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The Role of Risk Management in Achieving Competitive Success in Handloom Textile Enterprises

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Abstract:

The capacity of firms to manage risk effectively is a critical key for competitive positioning and long-term organizational outcomes in volatile and uncertain business environments. Yet, through which risk management capabilities translate into Firm performance remain insufficiently theorized and empirically examined, particularly with respect to the boundary conditions imposed by environmental uncertainty. This study investigates the influence of risk management capabilities that are risk identification, risk assessment and risk mitigation on the firm performance with sustained competitive advantage serving as the mediation and environmental uncertainty as a moderating variable on handloom textile enterprises. Drawing on the Resource-Based View and Dynamic Capabilities Theory, a quantitative survey was conducted, yielding a usable sample of 162 respondents. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS 4. The measurement model demonstrated excellent reliability and discriminant validity criterion. Structural model results revealed that risk management capabilities significantly predict sustained competitive advantage which in turn strongly predicts firm performance.

Keywords: Risk Management, Risk Identification, Risk Assessment, Risk Mitigation, Sustained Competitive Advantage, Firm Performance, Environmental Uncertainty, PLS-SEM.

1. Introduction

Handloom textile enterprises operate in an environment where the firms have intensifying competitive pressures, technological disruption, instable geopolitics and changing regulatory landscapes. Within this, the ability to identify, assess and mitigate risks has been a peripheral function and has instead assumed main strategy. Risk management, when institutionalized as an organizational capability, enables firms to protect value, exploit opportunities during adversity and sustain competitive positions that rivals find difficult to replicate (Teece et al., 1998).

Even when there is a growing theoretical argument in handloom textile enterprises suggesting that risk management capabilities constitute a source of competitive advantage, the empirical literature exhibits notable gaps. First, few studies examine the three constituent sub-capabilities risk identification, risk assessment and risk mitigation as distinct rather than interrelated antecedents of competitive outcomes. Second, the pathway from risk management capability to firm performance is examined less through the mediating lens of sustained competitive advantage, leaving the precise mechanism underspecified. Third, the moderating role of environmental uncertainty, a condition that amplifies or attenuates the value of internal capabilities has received only limited empirical attention in risk and performance models (Aghapour et al., 2017).

This study addresses gaps by positioning three distinct risk management capabilities (risk identification, risk assessment and risk mitigation) as independent factors that leads to the sustained competitive advantage which further influences the firm performance. Environmental uncertainty is introduced as a moderator of the sustained competitive advantage and firm performance, allowing for the assessment of how external volatility conditions affect the extent to which competitive advantages translate into measurable organizational outcomes in handloom textile enterprises.

The theoretical foundations of this study rest on two complementary frameworks: the Resource-Based View (RBV) which emphasizes the strategic value of rare, inimitable and non-substitutable organizational resources (Barney, 1991) and Dynamic Capabilities Theory which focuses on an organization's capacity to internal competencies in response to environmental change (Teece et al., 1998). Using PLS-SEM with data from 162 respondents and SmartPLS 4 as the analytical platform, this study provides a empirical evaluation of these theoretical arguments.

The article proceeds as follows. Section 2 reviews the relevant theoretical and empirical literature and develops the hypotheses. Section 3 describes the research methodology. Section 4 presents the data analysis and results. Sections 5 through 8 discuss findings, theoretical implications, practical implications, limitations and future research directions. Section 9 concludes the article.

2. Literature Review

2.1 Theoretical Foundation

The present study is anchored in two complementary theoretical frameworks: the Resource-Based View (RBV) and Dynamic Capabilities Theory. The RBV, articulated most by (Barney, 1991), suggests that firms achieve sustained competitive advantage by possessing resources and capabilities that are valuable, rare, inimitable and non-substitutable (VRIN). Within this framework, in handloom textile enterprises risk management capabilities can be taken as a class of strategic resources. A firm's institutionalized capacity to identify emerging threats, properly evaluate their potential consequence and deploy targeted mitigation responses which are difficult to replicate and provides value that competitors cannot easily substitute. Also, superior risk management capabilities create a foundation for competitive differentiation that underpins long-term firm performance.

Dynamic Capabilities Theory (Teece et al., 1998) extends the RBV by competitive advantage in volatile environments requires not merely the possession of static resources but the ability to sense, seize and reconfigure them as conditions change. Risk identification can be conceptualized as a sensing mechanism through which firms detect early signals of environmental threats; risk assessment enables informed seizing decisions by evaluating the strategic importance of identified risks; and risk mitigation embodies the reconfiguration capability through which resources are reallocated to neutralize threats. Together, these three capabilities constitute a dynamic risk management system that is valuable under conditions of environmental uncertainty in handloom textile enterprises.

The environmental uncertainty, which is explained as the level of unpredictability of the external business environment due to competitive forces, regulatory factors, technological changes and economic fluctuations, acts as the boundary condition in this research (Liao et al., 2024). The RBV and DCT framework is used as a theoretical tool to examine the development of risk management competencies into competitive advantages and the impact of such advantages on organizational gains, which are influenced by the external environment as well.

2.2 Variable-Based Literature

2.2.1 Risk Management Capabilities and Firm Performance

Value creation through risk management has been an issue that has always been acknowledged in the literature (Bromiley et al., 2015). n enterprise risk management (ERM) approaches such as (COSO, 2017) and (ISO 31000, 2018) for instance, there is emphasis on incorporating the risk management process within strategic planning in the organization, which indicates that organizations that have developed their risk management capabilities can be able to foresee disruption and take advantage of the same.

Empirical studies across diverse industry contexts have found that ERM maturity is positively associated with firm performance measured through market-based, accounting-based and operational metrics (Hoyt & Liebenberg, 2011). The theoretical argument is that risk management reduces the variance of cash flows, improves resource allocation efficiency and enables more confident strategic decision-making all of which contribute to enhanced profitability and stability.

