

Relationship Between Innovations, Capital Expenditures and Post-M&A Performance: Evidence from Vietnam, 2005-2012

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The paper attempts to explore the plausibility and validity of theoretical relationship between determination of controlling an acquired firm's capital, assets and brand values versus its capability of innovation, and ex post performance of Vietnam's M&A industry amid the resurgence of the Mergers and Acquisitions (M&A) wave from 2005 to 2012. The study mainly employs logistic regressions performed on a categorical data sample, consisting of 212 M&A cases. The results reported from this analysis suggest significant and plausible relationship between pre-M&A pursuit of innovation (versus capital/physical assets) of the acquired and post-M&A performance. In addition, pre-M&A expenditures tend to cause poor post-M&A performance. As a plausible reasoning, the paper concludes that creative performance can be a factor to pursue in M&As, which suggests the need to emphasize capable and willing human capital. However, in a wave of M&A where pursuits of capital resources, assets and brand value are overemphasized, the influence of innovation factor to the ex post success becomes negligible.

Introduction

The study attempts to investigate the evolution and dataset on actual transactions of Mergers and Acquisitions (M&A) in Vietnam's emerging economy from 2005 to 2012 when M&A value was estimated around \$10 bn. Vietnam's reintegration into the world economy has not been without obstacles and difficulties (Stiglitz, 2008). The rush for financial resources can be seen very clearly in the early stage of development of the Vietnamese capital markets and financial system, where both equity and debt finances have become a frenzy (Vuong *et al.*, 2010; and Vuong and Tran, 2011). Since Vietnam's M&As began in earnest during the post-WTO globalization process, it may be a signal for the complexity of the economy's next period of transition. In emerging markets, foreign Transnational Corporations (TNC) may pursue a strategy of taking over resources (capital/physical) and market positioning, partly defined by the brand strength of the acquired firm in a local market. Vietnam's 1990-2010 M&A data showed that 79.4% of the M&A attempts came from foreign firms acquiring domestic ones (Vuong *et al.*, 2010).

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Both acquiring and acquired firms seek economic benefits when entering M&A agreements. Thus M&As involve changes and expectation of profit opportunities for the parties involved, as well as some level of innovation (Drucker, 1986, p. 81). However, as many sellers consider M&As a way to exit from their industries with satisfactory gains, they are unlikely to initiate structural changes and innovations. The current trend may represent a shift in the economic function of local business people from being entrepreneurs to more of capitalists. In fact, motivated to exit the industry, the selling entrepreneur shows her declining commitment to both the future of the acquired firm and any future innovation. Consequently, future innovation would likely be in the hands of the acquiring one. Presumably, this has to be decided *ex ante*.

Literature Review

Calderón *et al.* (2004) showed that M&As have become a mainstream economic operation in today's business world going through six waves over the past century (Katz *et al.*, 1997), with technological innovations behind the most recent wave starting in 2000s. In East Asia, the trend appeared in the late 1980s, while the 1997 Asian financial turmoil also contributed to the emergence of a regional M&A wave (Mody and Negishi, 2000).

The Vietnamese M&A industry is closely connected to the surging FDI inflows (Lall, 2002) and became important in the 2005-2010 period (Vuong *et al.*, 2010). As expecting short-term profits is unrealistic in a transition economy, acquiring firms tend to seek longer-term value (Focarelli *et al.*, 2002; and Öberg and Holtström, 2006), knowing that making strategic acquisitions may increase the acquiring firm's power to control assets and market access, and help secure stable supplies of production materials. Beena (2007) showed that in India's innovation-oriented pharmaceutical industry, post-M&A firms are more efficient compared to their pre-M&A operations.

Still, the question about real economic efficiency, especially innovation capability, has been left unanswered. This question is even more critical in a transition economy like Vietnam, as innovation is the very thing that is needed the most (Te Velde, 2001; Lall, 2002; and Napier *et al.*, 2012). The absence of an *ex ante* pursuit of innovation could even render post-M&A operation's viability questionable.

In reality, a singular goal of acquiring brands and valuable assets (capital/physical) may miss a key function of M&A, facilitating trade liberalization and industrial restructuring. The high rate of success (~90%) for M&A attempts in the 2005-2010 period in Vietnam showed how local enterprises embraced abundance of resources temporarily available to them following the sole 'serendipity' method for identifying emerging opportunities (Napier and Vuong, 2014), as well as the influence of sociocultural factors to business leaders' mentality during M&A processes (Vuong and Tran, 2009). And this overreliance on resources can become detrimental because the economy needs innovation capabilities and entrepreneurship (Vuong and Napier 2013; and Vuong *et al.*, 2013).

