)$ is the expected return on the market. Since β (beta) measures the sensitivity of an investment's return to movements of the entire market, stocks with a beta of less than 1 will be less risky than the market whilst those with a beta greater than 1 will be more risky than the market [3]. In the CAPM formula term, the product of $\beta^m_i [E(R_m) - R_f]$ represents risk premium for stock i . In other words, it is the compensation for the stock's exposure to the systematic risk.

In the context of NCFT's uniform assumptions of such a simple world (i.e. perfect and complete markets), [9] saw a super-efficient portfolio as represented by the market portfolio [7]. Ref [3]

pointed out that although CAPM's formulation is explained in terms of stock returns, it has a parallel implication in capital budgeting situations where:

$$r = r_f + (\text{project beta}) (r_m - r_f), \text{ and} \\ r = \text{required rate of return on the project.}$$

Hence, the required rate of return on a project increases in tandem with the project's beta. It then follows that the true cost of capital is influenced by the risk profile of the project for which the capital is put to use [3].

3.2 Unsystematic Risk and Risk Premium: CAPM modification

CAPM's theoretical framework clearly indicates that there is no favorable risk pricing effect for the reduction in unsystematic risk, hence implying that any deliberate effort on the part of the firms to manage their unsystematic risk will not be compensated. However, assuming if there would be a positive effect on managing unsystematic risk, how would this notion impact the variables in the CAPM formula then? It should follow that variable r , representing the required rate of return for an asset or a project, should be reduced due to the lower risk profile (either perceived or otherwise). A lowered r , which is also used for discounting firms' expected cash flows, should yield a higher firm value as follows:

$$\text{Firm value} = \sum E(CF_t) / (1 + r_t)^t$$

where $\sum E(CF_t)$ is the sum of all expected cash flows, t is the time period, and r is the discount rate. And according to NCFT, on the basis of maximizing shareholders' wealth, the appropriate firm-decision rule is for managers to pursue all investment opportunities that will yield a positive net present value (NPV) [7].

In the CAPM's formula $E(r) = R_f + \beta^m_i [E(R_m) - R_f]$, where R_f is the risk free rate, β^m_i is the firm's (asset) beta or the correlation coefficient of that particular firm to the market portfolio. The term $[E(R_m) - R_f]$ is the market potfolio's risk premium and the term $\beta^m_i [E(R_m) - R_f]$ is the firm's risk premium. The reduction of expected or required rate of return, $E(r)$, will be significantly influenced by the firm's risk premium term, or $\beta^m_i [E(R_m) - R_f]$. The return on a risk-free asset (R_f) and the expected return on the market $[E(R_m)]$ are externality variables to the firm. Hence, there is nothing much managers can do to influence them managerially other than to hope for market forces to change these variables in the favorable direction for risk pricing reduction. The same applies to the firm's beta (β^m_i). Beta measures the covariance of the firm's return to that of the

market portfolio, or in other words, it is the measurement for the firm's systematic risk. In this light, the only way the beta of the firm would change is by way of the firm varying its existing business line so that its business risk profile would shift in relation to that of the market. One example of this is to undertake business diversification through either the firm's product lines or target markets. But this managerial maneuvering affects the systematic risk aspect of the firm. As such, in order to capture the positive effect of managing a firm's unsystematic risk and reflect it in the CAPM formulation, we may attempt to include an additional variable, i.e. μ , to impact the firm's risk premium term. This variable should take a negative value so that it can have diminishing effect on the term $\beta^m_i [E(R_m) - R_f]$ such that the new risk premium term of the firm becomes $\beta^m_i [E(R_m) - R_f] - \mu$. Thus, the modified CAPM formula that recognizes the effect of managing a firm's unsystematic risk shall be:

$$E(R_i) = R_f + \beta^m_i [E(R_m) - R_f] - \mu$$

Conceptually, it should be noted in the above formula that the effect of unsystematic risk does not come in the form of a direct reward for bearing them in the way similar to bearing systematic risk in the asset pricing model. Rather, it is the reward that comes from the nature for its successful reduction or elimination. This notion runs contrary to the concept of market risk in asset pricing whereas investors are being rewarded for bearing market risk because it is not diversifiable. Nonetheless, the notion of unsystematic risk management does not suggest that firms be rewarded for bearing unsystematic risks. This is because those risks are diversifiable.