2.2.2 Risk Identification

Risk identification is the foundational sub-capability in any risk management system, involving the systematic scanning of internal and external environments to detect potential threats and opportunities before they materialize into losses (ISO 31000, 2018). Firms with robust risk identification processes maintain early-warning mechanisms, cultivate broad information networks and develop organizational routines for horizon-scanning and scenario analysis. This early intelligence provides decision-makers with the lead time needed to respond proactively rather than reactively (Teece et al., 1998) .

Under the Resource Based View, the ability to detect risks which competitors cannot see becomes an area where differentiation is possible. Firms which regularly recognize potential regulatory shifts, new technologies and supply chain threats before their competitors can take advantage of the information asymmetry thus created (Barney, 1991). Evidence for the above point can be seen in empirical research on how firms that are able to sense risks proactively are resilient organizations (Herbane, 2010) (Mikes & Kaplan, 2013).

H1: Risk Identification has a significant positive influence on Sustained Competitive Advantage.

2.2.3 Risk Assessment

Risk assessment is the process of evaluating the identified risks in terms of likelihood, as well as severity and speed of impact (COSO, 2017). Properly executed risk assessment allows an organization to focus on mitigating most significant risks, spending money on addressing truly important ones and avoiding excessive responses to insignificant risks. Methodology for assessing risks quantitatively and qualitatively, involving such models as the value-at-risk framework, risk matrix and scenario planning instruments, form the toolset for executing this capability.

The value of risk assessment capability as a tool for strategy formulation is its role in enhancing decision-making under conditions of uncertainty. Companies that are successful in calibrating their risks do not fall victims to mistakes due to the wrong estimation of the level of the threat (Power, 2009). In addition, efficient risk assessment allows building stakeholder confidence as an ability of a company to demonstrate its risk transparency to stakeholders, including investors, regulators and clients.(Lam, 2014).

H2: Risk Assessment has a significant positive influence on Sustained Competitive Advantage.

2.2.4 Risk Mitigation

Mitigation consists of the implementation and design of actions aimed at reducing the chances or impact of risks that have been identified and assessed (ISO 31000, 2018). Mitigation techniques vary from risk avoidance, risk transfer through insurance and contractual provisions, risk reduction through diversification and process improvement, as well as risk acceptance and contingency planning. Effective choice of mitigation techniques is only possible when firms possess unique organizational insights, have different resource pools available and have the ability to conduct complex reactions all of which are rare and inimitable resources as per RBV (Dohale et al., 2022).

An emerging research trend shows that effective risk mitigation capabilities help organizations in maintaining earnings stability, protecting themselves from losses due to catastrophic events and preserving strategic options open (Bromiley et al., 2015) (Grace et al., 2015). Mitigating risks allows companies to maintain competitive advantages through market cycles and reallocate protected resources for creating value for the firm while competitors cannot do so due to risks, they are facing.

H3: Risk Mitigation has a significant positive influence on Sustained Competitive Advantage.

2.2.5 Sustained Competitive Advantage and Firm Performance

Sustained competitive advantage defined by (Barney, 1991) refers to the capacity of a firm to implement a value-creating strategy that is not simultaneously being implemented by existing or potential competitors and whose benefits cannot be rapidly duplicated through imitation or substitution. In the context of risk management, firms

that develop superior risk identification, assessment and mitigation capabilities acquire strategic assets that competitors cannot easily reproduce, thereby establishing a durable source of competitive differentiation.

The relationship between competitive advantage and performance is a key tenet of the resource-based view (RBV) and has been empirically established through various studies (Newbert, 2007) (Peteraf & Barney, 2003). It can be expected that firms in advantageous competitive positions and their competing counterparts have the possibility to earn superior returns, profit margins and market share as well as superior stakeholder value. For organizations operating in risk-intensive business environments, having lower average risks through superior risk management is the very type of inimitable competitive advantage that results in superior financial performance (Dey et al., 2023).

H4: Sustained Competitive Advantage has a significant positive influence on Firm Performance.

2.2.6 The Moderating Role of Environmental Uncertainty

Environmental uncertainty relates to the level of the uncertain external environment in which a business organization functions and includes market turbulence, competitiveness, regulation and technological changes (Miller, 1993). The strategic management framework implies that internal resources become more valuable or, in certain theoretical conceptions, more important in case of the higher levels of environmental uncertainty, because the potential for the benefits from proactive actions becomes relatively bigger (Teece et al., 1998).

In case of the link between competitive advantage and firm performance in the handloom textile enterprises, environmental uncertainty will serve as an amplifier: firms, having achieved their competitive advantage thanks to their high-risk management skills, will be better able to capitalize on these advantages and achieve profitability in times of high environmental uncertainty, because their competitors do not have such protective resources (Eisenhardt & Martin, 2000).

H5: Environmental Uncertainty positively moderates the relationship between Sustained Competitive Advantage and Firm Performance.

3. Conceptual Framework

The conceptual framework of this study positions risk management capabilities as the primary antecedents of sustained competitive advantage which in turn drives firm performance. Environmental uncertainty plays as a moderating variable conditioning the strength of the sustained competitive advantage and firm performance relationship particularly in handloom textile enterprises. This architecture reflects the theoretical argument that risk management capabilities, by reducing vulnerability to external threats and enabling proactive strategic positioning, enable firms to build and sustain competitive advantages that generate better firm performance in handloom textile enterprises.