Objectives

- What do we learn about M&A success/failure, given acquiring firm's pre-M&A attention to acquired firm's resources/brand versus its capability of technology/management innovation?
- What may be the impact of the absence of a strategic intent for acquired firm's innovation capacity on post-M&A performance?
- How does the factor of pre-M&A capital expenditure help predict the failure of post-M&A performance if the innovation factor does not play a vital role in acquiring firm's strategic determination from the beginning (i.e., *ex ante*)?

Methodology

The data consisted of coded data points for 212 M&A transactions recorded in Vietnam's capital market in the 2005-2012 period. Two structured datasets (Tables 1 and 2) are tabulated with six distinct dichotomous categorical predictor variables, namely, expenditures, innovations (technological, managerial and marketing/distribution), capital resources, physical assets and valued brand.

The binary response variable that is used to examine the theoretical hypotheses is post-M&A performance ('Perf'; with Perf = 1 when positive performance is recorded 'Yes' and Perf = 0; when 'No'). The datasets also consider qualitative information and insights obtained from many reports published by Ho Chi Minh City Stock Exchange, Hanoi Stock Exchange, listed firms and local media sources like *Dau Tu Chung Khoan*, *Vietnam Economic Times*, *Vietnam Investment Review* and *Saigon Economic Times*.

Subsequent analyses perform various logistic regression estimations for dichotomous response variables and categorical predictor variables having a general specification as follows:

$$\ln\left(\frac{\pi}{1-\pi}\right) = \text{logit}(\pi) = \beta_0 + \beta_i X_i^K, i = 1, \dots, K \quad \dots(1)$$

where π represents the 'success probability,' that is, when the performance of the post-M&A operation satisfies the expectation by the acquiring firm (Perf = 1). This event is observed directly from the empirical dataset. β_0 is the intercept and the β_i coefficient associates with the i^{th} predictor variable X_i .

For each categorical predictor variable X_i , the standard null hypothesis is: $H_0 : \beta_i = 0, i = 1, \dots, K$. For examining interactions between variables, H_0 becomes $\beta_i \beta_j = 0, \forall i \neq j$. The statistic employed for hypothesis testing is the standard likelihood ratio measure, which is χ^2 -distributed:

$$G^2 = -2 \ln \left(\frac{L_0}{L_1} \right) = -2 [\ln(L_0) - \ln(L_1)] \quad \dots(2)$$

where L_0 is the numerical value of the likelihood function computed from the observed data under the null hypothesis estimate (π), and L_1 under the empirical data-evaluated estimate ($\hat{\pi}$). This G^2 test statistic follows a χ^2 -distribution with K degrees of freedom (following standard treatments, as explained in Terrell, 1999; Agresti, 2002; and Azen and Walker, 2011).

In both Tables 1 and 2, Inno1 means 'ex ante pursuit of innovation verified'; and Inno0 is 'not verified'. 'Yes' and 'No' are the confirmation of efficient firm performance as observed with our empirical data. Brand1 means 'determined that the M&A pursuit was dependent on brand value', and Brand0 is 'independent'. Likewise, Res1 and Res0 are 'pursuit of capital/physical assets' and 'none', respectively.

			Brand1	Brand0
Yes	Inno1	Res1	50	15
		Res0	2	2
	Inno0	Res1	23	45
		Res0	0	0
			Brand1	Brand0
No	Inno1	Res1	15	11
		Res0	1	1
	Inno0	Res1	11	31
		Res0	3	2

Table 2 splits 'Resources' into physical asset (with categories As1/As0) and capital (Cap1/Cap0), while the remaining variable, 'Expenditures', tells whether the M&A is considered expensive or costly.

In both Tables 1 and 2, the response variable, 'Performance', takes the value of either 'Yes' (i.e., Perf= 1) or 'No' (Perf = 0), conditional upon numerical values of other predictor variables given in the corresponding cells.

Table 2: Contingency Table for Performance, Expenditures, Assets and Capital Resources

			Cap1	Cap0
Yes	Exp1	As1	52	52
		As0	14	4
	Exp0	As1	5	10
		As0	0	0
No	Exp1	As1	18	33
		As0	4	2
	Exp0	As1	4	3
		As0	6	5

Results and Discussion

Estimations provided in the following discussion apply several logistic regressions on the corporate dataset (Tables 1 and 2) evaluated by SAS® software package. The model for assessing the goodness of fit is the standard global null hypothesis $H_0 : \beta_1 = \beta_2 = \dots = 0$, yielding corresponding Likelihood Ratio (LR) test statistic values.