Instead, we suggest that the firms to be treated favorably by the market for their ability to reduce and capability to manage those unique risks facing the firms. The rationale for this reward system is by giving a due recognition to managing the firms' unsystematic risk which can result in firms enhancing their capability to improve earnings. This earnings improvement can come in the form of reducing or eliminating negative profit variation, reducing cost of financial distress, minimizing agency problem, enhancing corporate brand name and the likes. Managers, thus, should endeavor to manage firms' unsystematic risk well enough to earn the largest possible value of $-\mu$ as possible from the investors in order to reduce the firms' required rate of return (risk premium) or cost of capital.

In the context of asset pricing, unsystematic risk comes from the hypothesis where it is postulated that investors would welcome such a reduction in firms' specific risks. As a result, investors would demand a

relatively lower risk premium for their investment in the firm.

3.3 The CAPM Rebuttal

According to modern financial theory, managing unsystematic risk will not be rewarded by the stock market [3]. However, [3] highlighted that the idea of managers should not be concerned with managing unsystematic risk is contradicting with the notion of corporate strategy and the theory of strategic management. This contradiction is vividly highlighted with the account by [10] on managerial behavior that: "Given a business opportunity producing a cash flow, the risk/return model emphasizes that market value will be affected by managing systematic risk rather than unsystematic, or company specific risks. Ironically, managers spend most of their efforts on these very real company specific risks (such as competitive retaliation, labor relations, or even bankruptcy) which are both obvious and immediate, as well as being potentially disastrous to personal and organizational welfare". This managerial situation is very true considering that unsystematic risks are associated with firms' specific resources and competencies. Moreover, the risks are also linked to the firms' operating environment [3]. To this end, [11] argued that managing these unsystematic risks become inherent in the concept of matching corporate resources and competencies to opportunities within the firms' environment.

According to [3], there had been many studies that had showed the success of companies through strategic management that relied on the strategic adaptation by skillful, rigorous, and continuous management of unsystematic risk. Examples are those empirical studies of company success by [12] [13], theoretical explanations in industrial economics [14], a massive study of industrial history [15]. Apart from these, in the area of organizational theory, studies by [16] [17] [18] indicated effective management of unsystematic risk was the central cause of organizational evolution, where "the cause that determines which organizations survive and grow and which decline and die" [3].

In the marketing domain, one example of unsystematic risks in the context of corporate strategy management is the issue of entry barriers. For instance, [19] cited specific management of unsystematic risk in managing the risk of a new entrant into a market where a firm is competing. To manage this risk it will entail the formulation of strategy for deterring such new entrants. Hence, corporate strategy will require managers to devote

attention to barriers of entry. The competitive strategy theory by [20] underscores the importance of managing barriers of entry under various conditions for firms to stay competitive in the market place. Studies in industrial organization economics such as [21] [22] also give generic conclusion that the profit potential of an industry or individual firm is influenced by the height of barriers to entry.

Thus, a manager who does not manage unsystematic risk (i.e. entry barriers as in the above examples) is to ignore an important element of strategy [3].

4 ERM Value Creation Transmission Mechanism

We can conclude from the above discussion that modern financial theory (neo-classical finance theory) and strategy theory offer different notions on the efficacy of corporate risk management, specifically in the context of ERM. In effect, the conclusions of modern financial theory also run contrary to that of classical theory (i.e. Markowitz) in this respect. Nevertheless, as [3] aptly put it: "To alter either result is to disrupt significantly the logical structure of the underlying discipline". How then, can one provide plausible and sensible explanations in an effort to describe this discrepancy and to even reconcile the difference? In this light, it will be of significance to provide a theoretical linkage among the three schools of thought, namely the classical finance theory, neo-classical finance theory, and strategy theory. This paper, hence, endeavours to provide such linkage.

For starter, we highlight the opposite views of neo-classical financial theory (NCFT) and classical/strategy theory by drawing reference to some anecdotal evidences of the practices of corporate risk management in the real world. Risk management in the context of NCFT would only mean diversification, asset allocation and to a certain extent, the hedging or transfer of risk [7]. However, [7] also pointed out that, in the real world realm, corporate risk management activities include "a logical and systematic method of establishing the context, identifying, analysing, evaluating, mitigating, monitoring and communicating risk associated with any financial activity, function or process in a way that will enable organizations to minimize financial losses and maximize financial opportunities".