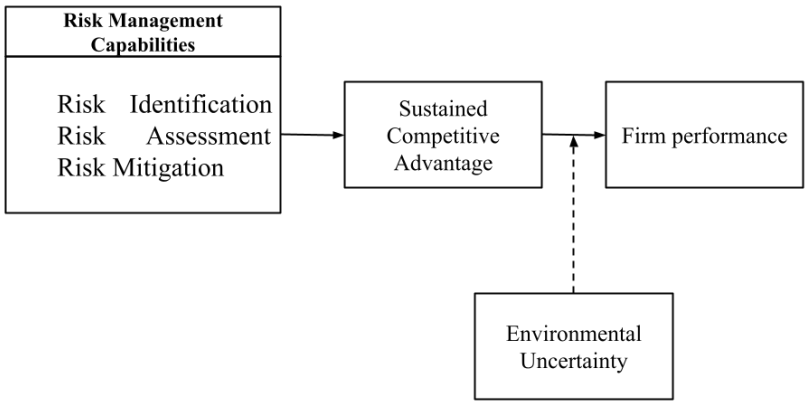


Figure 1 Conceptual Framework

The three risk management capabilities such as risk identification, risk assessment and risk mitigation are treated as distinct yet related constructs, each contributing uniquely to sustained competitive advantage. Risk identification enables firms to sense emerging threats; risk assessment calibrates strategic responses by evaluating threat magnitude; and risk mitigation executes protective actions that preserve organizational resources and reputation. These capabilities create an integrated risk management system that generates competitive differentiation. Sustained competitive advantage, operationalized as the firm's subjective and objective positioning relative to competitors across multiple dimensions (quality, cost, innovation and responsiveness), mediates the path from risk management capabilities to firm performance outcomes including profitability, growth, market share and overall firm strength in handloom textile enterprises.

Environmental uncertainty is modelled as a moderating variable in the relationship between sustained competitive advantage and firm performance, reflecting the theoretical expectation that the value of competitive advantage is contingent on the environmental context. The complete model, incorporating six hypotheses (H1–H5), is visually represented in the conceptual framework diagram presented in the image provided by the authors.

4. Methodology

4.1 Research Design

This study employs a quantitative, self-administered survey design grounded in the deductive research tradition. The research design was selected on grounds of practical feasibility and alignment with the study's objective of capturing contemporaneous perceptions of risk management practices, competitive positioning and firm performance outcomes in the handloom textile enterprises. While this design does not permit causal inference in the strict temporal sense, the use of established structural equation modelling techniques and motivated model specification provides an appropriate basis for evaluating the hypothesized relationships.

The choice of PLS-SEM as the analytical method was guided by several considerations. First, the study involves multiple latent constructs measured by reflective indicators, rendering SEM more appropriate than regression-based approaches that do not account for measurement error. PLS-SEM is particularly well-suited to models with complex predictive structures, including moderation effects, where the goal is both theoretical testing and predictive assessment (Hair et al., 2019). The sample size of n = 162 handloom textile enterprises is consistent with PLS-SEM's lesser demands on sample size compared to covariance-based SEM (CB-SEM) approaches. SmartPLS 4 (Ringle et al., 2024) was used as the software platform, following a two-stage analytical protocol: measurement model assessment followed by structural model evaluation.

4.2 Research Instrument

Data were collected using a structured self-administered questionnaire developed through a systematic review of validated scales from the extant literature. The measurement instrument comprised six sections corresponding to the six principal constructs in the research model. Risk Identification was measured using three items (RI1–RI3) (Punniyamoorthy et al., 2013) , Risk Assessment with four items (RA1–RA4) and Risk Mitigation with three items (RM1–RM3). Sustained Competitive Advantage was operationalized through five items (SCA1–SCA5), Environmental Uncertainty through four items (EU1–EU4) and Firm Performance through six items (FP1–FP6). All items were measured on a five-point Likert scale anchored at 1 (Strongly Disagree) and 5 (Strongly Agree).

The measurement scales were adapted from established instruments in the risk management and strategic management literatures to ensure content validity.

4.3 Sampling and Data Collection

The selected target population consisted of managers, senior executives and proprietors of handloom textile firms involved in risk management and strategic planning initiatives in their firms. Purposive sampling strategy was used whereby participants who have the requisite skills to respond meaningfully to the measurement items in relation to organizational risk practices, competitive abilities are selected. Purposive sampling is ideal when carrying out studies in which the objective of the research requires particular knowledge from the participants in handloom textile firms instead of mere representation of a general handloom textile firm (Saunders et al., 2019).

Data collection was done through online administration of surveys. The resulting sample after removing questionnaires that were either not fully completed or had clear patterns in responses of 162 respondents from handloom textile firms. Sample size of n = 162 is in line with the requirements for PLS-SEM as set by (Hair et al., 2019), in that it is more than ten times the maximum number of inner or outer model paths in PLS-SEM.

5. Data Analysis and Results

5.1 Descriptive Statistics

Table 1 shows the demographic and organizational profile of the 162 respondents. Two-thirds of the respondents were male (63.6%) and one-third were female (36.4%). In terms of age, more than half of the respondents are belonged to 41 - 50 years category (51.2%) then followed by age category of 31- 40 years (17.9%) and so on. Regarding educational qualification, more than two-fifths of the respondents were undergraduates (44.4%) and another two-fifths were postgraduates (40.7%). From the frequency distribution, one-fourth of the respondents are the organizations operating for 11–15 years (25.9%) and 25.9% belongs to organizations with more than 20 years of existence. About one-fifth of the organizations were less than 5 years old and one-fifth had existed for 5–10 years (21.0%). In terms of enterprise type, more than two-fifths were medium enterprises (41.3%) and nearly one-third were small enterprises (30.9%) and slightly more than one-fourth were micro enterprises (27.8%). In the workforce size of the organizations, nearly two-fifths of the respondents represented organizations with more than 100 full-time employees (38.9%) and more than one-fourth belonged to organizations employing 25–50 employees (28.4%). The sample comprised of mostly middle-aged and well-educated respondents from good established small and medium-sized enterprises.