The first specification is given by Equation (3):

$$\text{logit}(\pi) = \ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 \text{Innovation} + \beta_2 \text{Resources} + \beta_3 \text{Brand} \quad \dots(3)$$

where the event to observe is 'positive post-M&A performance'. The dataset counts 137 entries. The results reported from this estimation confirm that H_0 is rejected decisively at 5% level, with LR-statistic and Wald-statistic being 9.88 and 9.25, respectively (df = 3) leading to their respective p -value both smaller than 0.05.

Thus, this relationship is meaningful. The analysis of Maximum Likelihood Estimates (MLEs) is shown in Table 3.

Only the 'Resources' variable—whose b_2 is statistically significant—has explanatory power in this estimation. The coefficient b_2 is quite substantial, reported at 1.3262, much larger than the estimated values of the other coefficients included in Equation (3).

Table 3: Analysis of MLEs for Equation (3) Specification

Parameter	Estimate	Chi-Square	p-Value
Intercept (β_0)	-1.0484	2.47	0.11
Innovation (β_1)	0.3941	1.51	0.22
Resources (β_2)	1.3262 ^(b)	4.12	0.04
Brand Values (β_3)	0.4802	2.29	0.13

Note: ^(b) coefficient significant at 5% conventional level.

The next estimation equation is Equation (4):

$$\text{logit}(\pi) = \beta_0 + \beta_1 \text{Resources} + \beta_2 \text{Brand} \quad \dots(4)$$

where 'negative post-M&A performance' is the event to observe (Perf = 'No'). Empirical estimation shows that LR-statistic is 8.36 (df = 2) rejecting H_0 at 5% level. The MLE analysis shows that both 'Resources' and 'Brand' are found to be significant in this evaluation with their estimates being -1.2923 and -0.6231, respectively, leading their corresponding p-values to be 0.048 and 0.035.

Next consider a relationship between negative post-M&A performance and absence of *ex ante* plan on innovation in Equation (5):

$$\text{logit}(\pi) = \beta_0 + \beta_1 \text{Innovation} \quad \dots(5)$$

The event to observe is Perf='No', where the reference category for the predictor variable is 'Inno1'. Estimates and their reported significance are shown in Table 4.

Table 4 : Analysis of MLEs for Equation (5) Specification

Parameter	Estimate	Chi-Square	p-Value
Intercept (β_0)	-0.9019 ^(a)	16.20	<0.0001
Innovation (β_1)	0.5325 ^(c)	3.29	0.0697

Note: ^(a) and ^(c) coefficients are significant at 1% and 10% conventional levels, respectively.

From Table 2, with the presence of substantial capital expenditures in pre-M&A determination, Equation (6) is estimated:

$$\text{logit}(\pi) = \beta_0 + \beta_1 \text{Expenditures} + \beta_2 \text{Capital} + \beta_3 \text{Asset} \quad \dots(6)$$

In the estimation of Equation (6), the event to observe is Perf = 'No', while there exists signs of costly capital expenditures, strong *ex ante* pursuits of resources. Evaluating Equation (6) with our empirical data yields the Wald-statistic numerical value of 9.55 (df=3). This result most probably rejects H_0 at 5% level as the corresponding p-value is 0.0228. The estimation indicates that the only statistically significant coefficient is β_1 showing an evaluated value of -0.8196 with reported G^2 being 4.3, significant at 5% level and a corresponding p-value of 0.0382.

Conclusion

The reported statistics provides a plausible reasoning that the relationship between pre-M&A determination on acquiring resources (financial/physical) and the post-M&A performance can be empirically established. Vietnam's data suggest some positive and profound effects of the 'size matters' strategy on firms' post-M&A performance. So to speak, the innovation factor has not had any significant meaning in an overwhelming 'asset/capital acquiring pursuit' strategy.

In contrast, the overemphasis on resources and brand value at the time of the M&A pursuit is the major explanation for negative post-M&A performance. Simultaneously, the absence of innovation as a major determinant in the pre-M&A period appears to have significant explanatory power for poor performance *ex post*. In addition, the previously reported statistics also confirm that a plan to pursue innovation in the pre-M&A period tends to support positive post-M&A performance.

Finally, when the M&A involves costly arrangement or expensive investments (size, price or running costs), no matter how large the resources the post-M&A firm may acquire, pre-M&A expenditures tend to adversely affect the post-M&A performance results.

Therefore, innovation and creative performance can be the important factors to pursue in M&A transitions, which suggests the need for emphasizing capable and willing human capital rather than resources or existing values of corporate/goods brands. However, in a wave of M&A where there is an overwhelming emphasis on assets and brands, the innovation factor's impact is limited, in part due to 'illusions' caused by seemingly endless prosperity seen in the abrupt surge of foreign portfolio investments in the early days of Vietnamese stock market fever (Vuong *et al.*, 2013).☉

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