Even so, the description by [7] on the ultimate purpose of corporate risk management (i.e. minimizing financial losses and maximizing

financial opportunities), in our view, is still not as exhaustive as what we view the implementation of ERM can achieve. We conceptualize that ERM implementation framework should also encompass the goals of dealing with all business activities risks, ranging from financial to operational, such that to minimize/maximize not only financial losses/opportunities, but also other aspect of business losses/opportunities such as reputation, branding, governance, and corporate entrepreneurship, to name a few.

Another distinction of our proposed ERM implementation framework as compared to the notion of risk management by NCFT lies in the management of unsystematic risk or firm-specific risk. Apart from systematic risks, ERM also highlights the importance for managing unsystematic risk with the belief that it will lead to an enhanced shareholders' value. This concept blends well with the value-enhancing notion as postulated by strategy theory.

To bridge the contradicting arguments between modern financial theory and strategy research with regard to managing the firms' unsystematic risk, it requires a model that fits well within the two contradicting schools of thought. This model shall serve to describe the value creation transmission mechanism of ERM. One such plausible model is with respect the idea for to the determination the firm's risk premium. Thus, this paper conceptualizes a strategic risk premium model to theorize value creation in managing the firm's unsystematic risk.

Risk premium is a crucial element for the firms. It has a profound impact on firms' cost of capital. Firms with risky profiles in the eyes of investors will suffer from incurring higher costs when raising capital. This comes in the form of either selling equity at lower prices or issuing bond/debt with higher coupon/interest rates [23]. Firms encountering this situation will face an unfavourable strategic opportunity set [24]. Besides, higher capital costs will return lower present value when discounting firm's future earnings. As such it can become a source of competitive disadvantage when a firm faces its rivals in accessing capital markets [7] [25].

This study adapts a model called "a dynamic framework of a firm's risk premium" developed by [25]. Ref [25] assumes that investors do care about firm-specific risk. This is owing to the fact most investors are not as fully diversified and markets are not as perfect as CAPM assumes. The interactions among constructs in the model take reference from (i) information economics, (ii) resource-based view of the firm, and (iii) the industry structural view of strategy [25].

The information economics highlights the existence of information asymmetries in the market and notices that the belief among market participants to be heterogeneous. The resource-based view of the firm provides explanation that the asymmetries that happen in the resources markets are caused by the characteristics of the resources in which they are lumpy, heterogeneous, and to be acquired with a cost. The industry structural view of strategy on the other hand, sees asymmetries in market power distribution in the input and output markets [25].

According to [25], investors are exposed to various classes of firm-specific risk in a world of partial diversification and imperfect markets. This notion forms the core of our strategic risk premium model for ERM implementation. The postulated strategic risk premium model extends CAPM's notion where apart from recognizing the sensitivity of macroeconomic uncertainties, a firm's risk premium will also be influenced by its sensitivity to three additional classes of firm-specific risks, namely the *tactical*, *strategic*, and *normative* risks. Ref [24] highlights that tactical risk exists mainly in information asymmetries, whilst strategic risk comes from imperfections in the resource and output markets, and finally normative risk presents itself in the forces that define institutional norms.

Ref [25] highlights the notion that there are dynamic relationships between unsystematic risk (i.e. tactical, strategic, and normative risks) and a firm's risk premium as depicted in Fig. 2. Thus, firm-specific activities and skills derived from the active management of those risks will influence a firm's risk premium. This argument is well supported by the current theories of strategy [26]. However, this assertion is apparently inconsistent with CAPM which does not acknowledge such a relationship. CAPM defines that all firm-specific activities, which are measured by the variance of the error term in the market model, as unsystematic risk. This unsystematic risk is not correlated with risk premium. Thus, it is irrelevant [7] [25].

