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MASTER  
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**Does an acquirer's prior alliance experience with a target  
influence post-acquisition performance?**

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## 1. INTRODUCTION

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*Based on the theory of Patrizia Porrini that an acquirer's previous alliance with a target positively influences post acquisition performance, this study is going to test the generalizability of her findings. In contrast with the results of her research, data from over 1,070 acquisitions show that there is no influence on post-acquisition performance. Furthermore, we are going to study the type of influence different forms of alliance can have on post-acquisition performance. We believe that alliances in R&D and licensing between an acquirer and a target each can influence post acquisition performance to different degrees.*

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Recently, just as in the past decade, the performance of companies after a merger & acquisition has been especially intriguing to scholars, managers, regulators, investors and shareholders. Whether and how acquisitions create economic value are key questions in strategy research (Haspeslagh and Jemison 1991. Hitt et al. 2001). Since about 80% of acquisitions fail (Johnson, 2006), it is important for companies that intend to grow by acquisition to determine which type of activities or practices such as performing an alliance with a target before acquiring the target, has the most influence on post-acquisition performance. If a specific cause of action can significantly boost post-acquisition performance, companies may make use of this as a strategy for success. Hence, the failure rate of acquisitions will be reduced.

Particular interest has been shown in the study of post-acquisition performance by a host of scholars. Some scholars have explored the relationship between alliance experience with a target and acquisition performance. However, the existing literature that empirically researches the relationship between alliance experience and post-acquisition performance is limited. Although, this particular relationship is under-emphasized by academics, Patrizia Porrini\* in her study on the subject concludes that a previous alliance between an acquirer and a target benefits post-acquisition performance, while also suggesting that target-specific information and experience is an advantage-producing resource. She also theorized that an acquirer's previous acquisition experience with a target had a correlation with post-acquisition performance. However, it is not clear under which circumstances an acquirer's prior acquisition experience with a target influences post-acquisition performance. This study will therefore contribute to existing literature by providing an answer whether Patricia Porrini's findings can be replicated and generalized.

Porrini's findings are not without limitations. These limitations include (1) the time-period during which the study was performed which witnessed a high number of acquisitions and alliances (2) the fact that the study solely focused on manufacturing

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\* Patrizia Porrini, an assistant Professor of Management in the Management Department, College of Management, CW Post Campus of Long Island University

companies (3) the fact that only companies in the UK were chosen. Thus, there exist a research gap between the actual state and the desired ideal state of the study's findings (the actual state being time-period used and single domain, while the ideal state indicates conditions that will enhance both replication and generalization of the theory within and across industries). In their study published in 2010 Zaheer, Hernandez & Banerjee researched the relationship between prior alliance experience with a target and acquisition performance. Just like Porrini, their research is empirical but unlike her research, their data sample was larger. They found no relationship between prior alliance with a target and acquisition performance. However, their findings cannot be generalized since it was specifically researching that relationship in a specific industry only.

It is therefore necessary to bridge the aforementioned research gap, hence the need to replicate Porrini's study.

This study will breach the gap by (1) including data for companies across a 10 year period that is different from Porrini's, (2) will include all sectors and not only manufacturing firms, (3) use American listed companies and not only British companies.

The research question for this paper is: ***“Does an acquirer's prior alliance experience with a target influence post-acquisition performance?”***

Sub questions are:

**Sub-question 1:** Does alliance experience with a target similar to the acquired target influence post-acquisition performance?

**Sub-question 2:** Does alliance experience with the same target as the acquired target influence post-acquisition performance?

The results of this research may influence companies or decision makers who intend to perform an acquisition to make a choice between two options. Option (1) being, **firms should always perform an alliance with a target before acquiring the target in order to boost post-acquisition.** Option (2) being, **make it crystal clear that performing an alliance with a target before acquiring the target is not a magic potion to boost post-acquisition performance.**

**Investors:** An indication as to which of the two options mentioned above is correct has direct implications for investors. If it is proven by means of this study that option (1) is true, then an investor may benefit by exclusively investing in firms that first perform an alliance with a target before deciding to acquire the target or not. However, if it is proven by means of this study that option (2) is true, investors will be aware of the fact that investing in a firm that always performs an alliance with a target before acquiring the target is not per definition a more attractive and rewarding investment.