Variables	Categories	Frequency	Percentage
Gender	Male	103	63.6
	Female	59	36.4
	Total	162	100.0
Age of the respondent	21-30	15	9.3
	31-40	29	17.9
	41-50	83	51.2
	51- 60	17	10.5
	Above 60	18	11.1
	Total	162	100.0
Educational Qualification	Diploma	4	2.5
	Undergraduate	72	44.4
	Postgraduate	66	40.7
	Others	20	12.3
	Total	162	100.0
Age of the organization (in year)	< 5 years	**33**	**20.4**
	5 - 10 years	34	21.0
	11 - 15 years	42	25.9
	16 - 20 years	16	9.9

	Above 20 years	37	22.8
	Total	162	100.0
Type of enterprise	Micro	45	27.8
	Small	50	30.9
	Medium	67	41.3
	Total	162	100.0
Workforce Size of Full-time Employees	< 25	19	11.7
	25 - 50	46	28.4
	51 - 100	34	21.0
	above 100	63	38.9
	Total	162	100.0

Table 1 Descriptive Statistics of the respondents

Source: Compiled using primary data

Table 2 provides reflective measurement model based on outer loadings, Cronbach's alpha, composite reliability (CR) and average variance extracted (AVE). The outer loadings of the measurement items ranged from 0.607 to 0.925. Most indicators recorded loadings above the threshold of 0.70 which indicates satisfactory indicator reliability. A few items like Risk Identification, Firm Performance and Environmental Uncertainty, showed loadings between 0.60 and 0.70 but these items were kept because the constructs showed acceptable composite reliability and AVE values. Composite reliability values ranged from 0.804 to 0.897, exceeding the value of 0.70 and satisfies the internal consistency reliability for all constructs. Cronbach's alpha values ranged from 0.645 to 0.843. The AVE values ranged from 0.557 to 0.745, with all constructs exceeding the recommended threshold of 0.50. Thus, the measurement model demonstrates satisfactory reliability and convergent validity for Risk Identification, Risk Assessment, Risk Mitigation, Sustained Competitive Advantage, Firm Performance and Environmental Uncertainty.

Source	**Item**	**Outer loadings**	**Cronbach's alpha**	**CR**	**AVE**
Risk Identification (RI) (Punniyamoorthy et al., 2013)	Our organization is well informed about possible risks in our supply chain.	0.607	0.645	0.804	0.583
	We continuously monitor short-term supply chain risks.	0.788			
	We identify key areas where supply chain risks may occur.	0.871			
Risk Assessment (RA)	We identify potential sources of supply chain risks.	0.824	0.843	0.895	0.681
	We evaluate the probability of supply chain disruptions.	0.793			

(Punniyamoorthy et al., 2013)	We analyse the impact of supply chain risks on operations.	0.803			
	We prioritise supply chain risks based on severity.	0.878			
Risk Mitigation (RM) (Punniyamoorthy et al., 2013)	We collaborate with partners to reduce supply chain risks.	0.804	0.828		
	We share supply chain risks with partners through appropriate strategies.	0.925		0.897	
	Our organization has clear policies for managing supply chain risks.	0.857			0.745
Sustained Competitive Advantage (SCA)	We offer competitive prices.	0.702	0.822		
	Our firm offers high quality and attractive products to its customers	0.792			
	Our firm provides dependable delivery on time	0.810		0.876	
	Our firm provides customized products and services	0.767			
	Our firm is always the first in the market to introduce new products and services	0.751			0.586
Firm Performance (FP)	Market share	0.809	0.839		
	Return on investment	0.751			
	The growth of market share	0.781		0.882	
	The growth of sales	0.636			
	Growth in return on investment	0.796			
	Profit margin on sales	0.689			0.557
Environmental uncertainty (EU)	Customer needs and demands are not stable and change very quickly.	0.808	0.755		
	Demand forecasting is very challenging due to changing customer preferences.	0.824		0.841	
	Competitors strategies across the global markets are intense and unpredictable.	0.631			
	Geopolitical turbulence affects the profitability of the business.	0.746			0.572

Table 2 Indicator reliability, internal consistency reliability and convergent validity

Source: Compiled using primary data

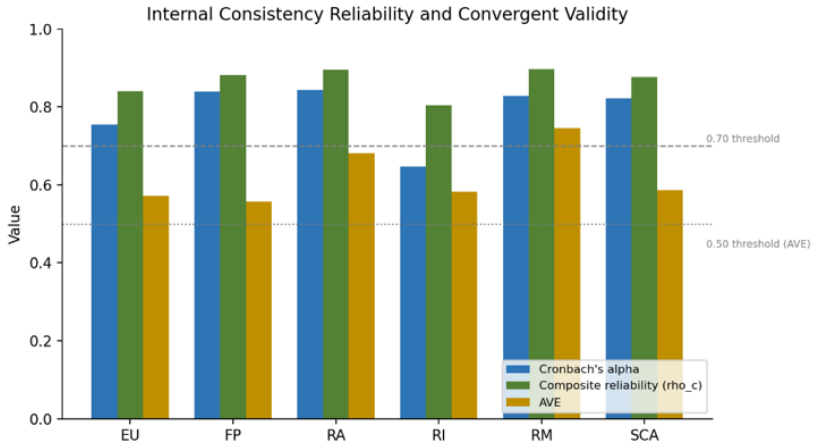


Figure 2 Internal Consistency Reliability and Convergent Validity

5.2 Measurement Model Assessment

Consistent with the two-stage analytical protocol and elaborated for PLS-SEM by (Hair et al., 2019), the measurement model was evaluated prior to structural model assessment. This sequencing ensures that the constructs achieve adequate reliability and validity before their inter-relationships are examined. The measurement model assessment encompassed four domains: (1) indicator reliability and factor loadings, (2) internal consistency reliability, (3) convergent validity through Average Variance Extracted (AVE) and (4) discriminant validity through the Fornell-Larcker.

5.3 Discriminant Validity

The Fornell-Larcker criterion was employed in testing the discriminant validity of the constructs. The figures in bold in the matrix below the diagonal indicate the square root of Average Variance Extracted (√AVE) of the constructs, whereas the figures below the diagonal indicate the correlation among the constructs. It can be observed that the square roots of AVE of all the constructs under consideration are greater than their correlation with all the other constructs. The √AVE figures vary between 0.800 and 0.863 but the correlations between the constructs are smaller than those on the diagonal. This implies that the Fornell-Larcker criterion is fulfilled for all the constructs.