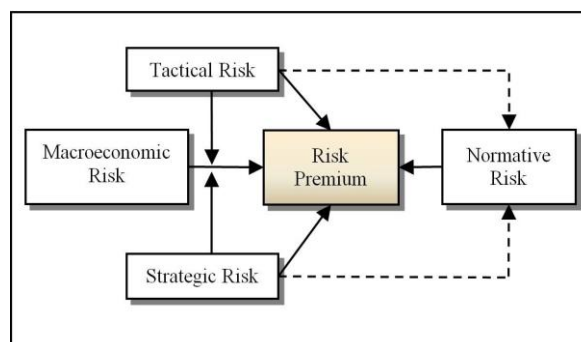


Fig. 2. The Strategic Risk Premium Model

Thus, the conceptualization of the strategic risk premium model takes a multivariate approach to include such factors as macroeconomic, tactical, strategic, and normative risks; of which the latter three risks are omitted by the single-factor market-based CAPM. The strategic risk premium model also pays due recognition to the dynamic of the continuous interplay between elements of the firm's activities and market forces [25]. This approach of conceptual assertion not only comes in tandem with the studies of strategic management, but also offers to connect the former with the theories in financial economics in providing a solid and robust conceptual framework for *enterprise risk management* (ERM). This linkage of theories from the two disciplines (i.e. strategic management and financial economics) enables the building of a new theory postulating that ERM can lead to improved business performance and enhanced shareholders value [27][28]. Table 2 presents a summary of the structural framework and the relevant literature relating to the conceptualization of the strategic risk premium model.

5 The Hypotheses

The postulated strategic risk premium model for ERM implementation highlights managing the firms' four classes of risks, namely, macroeconomic, tactical, strategic and normative risks (refer to Fig. 2). By managing these four classes of risks, the risk premium expected by the debt-holders will be lowered, thus reducing the cost of capital for the firms.

This in turn, is a form of value creation to the shareholders since the shareholders can now share less of the company's earnings with the debt-holders in interest (for loan financing) or coupon (for bond financing) payments.

Table 2: Strategic Conceptualization of Risk Premium

Firm-specific Risk Class	Definition	Source of Risk	Relevant Literature	Risk Management Objective	Action
Tactical	Uncertainty in firm's expected earnings	Informational Asymmetries	Earnings / Governance / Liquidity / Information management Hedging & Real options	To lower the variance of expected earnings through minimizing earnings surprises/ variation from informational asymmetries	Engage in financial tactics, e.g. hedges and real options contracts
Strategic	Uncertainty in performance outcomes of committed resources	Resource and output markets imperfection	Strategy / Firm- structured / Resource-based / Knowledge-based view Strategic options	To isolate earnings from macroeconomic and industry-specific disturbances	Shape market forces in firm's competitive arena to gain advantage
Normative	Incurring risk premium for failing to comply with institutionally expected norms	Forces of institutional norms	Diminishing competitive advantage view Dynamic market forces view	To reduce cost and avoid bearing additional risk without the promise of higher return	Comply to industry rules and conform to institutionally expected norms

The theoretical argument presented above suggests that a firm's specific activities in managing its three classes of unsystematic risk can have a positive effect on reducing the firm's risk premium. This notion forms the core of our managing firms' theorized ERM value creation transmission mechanism.

Hence, this paper develops the below hypotheses to theorize the value creation of enterprise risk management and its transmission mechanism in managing the firm's unsystematic risk:

H₁: *ERM implementation will reduce firm's tactical risk*

H₂: *ERM implementation will reduce firm's strategic risk*

H₃: *ERM implementation will reduce firm's normative risk*

To attest the validity of the presented argument on the strategic risk premium model and its value creation transmission mechanism, reference can be made to the rating criteria of the Malaysian rating agencies. For instance, one of the rating agencies, RAM, affirms the reduction of the firms' *tactical* risk in relation to its favourable rating profile for managing the (i) financial risk, i.e. profitability and coverage, funding structure, capital leverage, cash flow stability and adequacy, financial flexibility and liquidity; and (ii) corporate governance issues. Similarly, managing strategic risk embraces RAM's favourable rating for managing (i) industry risk, i.e. growth potential, vulnerability to industry factors,

barriers to entry; (ii) business risk, i.e. market risk – basis of competition, market position and size, product/service diversity, customer analysis; operational risk – availability of raw materials, efficiency of assets, cost structure, labour relations, credit controls, inventory management; and (iii) diversification factor [29].

6 Comparison with Previous Methods

The primary reference of the research framework for this study is based on the work of [25]. Nevertheless, [25] only discussed the strategic conceptualization of a risk premium model highlighting the tactical, strategic and normative risks. No empirical examination was employed to validate the conceptualized strategic risk premium model.

This study furthers the discussion of [25] by contextualizing the arguments of the strategic risk premium model into the proposed enterprise risk management implementation framework discussed in *section 2* of this paper. Furthermore, this study also undertakes an empirical examination to validate the conceptualized strategic risk premium model and to test the formulated hypotheses under discussion.