**Managers:** An indication as to which of the two options mentioned above is correct has direct implications for managers. If it is proven by means of this study that option (1) is true, then managers may benefit by exclusively deciding to acquire a target only after having performed an alliance with the target. Doing this as a strategy to boost post-acquisition performance is realistic if and only if option (1) is true. However, if it is proven by means of this study that option (2) is true, managers will be aware of the fact that acquiring a target after having performed an alliance with the target may not necessarily boost post-acquisition performance.

**Regulators:** Based on the findings of this research, regulators may be in a better position to legislate on the performance of alliances and decide whether it is necessary to pass laws or restrictions in connection to the performing of acquisitions.

An indication as to which of the two options mentioned above is correct has direct implications for regulators. If it is proven by means of this study that option (1) is true, then regulators may make the performing of an alliance with a target before acquiring a target mandatory. This will then lead to a greater number of successful acquisitions as is the case now. However, if it is proven by means of this study that option (2) is true, regulators may make the performing of an alliance with a target before acquiring a target not mandatory.

This chapter has identified the research gap and indicated the possible benefits of closing this gap to various stakeholders. We have also identified the objective of this research and coined our research question. This research question has been broken down further into 2 sub-questions. Next, we are going to shed light on some variables that may possibly explain the behaviour of post-acquisition performance. In the next chapter, we are also going to discuss an important and relevant accounting theory for this research.

## 2. CONCEPT AND GENERAL CHARACTERISTICS

Several scholars have studied an acquirer's prior alliance experience with similar targets. Some have found little correlation with post-acquisition performance (Lubatkin, 1982). Some though, have found significant correlation with post-acquisition performance (Hitt et al, 1993). However, this significant correlation was found when a small sample was used. The small size of the sample used makes the generalizability of the findings contestable or impossible.

While there have been diverse theoretical accounts on post-acquisition performance, researchers have suggested that the mood of an acquisition would affect post-acquisition performance (Tuch & Sullivan, 2007).

Studies in acquisition have in conformity with the aforementioned, also indicated that the relative size of the target to the bidder influences post-acquisition performance (Asquith, Bruner and Mullins, 1983). And that the economic impact of such corporate union is likely to have stronger impact on the post-bid performance of the combined firm (Bruner, 2002). However, the 'size effect' on post-acquisition performance, has been countered by Moeller et al 2004, explaining that this phenomenon is due to the different levels of care exercised by small bidders in the acquisition process.

Furthermore, acquirers can learn from previous alliance(s) with targets, and that target-specific learning also benefits post-acquisition performance. Due to target-specific absorptive capacity in acquisitions, an acquirer's prior alliance with a target might boost an acquirer's future applications of target-specific learning (Porrini, 2004).

Another variable that has been demonstrated to also influence acquisition performance is an acquirer's alliance experience. Various scholars have identified two major types of acquirer's previous alliance experience in their works. An acquirer's previous alliance experience with a target similar to the one they acquired and an acquirer's alliance experience with the target they acquired (Porrini, 2004; Haleblian & Finkelstein, 1999). These various types of previous alliances will be expatiated upon in subsequent paragraphs.

Economic crisis may be a variable that may influence post-acquisition performance. However, in order to have findings that can be compared to those of Porrini, similar variables to those she used should be made use of in this research. Furthermore, this variable can cause ambiguity. A listed company in the US with subsidiaries in countries affected by Economics crisis may not be labeled as one operating in a crisis-free environment or as one acting in a crisis environment either. Making such a classification may be very tricky and may considerable reduce the sample size.

## *2.1 Relevant Accounting Theories*

An applicable accounting theory for this study is the theory of Historical cost accounting. This theory is important for the following reasons:

1. Historical cost is relevant in decision making. Cost to management is an investment, a calculated risk. So it should be the basis of judging. As managers make decisions concerning future commitments, they need data on past transactions.
2. Under historical cost accounting, a recording of the actual transactions is made and therefore, there is a supporting record of the figures of the financial statements.
3. Throughout history, financial statements based on historical cost have been found to be useful. If those who make management and investment decisions had not found financial reports based on historical cost useful over the years, changes in accounting would long since have been made.
4. Accountants must guard the integrity of their data against internal modifications. Historical cost is less subject to manipulation.
5. The best understood concept of profit is the excess of selling price over historical cost. People understand this basic notion of business success. Historical cost is based on this idea of profit.
6. Changes in the market prices can be disclosed as supplementary data. Supplementary data on current prices are a practical and sufficient way of reporting. So, no need to change from historical cost accounting.