It means that Environmental Uncertainty (EU), Firm Performance (FP), Risk Assessment (RA), Risk Identification (RI), Risk Mitigation (RM) and Sustained Competitive Advantage (SCA) exhibit satisfactory discriminant validity.

	EU	**FP**	**RA**	**RI**	**RM**	**SCA**
Environmental Uncertainty (EU)	0.800					
Firm Performance (FP)	0.620	0.820				
Risk Assessment (RA)	0.550	0.590	0.825			

Risk Identification (RI)	0.580	0.61	0.650	0.800		
Risk Mitigation (RM)	0.600	0.570	0.600	0.620	0.863	
Sustained Competitive Advantage (SCA)	0.610	0.630	0.700	0.680	0.650	0.820

Table 3 Discriminant Validity – Fornell-Larcker

Source: Compiled using primary data; Values above diagonal omitted for brevity

5.4 Collinearity Statistics (VIF)

Variance Inflation Factor (VIF) values assess multicollinearity among indicators and among predictor constructs. Values below 5 (conservatively, below 3.3) indicate collinearity is not a concern.

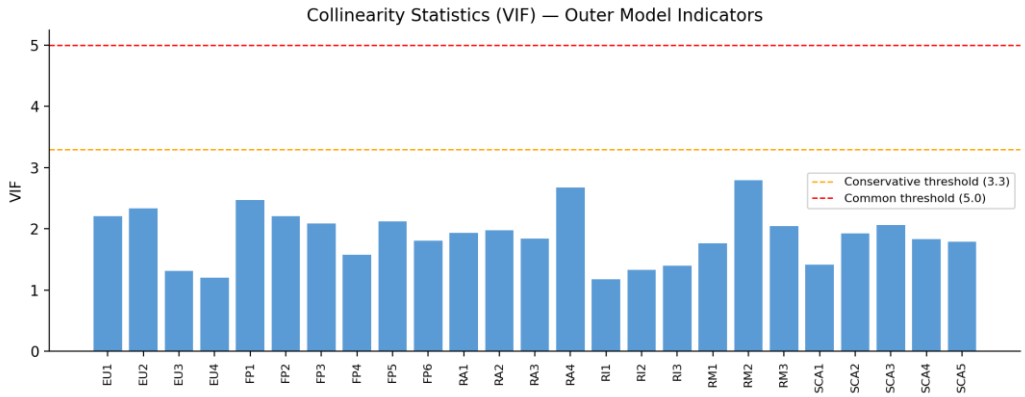


Figure 3 Indicator-level VIF values (outer model)

All indicator VIF values range from 1.18 to 2.80 comfortably below the conservative threshold of 3.3 so, collinearity among indicators is not a concern. At the construct (inner model) level, VIF values for the predictors of SCA (RA = 2.72, RI = 3.08, RM = 2.48) and of FP (EU = 2.74, SCA = 2.51, interaction term = 1.22) are also all below 5, confirming that multicollinearity does not distort the structural path estimates.

5.5 Structural Model Assessment

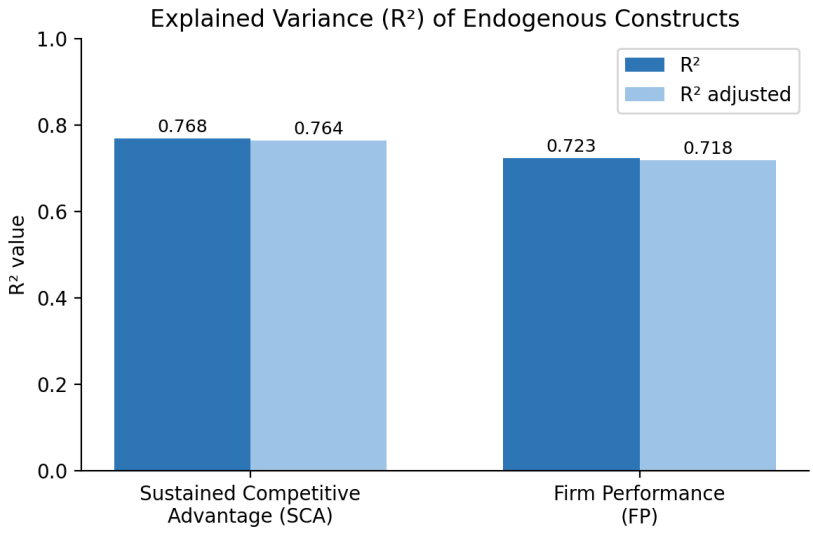


Figure 4 R² and adjusted R²

The model explains 76.9% of the variance in Sustained Competitive Advantage ($R^2 = 0.769$, adjusted = 0.764) a substantial effect by Cohen's benchmarks meaning that Risk Identification, Risk Assessment and Risk Mitigation together account for most of the variation in how firms build a sustained competitive advantage. Firm Performance is explained to a similarly strong degree ($R^2 = 0.723$, adjusted = 0.718) by Sustained Competitive Advantage, Environmental Uncertainty and their interaction term. Both R^2 values comfortably exceed the 0.75/0.50/0.25 substantial/moderate/weak benchmarks commonly used in PLS-SEM, indicating strong explanatory power for both endogenous constructs.