7 Empirical Examination

This study carried out an empirical examination on the above-mentioned hypotheses to validate the theorized relationships among the constructs of ERM implementation framework with the highlighted three classes of the firm's unsystematic risks. The

significant of the tested relationship would signify the value creation transmission mechanism as espoused in this paper.

7.1 Data Collection

The data was collected from public listed companies via survey questionnaires. There were 50 cases of answered and accepted questionnaires which provided the information on the respondent firms' ERM implementation and their tactical, strategic, and normative risks situations.

Table 3 presents the formulated hypothesis statements on managing the firm's unsystematic risks, i.e. H_1 , H_2 , and H_3 . Also indicated in Table 3 are the respective unsystematic risks classified by the CLS risk premium model which serve as the dependent variables in the bivariate correlation tests. The measurement items for each class of unsystematic risk are also shown.

Table 3: Hypotheses of the Shareholders Value Creation Transmission Mechanism with ERM Implementation

H_i	Classes Unsystematic Risk	Items' Code	Hypothesis Statements
H_1	Tactical Risk	d2, d3, d4 d5, d6, d7	<i>ERM implementation will reduce firm's tactical risk</i>
H_2	Strategic Risk	d8, d9, d10, d11, d12, d13, d14, d15, d16	<i>ERM implementation will reduce firm's strategic risk</i>
H_3	Normative Risk	d17, d18, d19, d20	<i>ERM implementation will reduce firm's normative risk</i>

The aims of the bivariate correlation tests on H_1 , H_2 , and H_3 are to ascertain the efficacy of the shareholders' value creation transmission mechanism which is underpinned by the conceptualization of the risk premium model (CLS model). This is performed by way of examining the associations between ERM implementation (independent variable) and its impact on reducing the three classes of unsystematic risks, i.e. tactical, strategic, and normative risks (dependent variables). Below are the results of these empirical tests.

7.2 Scale Reliability and Test Statistic

The test for scale reliability was conducted on the constructs *ERM Implementation*, *Tactical Risk*, *Strategic Risk*, and *Normative Risk*. Table 4 presents the result of the reliability analysis with the

respective Cronbach's alpha scores for each of the constructs' summated scales.

Table 4: Result of Scale Reliability Test on ERM Implementation and the CLS Model

Scale	No. of Item	Cronbach's Alpha
ERM Implementation	14	.904
Tactical Risk	7	.868
Strategic Risk	9	.921
Normative Risk	4	.781

As shown in Table 4, the Cronbach's alpha coefficients are all above the recommended value of 0.6. These results indicate that the summated scales of all the four constructs possess satisfactory internal consistency reliability [30]. With these results in sight, the study could confidently proceed with the running of the bivariate correlation tests on the formulated hypotheses in relation to the constructs.

Hypotheses H_1 , H_2 , and H_3 were tested using the product moment correlation statistic, also known as Pearson correlation coefficient, to ascertain whether a linear relationship exists between an independent and a dependent variables. The index is commonly denoted as r . A rule of thumb would suggest that r values above 0.5 to indicate considerable association between an independent and dependent variables. An r value of 1.0 indicates perfect relationship between the independent and dependent variables [30].

Apart from the product moment correlation statistic to examine association, the linear relationship between an independent and a dependent variable is also statistically tested for its significance using t distribution statistic. The test for significance is performed by examining the following hypotheses:

$$H_0: \beta_1 = 0$$

$$H_1: \beta_1 \neq 0$$

With the null hypothesis, H_0 , implies that there is no linear relationship between the independent and dependent variables. The alternative hypothesis, H_1 , implies that there is a linear association between independent and dependent variables ($\beta_1 \neq 0$) and the association is statistically significant [30].

7.3 Examining H_1

In the test of hypothesis H_1 , which reads, "*ERM Implementation will reduce firm's tactical risk*", the results indicate that ERM Implementation has a positive and significant association with its effect to reduce firms' tactical risk. The CLS risk premium model defines the nature of tactical risk as that

associated with the uncertainty in firms' expected earnings. CLS risk premium model posits that investors are averse to earnings surprises owing to information asymmetries in the market between managers and investors. Thus, investors will request lower risk premium from firms who can stabilize earnings or minimize firms' earnings surprises.