This theory however has its limitations. These are:

1. The role of accounting is to meet the needs of the users. The needs of users call for a forward looking position rather than a preoccupation with the past. Investors are also interested in knowing about the increases and decreases in the value of their investments as represented by the net assets of the company.
2. Historical cost overstates income in a time of rising prices and could lead to the unwitting reduction of capital.
3. One of the justifications for the utilization of historical cost is the going concern assumption. The high rate of business failures would make it difficult to build an evidential case for a projection of continuity. No business has ever continued 'indefinitely'. Thus, it would be more reasonable to assume cessation instead of continuity.

Given that the dependent variable for this study is ROA, it is of critical importance that the ROA obtained from the financial statements for all companies be valued based on the accounting principle of Historical cost. Making use of Historical cost accounting mitigates to an extent manipulation. Furthermore, comparability of ROA among companies is enhanced when all companies make use of the same accounting principle of Historical cost accounting.

In this chapter, we have examined some literature that suggest there is a significant relationship between prior alliance experience and post-acquisition performance and also those that argue against. From the literature, we have adduced that those that found a significant influence did have a considerably small sample size. Arguably, whether this result can be replicated in a larger sample remains to be verified.

Furthermore, we have looked at potential variables that may be included in our research in this chapter. We have also discussed an accounting theory that is relevant for the comparability and reliability of the data used in this research. In the next chapter, we are going to develop the hypotheses that will enable us answer our research question.



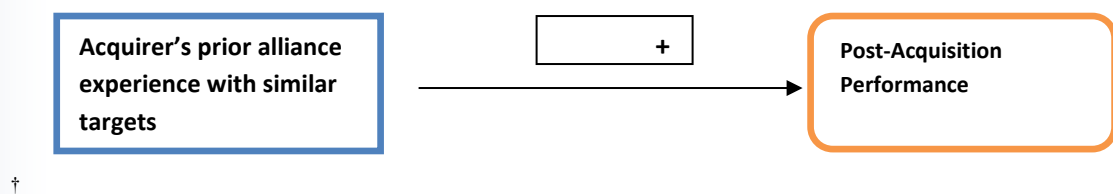
### 3. HYPOTHESIS

#### *Acquirer's prior alliance experience with similar targets*

Haleblian (1999) found a correlation in a study on an acquirer's prior alliance experience with similar targets. He posited that firms will establish a more robust basis for alliance cooperation due to the increasing probability that the new situation is in a form familiar to the partnering firm, as their background in alliance experiences expand. Thus, for firms experienced in alliance activities, a collective understanding regarding the execution of alliances is expected to emerge through the tacitly updated and refined alliance capability, enabling the firm to achieve continuous, incremental improvements in performance (Haleblian & Finkelstein, 1999). Thus as firms accumulate alliance experiences, their alliance performances are enhanced through advances in cooperative techniques and enhanced abilities to appropriate and integrate knowledge from partners.

Bruton, Oviatt, and White (1994) demonstrated that, (1) an experienced acquirer knows when to acquire and when not, (2) know more than inexperienced acquirers about the key success factors for successful integration. They defined an experienced acquirer as one that had performed a previous alliance with a similar target and an inexperienced acquirer as one that has not. Knowing when to acquire and when not to do so may have a positive influence on post-acquisition performance. Furthermore, knowing about the key success factors for successful integration may have positive influences on post-acquisition performance. Based on the above mentioned facts, we believe that an acquirer's previous alliance experience with a similar target will positively correlate with post-acquisition performance. The appropriate generalization hypothesis will thus be as follows

**Hypothesis 1:** *An acquirer's prior alliance experience with similar targets will positively correlate with post-acquisition performance.*



$$\text{Change in ROA} = \alpha + \beta_1 d_{\text{alliance\_exp\_with\_similar\_target}} + \varepsilon \dots \dots \dots \text{equation..(1)}$$

<sup>†</sup> The Pearson correlation model is applied. A plus indicates a positive correlation and the grade of the correlation.

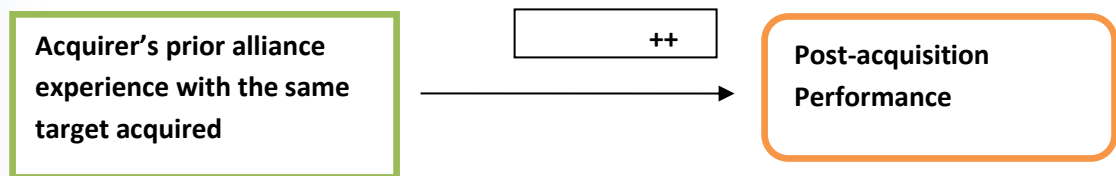
The answer to sub-question 1 will be determined by the outcome of hypothesis 1.