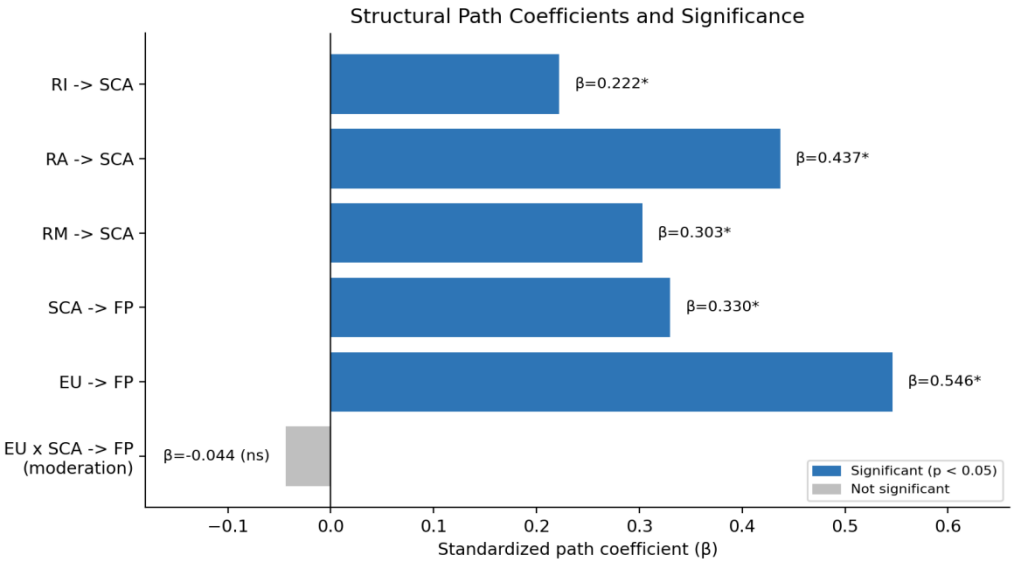


Figure 5 Standardized path coefficients (blue = significant, gray = not significant)

The structural model was evaluated using bootstrapping with 5,000 subsamples to assess the significance and stability of the estimated path coefficients. The structural model was assessed in terms of path coefficients, coefficient of determination (R^2), effect sizes (f^2) and the moderation effect (Hair et al., 2019) (Ringle et al., 2024). The R^2 value for the variable Sustained Competitive Advantage (SCA) was 0.769, implying that Risk Identification, Risk Assessment and Risk Mitigation combined account for 76.9% of the variability in the Sustained Competitive Advantage. This implies that the explanatory power in this study is strong since the model explains a huge share of the variation in SCA.

From the three risk management capabilities, the path coefficient between Risk Assessment and Sustained Competitive Advantage is highest ($\beta = 0.437$), while that between Risk Mitigation and SCA is $\beta = 0.303$ and $\beta = 0.222$ for Risk Identification. This means that the three risk management capabilities have positive relationships with Sustained Competitive Advantage and Risk Assessment has the highest impact among the three. However, the significance of the paths must be tested using the t-value and p-value from the bootstrapping statistics.

The R^2 value for Firm Performance was 0.723, implying that the model accounts for 72.3% of the variation in Firm Performance. For the structural model, the variable Sustained Competitive Advantage is positively related to Firm Performance with a path coefficient $\beta = 0.330$. In other words, Sustained Competitive Advantage increases Firm Performance. The statistical significance of this association can only be known through the use of bootstrapping t-value and p-value.

Environmental Uncertainty has been incorporated into the model as a moderating variable. It has a negative path coefficient, $\beta = -0.044$. The negative path coefficient implies that Environmental Uncertainty has a negative moderating effect on the link between Sustained Competitive Advantage and Firm Performance. However, the significance of this effect cannot be established from the diagram and it needs the bootstrapping t-value and p-value for the interaction term.

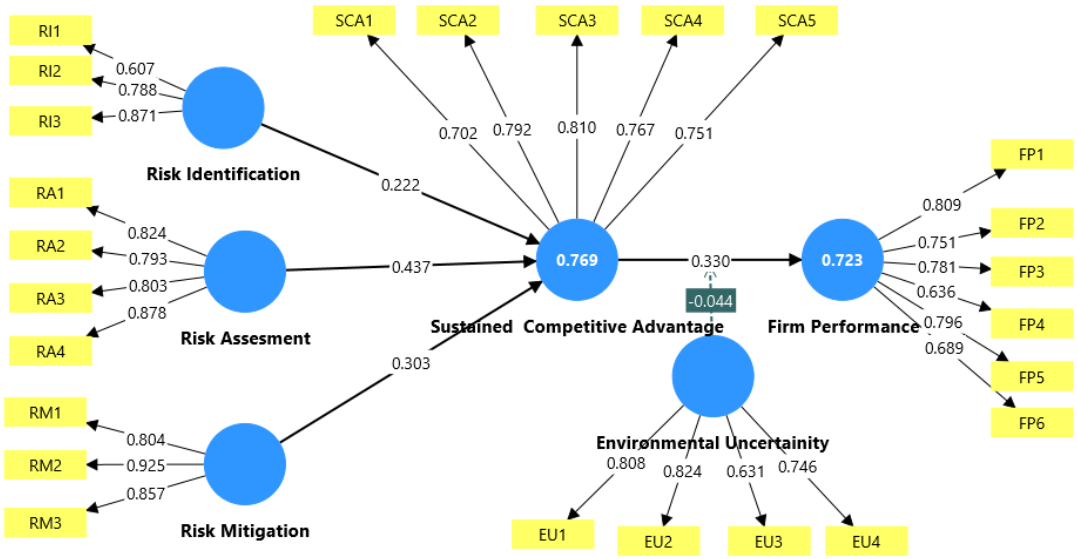


Figure 6 Estimated model with standardized path coefficients, outer loadings and R^2 values (SmartPLS output)

The Table 4 presents the structural model path coefficients, t-statistics and p-values derived from the bootstrapping procedure.