The t statistic two-tailed test is significant at $\alpha = 0.05$ level with p -value = 0.037. The Pearson correlation coefficient, r , is 0.376. Hence, the null hypothesis of no relationship between ERM implementation and its impact in reducing firms' tactical risk is rejected. By the same interpretation, **H₁ is accepted**. Despite so, the Pearson coefficient (r) of 0.376 indicates that the ERM implementation impact in shareholders' value creation through reducing firms' tactical is not very strong. Nevertheless, the positive value of the Pearson coefficient proves the existence of a linear association between the independent and dependent variables. It also statistically ascertains the efficacy of the value creation transmission mechanism of the CLS risk premium model via the tactical risk dimension.

7.3.1 Cross-tabulation analysis with chi-square statistics (ERM vs Tactical Risk)

This study also conducted 2x2 cross-tabulation analysis in which the ERM implementation intensity (penetration level) were broken down into two levels, i.e. "light" and "heavy", and the two levels were cross analysed for its significance association with two levels of tactical risk reduction, i.e. "low" and "high". The null hypothesis is that there is no significance association between the levels of ERM implementation and the reduction of tactical risk. The alternative hypothesis, on the other hand, is that the levels of ERM implementation (light or heavy) will have significance association with the levels of tactical risk reduction (low or high); i.e. "heavy" ERM implementation is associated with "high" tactical risk reduction whereas "light" ERM implementation sees "low" tactical risk reduction.

The chi-square statistic (χ^2) is used to test the statistical significance of the observed association in the cross-tabulation. The result indicates that the χ^2 statistic is significant at $\alpha = 0.05$ level with p -value of 0.027 (rejection of null hypothesis). Hence, we can conclude that a systematic association between ERM implementation and tactical risk reduction exists albeit the strength of the association as indicated by the phi-coefficient (ϕ) is rather low at 0.398. Table 5 presents the chi-square statistics of the above analysis.

Table 5: χ^2 Statistics (Cross-tabulation) Analysis for ERM Implementation and Tactical Risk Reduction

H _i	chi-square statistic (χ^2)	Critical value	df	p-value (2-sided)	Phi-coefficient (ϕ)
H ₁	4.918	3.841	1	0.027**	0.398

*Significant at $\alpha = 0.10$ level

**Significant at $\alpha = 0.05$ level

7.4 Examining H₂

The test results of hypothesis H₂, which reads, "*ERM implementation will reduce firm's strategic risk*", indicate that ERM Implementation has a positive and significant association with its effect to reduce firms' strategic risk. The CLS risk premium model defines the nature of strategic risk as "the probability that a firm can isolate its earnings from macroeconomic and industry-specific disturbances" [25]. The source of strategic risk originated from the imperfections in resource and output markets which cause uncertain performance outcomes from the firm's committed resources. As such, firms undertake to manage strategic risk in formulating strategy to commit and deploy their scarce yet precious resources. This will ensure firms continue to attain and sustain competitive advantage in the marketplace.

The t statistic two-tailed test is significant at $\alpha = 0.10$ level with p -value = 0.055. The Pearson correlation coefficient, r , is 0.348. Hence, the null hypothesis of no relationship between ERM implementation and its impact in reducing firms' strategic risk is rejected. By the same interpretation, **H₂ is accepted**. Nonetheless, similar to that of in H₁, the Pearson coefficient (r) of 0.348 does not indicate a very strong linear correlation between ERM implementation and its impact in reducing firms' strategic risk. Albeit so, the positive value of the Pearson coefficient attests the existence of the shareholders' value creation transmission effect through ERM implementation. The results in testing H₂ statistically substantiate the perceived value creation efficacy of managing firms' strategic risk.

7.4.1 Cross-tabulation analysis with chi-square statistics (ERM vs Strategic Risk)

The 2x2 cross-tabulation analysis for the ERM implementation intensity and the reduction of strategic risk (i.e. "Light" and "Heavy" ERM implementation intensity vs "Low" and "High" Strategic risk reduction) indicates that systematic association exists, i.e. heavy ERM implementation is associated with high strategic risk reduction whereas light ERM implementation sees low strategic risk

reduction. Like the previous test, the strength of the association as indicated by ϕ coefficient is low at 0.356. Table 6 presents the chi-square statistics for the above analysis.