*Acquirer's alliance experience with a particular target*

A special case of organizational learning during which an acquirer may draw inferences and target-specific knowledge occurs when an acquirer repeatedly performs an alliance with a particular target (Levitt & March, 1988). This acquired knowledge can then be applied by the acquirer to occurrences in the acquisition process.

By so doing, the acquirer may become more efficient and effective with organizational processes that relate to working with the target's resources. This may positively improve post-acquisition performance. Based on the above mentioned facts, we believe that an acquirer's previous alliance experience with a target will positively influence post-acquisition performance. The appropriate generalization hypothesis will thus be as follows:

**Hypothesis 2:** *An acquirer's prior alliance experience with the same target it acquired positively correlates with post-acquisition performance.*



$$\text{Change in ROA} = \alpha + \beta_1 d_{\text{alliance\_exp\_with\_same\_target}} + \varepsilon \dots \dots \dots \text{equation..(2)}$$

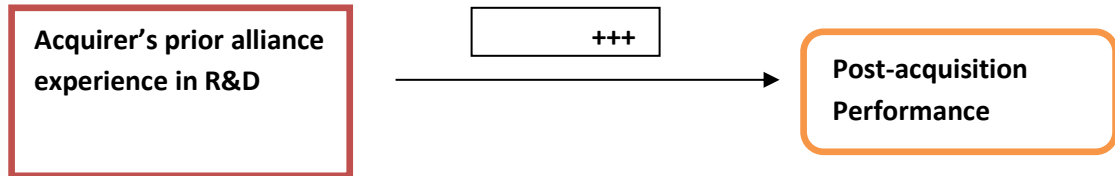
The answer to sub-question 2 will be determined by the outcome of hypothesis 2.

*Acquirer's alliance experience in R&D with a target*

We believe that post-acquisition performance can be positively influenced by performing an alliance with a target before acquiring the target. Since an alliance with a target provides target-specific information and experience to the acquirer. However, there exist different types of alliances. Research indicates that different types of alliances provide different levels of target-specific information and experience to the acquirer (Anand & Khana, 2000a, 2000b). The difference is due to the type of alliance contract. Contract types that are less specific than licensing contracts provide broader access to partner's resources. This is so because there are relatively less specification and restrictions. This confirms findings by research that learning effects are weaker in licensing alliances than in alliances in R&D (Anand & Khana, 2000a). Since about 80% of acquisitions fail

(Johnson, 2006), it is important to determine which type of alliance has the most influence on post-acquisition performance. Based on the findings of Anand & Khana, we believe that an acquirer’s previous alliance experience in R&D will significantly correlate with post-acquisition performance. The appropriate generalization hypothesis will thus be as follows:

**Hypothesis 3:** *An acquirer’s prior alliance experience in R&D with a target will most significantly correlate with post-acquisition performance*

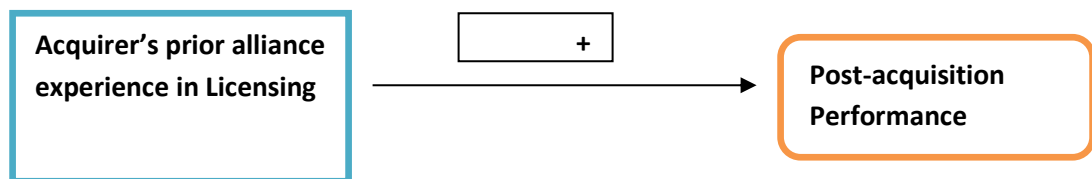


$$\text{Change in ROA} = \alpha + \beta_1 d_{\text{alliance\_exp\_in\_R\&D}} + \varepsilon \dots \dots \dots \text{equation..(3)}$$

*Acquirer’s alliance experience in Licensing with a target*

Since learning effects is weaker in licensing alliances than in alliances in R&D (Anand & Khana, 2000a) the share of resources and information is limited. This limitation inhibits the eliciting of target specific information by the acquirer. The limitation in information availability may cause the acquirer to poorly evaluate the target before acquiring it. This poor evaluation may have a negative effect on post-acquisition performance. Furthermore, integration after acquisition may be impaired as a result of the fact that the acquirer lacked information on feasibility possibilities. The appropriate generalization hypothesis will thus be as follows:

**Hypothesis 4:** *An acquirer’s prior alliance experience in Licensing with a target will slightly correlate with post-acquisition performance.*



$$\text{Change in ROA} = \alpha + \beta_1 d_{\text{alliance\_exp\_in\_LIC}} + \varepsilon \dots \dots \dots \text{equation..(4)}$$

In order to measure the effect of each individual alliance type, we are going to test all variables in a single regression equation which will be modeled as follows:

$$\text{Change in ROA} = \alpha + \beta_1 d_{\text{alliance\_exp\_with\_similar\_target}} + \beta_2 d_{\text{alliance\_exp\_with\_same\_target}} + \beta_3 d_{\text{has\_alliance\_exp\_in\_R\ \&\ D}} + \beta_4 d_{\text{has\_alliance\_exp\_in\_LIC}} + \varepsilon \dots \dots \dots \text{equation. (5)}$$

In this chapter, we have formulated the hypotheses we will use to find an answer to our research question. In the next chapter, we will shed light on the sample size, data source, and sample period. We will also describe the variables to be used in the regression analysis.

## 4. RESEARCH DESIGN

The unit of analysis of this research is public listed American companies that have performed acquisitions after prior alliances in licensing, marketing, manufacturing and R&D, and they themselves have not been acquired before December 31, 2010. We will make publicly quoted American companies our unit of analysis because of the following. In order to establish the generalizability of a theory, it is of critical importance that the theory be tested in the same domain using different variables or vice versa. Since the theories we want to test were derived from companies in the United Kingdom, we have to use a different domain (America) and same variables.

We are going to use a longitudinal method of data collection for this study. This method of data collection is most appropriate since we intend to measure the net effect of alliances on post-acquisition performance. We will collect data a year prior to the acquisition date and two years after the acquisition date just as Porrini did. Based on the difference, we will be able to determine with certainty the net effect of alliances on post-acquisition performance. However, due to the fact that most companies first reorganize immediately after an acquisition, the period in between may be too short to actually be able to measure the true effect on post-acquisition performance.

For objectivity purposes, we will discard companies with incomplete published data on alliances for each company in our sample. Furthermore, data that will be generated from SDC platinum, Thomson One Banker will be cross checked with Compustat databases to ensure data accuracy and reliability.

By means of SPSS 21.0, we will process our data, using a uniform 5% significance level across all analyses. Different types of analytical techniques will be used based on conformity with research context, nature of data type and preconditions of using certain technique. In the course of this study, we will perform Bivariate and Regression analyses.

We obtained data for all alliances from 1998 till 2008. As for data for mergers & acquisition, we obtained data from 1998 till 2010. This time interval is long enough to allow for the collection of data during the years in which mergers & acquisitions were rife as well as those in which the frequency was less. From the 13,996 companies in the data gathered for alliance experience, we began by removing all data for announced but later cancelled alliances. Then we sorted companies with alliance experience from those without alliance experience. From the data for mergers & acquisitions with 3,761 companies, we sorted companies with complete financial data from those without. Further, we sorted acquirers with alliance experience from those without. Then we sorted acquirers who acquired the same target with whom they had had alliance experience with. We then for completeness sake, removed all acquirers who themselves got acquired from our data. Finally, we were left with 1,070 companies with complete data ready for

analysis. This amount of data is representative enough as compared to the 400 companies only used by Porrini in her research.

## 4.1 Variable Description and Metrics

Variable	Description
<b>Central variable</b>	
<i>Change_in_ROA</i> (change in Return on Assets)	This is the relative average change of acquirer's enterprise value two years after acquisition and a year before acquisition.  Interval data
<b>Independent Quantitative variables</b>	
<i>d_has_alliance_exp_with_sim_target</i> (alliance experience with similar target)	This variable measures an acquirer's alliance experience with similar targets, especially those sharing same NAICS and SIC codes.  Yes = 1 , No = 0
<i>d_has_alliance_exp_with_sam_target_acquired</i> (alliance experience with same target acquired)	This variable captures the amount of times an acquirer performs different types of alliance with the same target over a certain period. Yes = 1 , No = 0
<i>d_has_alliance_exp_in_RD</i> (alliance experience in R&D)	This is a measure of the number of R&D alliances previously undertaken by the acquirer. Where 'Yes' $\geq 1$ count, and 'No' $\equiv 0$ count. Yes = 1 , No = 0
<i>d_has_alliance_exp_in_LIC</i> (alliance experience in licensing)	This is a measure of the amount of Licensing alliance previously embarked by the acquirer. Where 'Yes' $\geq 1$ count, and 'No' $\equiv 0$ count. Yes = 1 , No = 0