Hypothesis	Relationship	Path Coeff. (β)	T-Statistic	P-Value	Decision
H1	Risk Identification → SCA	0.222	2.166	0.030	Supported *
H2	Risk Assessment → SCA	0.437	6.492	< 0.001	Supported ***
H3	Risk Mitigation → SCA	0.303	4.404	< 0.001	Supported ***
H4	SCA → Firm Performance	0.330	3.117	0.002	Supported **
H5	Environmental Uncertainty → FP	0.546	5.676	< 0.001	Supported ***
H6	EU × SCA → FP (Moderation)	-0.044	1.172	0.241	Not supported

Table 4 Structural Model Results - Path Coefficients

Source: Compiled using Primary data

5.6 Effect Sizes (f^2)

f^2 measures how much an exogenous construct contributes to the R^2 of an endogenous construct. Cohen's guidelines: 0.02 = small, 0.15 = medium, 0.35 = large.

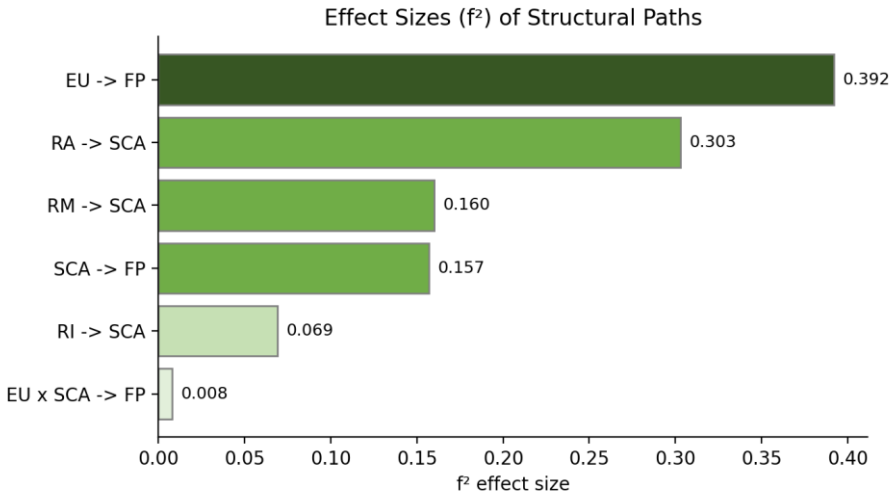


Figure 7 f² effect sizes of structural paths

Environmental Uncertainty has a big impact on Firm Performance ($f^2 = 0.392$). Risk Assessment has a large effect on Sustained Competitive Advantage ($f^2 = 0.303$), while Risk Mitigation ($f^2 = 0.160$) and Sustained Competitive Advantage's effect on Firm Performance ($f^2 = 0.157$) are medium. Risk Identification has a small-to-medium effect on SCA ($f^2 = 0.069$) and the EU × SCA interaction has a negligible effect on FP ($f^2 = 0.008$), which is consistent with its non-significant path coefficient.

5.7 Mediation: Indirect Effects of Risk Management Capabilities on Firm Performance

Because Sustained Competitive Advantage sits between the risk management dimensions and firm performance, the indirect (mediated) effects of RI, RA and RM on FP were tested via bootstrapping.

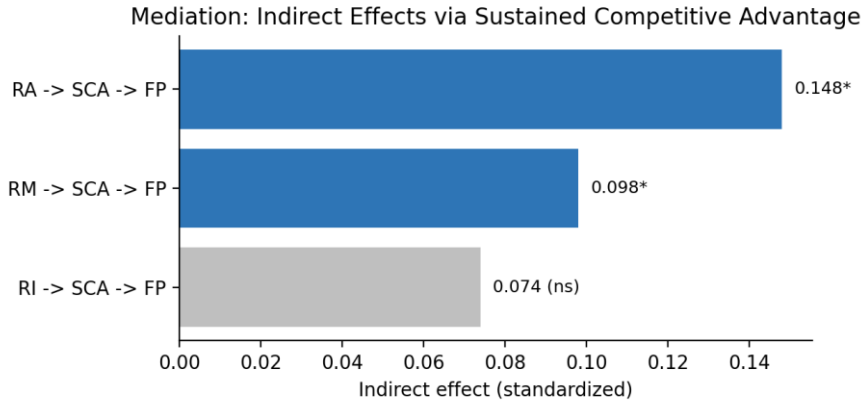


Figure 8 Indirect effects of Risk Management Capabilities on Firm Performance through SCA

Indirect path	Indirect effect	t-value	p-value	Result
RA -> SCA -> FP	0.148	3.157	0.0016	Significant mediation
RM -> SCA -> FP	0.098	2.721	0.0065	Significant mediation
RI -> SCA -> FP	0.074	1.485	0.137	Not significant

SCA has a mediating role between Risk Assessment and Risk Mitigation and Firm Performance; both of these constructs positively influence Firm Performance indirectly through their positive influence on SCA. The

mediating role of SCA for RI and Firm Performance is not significant; however, the fact that RI is a significant predictor of SCA on its own means that it positively influences SCA; the reason why its indirect influence on Firm Performance via SCA is not significant is that the value of the regression coefficient of the influence of RI on SCA ($\beta = 0.222$) is comparatively lower and its confidence interval is larger.

6. Findings and Discussion

The findings demonstrate that risk identification, risk assessment and risk mitigation significantly influence the sustained competitive advantage in handloom textile enterprises, explaining a good proportion of its variance ($R^2 = 0.769$). In the Risk management Capabilities, risk assessment is the strongest predictor ($\beta = 0.437$), followed by risk mitigation ($\beta = 0.303$) and risk identification ($\beta = 0.222$). This means that competitive advantage depends not only on identifying the potential threats but more on an enterprise's ability to evaluate how severe is the issue and how it affects the operational consequences in order to determine proper responses. This finding gives a picture that the strategic view of risk management proposed by (Bromiley et al., 2015) and with (Power, 2009) on effective risk assessment will help in decision-making under any circumstances.