Table 6: χ^2 Statistics (Cross-tabulation) Analysis for ERM Implementation and Strategic Risk reduction

H _i	chi-square statistic (χ^2)	Critical value	df	p-value (2-sided)	Phi-coefficient (ϕ)
H ₂	4.855	3.841	1	0.051*	0.356

*Significant at $\alpha = 0.10$ level

7.5 Examining H₃

The test of hypothesis H₃, which reads, “ERM implementation will reduce firm’s normative risk”, yields an insignificant linear association between ERM Implementation and its effect in reducing firms’ normative risk. The CLS risk premium model defines the nature of normative risk as the risk premium (or penalty) that a firm is subjected to if it fails to comply with its institutional norms or rules that it is expected to follow [25][26]. These norms represent the common expectations of the firm’s stakeholders, i.e. investors, regulators, interest groups, with regards to its behaviour [26]. The CLS model posits that any risk premium advantages attained through active management of tactical and strategic risks will be soon neutralized owing to competitive forces. These competitive forces will prompt competitors to quickly imitate the advantages attained by the firms [25].

The *t* statistic two-tailed test is insignificant at $\alpha = 0.10$ level with p-value = 0.191. The Pearson correlation coefficient, *r*, is 0.241. Hence, the null hypothesis of no linear relationship between ERM implementation and its impact in reducing firms’ normative risk is accepted, i.e. H₀: $\beta_1 = 0$. By the same interpretation, **H₃ is rejected**. The results imply that there is no adequate evidence to indicate the importance of managing firms’ normative risk as defined by the CLS risk premium model in creating value to shareholders by way of its impact in reducing firms risk premium. Thus, no value creation is being transmitted in managing this dimension of firms’ unsystematic risk.

7.5.1 Cross-tabulation analysis with chi-square statistics (ERM vs Normative Risk)

The 2x2 cross-tabulation analysis for the ERM implementation intensity and the reduction of normative risk (i.e. “Light” and “Heavy” ERM implementation intensity vs “Low” and “High” Normative risk reduction) indicates that

systematic association does not exist, i.e. heavy ERM implementation does not associate with high normative risk reduction and likewise. Table 7 presents the chi-square statistics for the above analysis.

Table 7: χ^2 Statistics (Cross-tabulation) Analysis for ERM Implementation and Normative Risk reduction

H _i	chi-square statistic (χ^2)	Critical value	df	p-value (2-sided)	Phi-coefficient (ϕ)
H ₁	2.596	3.841	1	0.107	0.289

7.6 Student’s *t*-test

The student’s *t*-test analysis is conducted to examine whether ERM implementation has impacted the reduction of the three firm-specific risks, i.e. tactical, strategic and normative risks, in different extents. The null hypothesis of the student’s *t*-test statistic reads that there is no significance difference of the mean scores (risk reduction) among the three firm specific risks given a level of ERM implementation intensity.

The student’s *t*-test results indicate that ERM implementation has different effect on risk reduction for each of the three firm specific risks with the largest impact on the reduction of strategic risk (mean score of 3.3 out of 5.0), followed by tactical risk (mean score of 3.2 out of 5.0), and the least extent of impact on normative risk (mean score of 2.6 out of 5.0). The student’s *t*-tests show that the difference in mean scores among the three firm-specific risks are statistically significant at $\alpha = 0.05$ level. Table 8 presents the student’s *t*-test results.

Table 8: Results of student’s *t*-Test

Risk reduction	Student’s <i>t</i> -test value	Sig.(2-tailed)	Mean score	Std. Deviation
Tactical risk	14.372	0.000**	3.2419	1.2560
Strategic risk	19.121	0.000**	3.2688	0.9518
Normative risk	17.17.	0.000**	2.5645	0.8316

**Significant at $\alpha = 0.05$ level

8 Findings in Summary

The hypotheses tests for ERM value creation transmission mechanism through the conceptualization of the strategic risk premium of the firms yielded mixed results. Table 9 summarizes the hypotheses testing results.

Table 9: Results of Hypotheses Testing on H₁ to H₃

H _i	Pearson Coefficient (r)	p-value (2-tailed)	H _i Accepted / Rejected
H ₁	0.376	0.037**	H ₁ Accepted
H ₂	0.348	0.055*	H ₂ Accepted
H ₃	0.241	0.191	H ₃ Rejected

*Significant at $\alpha = 0.10$ level**Significant at $\alpha = 0.05$ level

As shown in Table 9, the tests for H₁ and H₂ yielded results in the hypothesized direction. In other words, the results are in support for the proposition made by the CLS risk premium model. On the contrary, the test of H₃ revealed a result that pointed to the opposite direction of the hypothesis. Thus, hypotheses H₁ and H₂ are accepted whilst H₃ is rejected. In addition to this, it is worth pointed out that although the test results for H₁ and H₂ are statistically significant, the strength of associations between the independent and dependent variables are not very strong. This phenomenon is revealed by the Pearson coefficients (*r*) which are below the value of 0.5.

The bivariate correlation tests on the hypotheses relating to the CLS model's postulation of the three classes of firm-specific risk indicate that managing the tactical and strategic risk have significant correlation to reduce firms' risk premium. The test on managing normative risk, however, does not yield similar significant relationship.

Further analysis is undertaken to individually examine the significance of associations between the construct ERM implementation with the respective items which make up the summated scale of the construct normative risk in the CLS model. The objective of this further analysis is to find out which of the four items of the normative risk has contributed to the non-significance of the construct's association with ERM implementation. Table 10 tabulates the results of the analysis. The results reveal that even in their individual context, none of the items indicates statistically significant correlation with the independent variable, i.e. ERM Implementation, in the bivariate Pearson correlation tests. Thus, this further examination concludes that the proposed ERM implementation framework does not have significant impact in reducing any of the four elements, i.e. items d17, d18, d19, and d20, of the firms' normative risk as shown in Table 10. Items d17 and d18 represent the compliance and penalty aspects of the normative risk management effect whilst items d19 and d20 represent the diminishing effect of attained competitive advantages through strategic and tactical risk management as posited by the CLS model.

Table 10: Results of Bivariate Correlation Test between ERM Implementation with Individual Normative Risk Items

Items	Statements	Pearson Coefficient (r)	P-value (2-tailed)
d17	Our enterprise is successful in complying with industry and regulatory rules	.116	.534
d18	Our firm will face higher risk premium if we fail to comply with industry or institutional norms (I.e. those market rules expected by investors, regulators, interest groups)	.251	.174
d19	Our firm's competitive advantages achieved through implementing strategic risk management (i.e. structure, resource, knowledge advantages) will be quickly matched by our competitors.	.142	.445
d20	Our firm's competitive advantages achieved through implementing tactical risk management (i.e. hedging and options) will be quickly matched by our competitors.	.230	.213

One plausible explanation for the primary reason of the insignificance correlation between ERM implementation and its effect in reducing any of the four elements of firms' normative risk is perhaps due to the fact that the scope of the defined ERM framework is relatively wide in tandem with its inherently holistic nature. For instance, in the context of this study, the ERM implementation model is made up of fourteen items (variables) where each item indicates an aspect embodying the ERM implementation model. As a result, the impact of the implementation framework's collective efficacy through its various aspects toward the four items of normative risk may have been diluted when examined in its totality.

For example, the ERM's impact (in its totality) on item d17 (of normative risk) is not so obvious, conceivably because of item d17, i.e. to comply with industry and regulator rules, is generally achievable through an exclusive and more narrowly defined internal control mechanism of the PLCs as opposed to the proposed ERM program. Similar verity may have also been at play for items d18, d19, and d20 of the normative risk vis-à-vis the defined ERM implementation model.

In addition, it is observed that the Malaysian stock market is highly regulated by the authorities, i.e.

Malaysia Securities Commission and the Malaysia Bourse, in comparison to other advanced stock markets where self-regulation and disclosure based regulation take currency. As such, the Malaysian public listed companies adhere closely to the prescribed rules and regulators of the listing requirements, hence contributing to smaller window of normative risk issues to manage.

9 Conclusion

The above discussion demonstrates that the effect of ERM implementation is significant in reducing firms' systematic and firm-specific risks. This study links the strategic risk premium model as value creation transmission mechanism to the ERM implementation. Thus, reducing the firms' macroeconomic, tactical, strategic and normative risks implies the lowering of the firms' cost of capital through reducing the firms' risk premium.

In a nutshell, the theoretical argument presented in this paper in the light of the posited strategic risk premium model implies that corporations are poised to benefit from a favourable credit profiling rating from rating agencies with an effective ERM implementation program. This will lead to reduced risk premium and lowered cost of capital when the firms attempt to raise fund with the issuance of various debt instruments in the capital markets. As for the shareholders, a lowered risk premium demanded for the firm's debt instruments essentially means that a bigger portion of the company's earnings will be made available for distribution to the equity-holders as dividend payments, thus enhancing shareholders' value in the company.

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