Risk identification item is significant to sustained competitive advantage and this supports the early statement of recognizing the disaster gives enterprises a chance for better response. This is also supported by (Herbane, 2010) and (Mikes & Kaplan, 2013) who had found that sensing the risk beforehand gives more strategic opportunity for organisation to prepare themselves and its comparatively smaller effect size ($f^2 = 0.069$) shows that the identification can only may not be enough but also acting upon the issue and trying to resolve is equally important. Risk mitigation, shows a stronger contribution towards sustained competitive advantage, this indicates the mitigation capabilities protect the important resources and during any uncertainty (Bromiley et al., 2015) (Grace et al., 2015).

The study indicates that the sustained competitive advantage significantly improves firm performance ($\beta = 0.330$, $p = 0.002$) and this is supported by the Resource-Based View theory which says valuable capabilities will bring out superior organizational outcomes when they are transitioned into competitive points that are difficult to imitate (Barney, 1991). In the handloom textile enterprises, capabilities that support competitive pricing, product quality, delivery, customization and innovation may give a direction through which risk management can contribute to market and financial performance.

The mediation analysis shows how the risk management capabilities are aiding in achieving the performance. Sustained competitive advantage significantly mediated the effects of risk assessment (indirect effect = 0.148, $p = 0.0016$) and risk mitigation (indirect effect = 0.098, $p = 0.0065$) on firm performance and the indirect effect of risk identification was not significant. This finding shows that risk assessment and mitigation make the organization performance value by strengthening the firm's competitiveness. The finding also extends to RBV theory by demonstrating sustained competitive advantage as an intervention rather than a direct transition from risk capability to firm performance.

Environmental uncertainty also had a direct association with firm performance ($\beta = 0.546$, $p < 0.001$) but its interaction with sustained competitive advantage was not significant ($\beta = -0.044$, $p = 0.241$; $f^2 = 0.008$). This result is supported by Dynamic Capabilities Theory. Even though, Uncertainty is related to organizational outcomes the firm performance and sustained competitive advantage remains in stable level in all the levels of environmental uncertainty. This contrasts with the theoretical explanation where dynamic capabilities become valuable under any conditions (Eisenhardt & Martin, 2000). Rather than functioning as a boundary condition, environmental uncertainty may therefore exert a more direct influence on firm outcomes in handloom textile enterprises.

Overall, the findings reposition risk management from a predominantly defensive activity toward a strategic capability-building process. Risk identification provides awareness, but risk assessment and mitigation appear particularly important because they transform information about threats into strategic action. The results therefore suggest a sequential logic in which firms identify risks, evaluate their strategic significance, respond through mitigation, strengthen competitive advantage and ultimately improve performance.

7. Theoretical Implications

This research adds as an addition for the literatures on risk management and strategic management, as it is shown that risk identification, risk assessment and risk mitigation are independent but also acts as capabilities for achieving competitive advantage. The results of the study also add value to the Resource Based View and Dynamic Capabilities Theory in that they indicate that the competitive advantage is not created only by recognizing the risk but also interpreting and acting on the identified risk. It also proves that the contribution of risk assessment to competitive advantage is significant which means that the capability of inferring information about the risks into managerial interpretation on its own. This finding is evidently supported by (Wong & Ngai, 2023) that sensing, analysis and planning capabilities create sustained competitive advantage in the textile and manufacturing contexts as well as proactive risk management within supply chain creates competitive advantage through organizational readiness and continuity (Jerome et al., 2023).

Another contribution of this study is identifying sustained competitive advantage as a mechanism that explains the relationship between the risk management capabilities with firm performance. While risk assessment and risk mitigation has significant indirect effects on firm performance mediated through sustained competitive advantage but risk identification did not show indirect effect. This means that risk identification alone does not help organizations perform because there is no action after that process. Similar evidence from the apparel industry shows that capabilities of supply chain contribute to both competitive advantage and firm performance which helps in the organizational resilience and risk management capabilities (Abeysekara et al., 2019).

8. Practical Implications

For managers and owners of handloom textile enterprises, the findings suggest that risk management should not be a reactive process but a proactive strategic process. Firms should establish standard way for identifying supply-chain risks and evaluate the severity and feasibility of the risk. As risk assessment shown a stronger predictor of sustained competitive advantage, managers need to analyse the capability of supplier risks and assess through proper registration, proper scenario analysis, consistent reviews of demand and other operational vulnerabilities. This practice can help the mangers to allocate limited resources towards the risks which can affect the competitiveness.

As the results have shown significant effect on mitigations, collaboration with suppliers, other sourcing arrangements and formal risk management policies can help firms protect their maintaining quality, delivery, customization and responsiveness.

9. Limitations and Future Research Directions

The cross-sectional design is used to grasp the organizational perceptions at a particular point of time. Longitudinal studies where the study is conducted at multiple point of time like how risk capabilities and competitive advantage of a firm before, during and after any disruptions. The study is based on 162 purposively selected respondents from handloom textile enterprises and this may limit the generalization. The model may help in the future research to study across other textile clusters, manufacturing industries and other geographical regions. The study is on self-reported measures and future studies can combine with indicators such as sales growth, profitability, delivery disruptions or market share.

10. Conclusion

The study proved that risk management capabilities are important for sustained competitive and firm performance in handloom textile enterprise. Combination of Risk Identification, Risk assessment and risk mitigation gives a positive contribution to sustained competitive advantage and risk assessment as the most important capability. These will subsequently improve the firm performance.

The mediation analysis shows that risk assessment and risk mitigation affects the sustained competitive advantage and the firm performance. The results therefore suggest that recognizing risk is only the beginning of an effective risk-management process and stronger organizational outcomes rises when firms are able to evaluate risks and threats and translate that understanding into appropriate strategic responses.

The study holistically moves the understanding of risk management beyond its traditional defensive role and positions it as a capability for building competitive strength. For handloom textile enterprises facing volatile markets, changing customer expectations, supply-chain disruptions and competitive pressures, the ability to identify, assess and mitigate risks can become an important foundation for sustaining competitiveness and improving long-term performance.

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