*Table 1: Summary and description of selected variables.*

#### 4.1.1 The dependent variable

*Post-acquisition performance* will be measured in terms of *Return on Asset*. In her work published in 2004, Patricia Porrini measured post-acquisition performance by using Return on Assets (ROA). In order to establish the generalizability of her findings, we are going to use the same measurement variable. ROA represents the actual performance of the firm generated by the assets of a firm. The use of ROE can be misleading because it is greatly influenced by the degree of financial leverage of the firm (Porrini P, 2004). The formula for change in enterprise value in our study is given by;

$$ROA_{\text{change}} = (ROA_{+2} - ROA_{-1}) / ROA_{-1}$$

Where  $ROA_{\text{change}}$  is the relative change in ROA from year -1 to year 2, with year 0 being the year of the acquisition.

#### 4.1.2 Independent variable(s)

Acquirer's alliance experience with target is the independent variable for this study. Drawing from the findings on an acquirer's experience with a target (Haleblian & Finkelstein, 1999), there exists a positive correlation with post-acquisition performance. In his psychology literature, Thurstone showed that individuals improve on various manual tasks with task repetition (Thurstone, 1919). We believe that frequent alliances with a target before acquisition will have a more significant correlation with post-acquisition performance than in the case of a single alliance. This is so since the acquirer will have more opportunities to elicit target specific knowledge on its target. In order to control for extraneous systemic variance acquirer's experience due to repeated alliances with a target, this study examines only acquisitions with a single prior alliance between an acquirer and a target. This variable will be coded 1 if the acquirer had a single alliance with the target.



## 4.2 Control

Since post-acquisition performance may be influenced by a number of other variables, we are going to control for these variables in this study.

### 4.2.1 Acquirer's and Target's acquisition experience

*Acquirer's and target's acquisition experience* are the total number of acquisitions completed during the four years before the announcement. Research by some scholars provides evidence that Acquirer's and target's acquisition experience may positively influence post-acquisition performance (Hayward, 2002). Thus it is necessary to control for the influence an acquirer's and / or a target's acquisition experience has on post-acquisition performance.

### 4.2.2 Change in sales volume

*Change in sales* is measured as the difference between the acquirer's sales two years following the acquisition and sum of the acquirer's and target's sales one year prior to the acquisition. This difference is divided by the sum of the target's and acquirer's sales one year prior to the acquisition and is included as a percentage. When sales of a firm increase, there is a proportional increase in Return on Asset.

### 4.2.3 Size of target

*Size of the target* influences the number of potential acquirers. When the target is small, the number of potential acquirers will be high [or vice-versa]. This will result in a higher price for the acquisition than when the number of potential acquirers is low. This higher price has a negative correlation with post-acquisition performance. We will only include targets with a Return on Asset greater than € 4 million in our model.

### 4.2.4 Friendliness of deal

*Friendliness of the deal* will be coded 1 if the acquisition was friendly and 0 if otherwise (hostile). Increased integration costs and performance hindrance may occur if the mode of acquisition was a hostile one.

### 4.2.5 Method of payment

*Method of payment* is a variable coded 1 if the acquirer made cash offer and coded 0 if any other form of payment is used. Evidence exist that acquirer's return correlates with the form of payment and that stock financed acquisitions have lower returns than those financed by cash (Travlos, 1987).

In this chapter, we have expatiated on the various independent, dependent and control variables that will be included in our analysis. In the next chapter, we are going to perform the various analyses and discuss the findings.

## 5. REGRESSION ANALYSIS

In this part, we are going to estimate the impact of several explanatory variables in one test, measure the size of effects and predict the value of the dependent variable. Thus, the most appropriate tool is the Regression Analysis. Regression Analysis is a statistical method to estimate the assumed relationship between one or more dependent variables on the one hand, and several explanatory variables on the other hand at the same time.

Consequently, six (6) different models are going to be used in determining the nature of the relationships between the explanatory and dependent variables.

We begin by determining whether alliance experience has an influence on post-acquisition performance. In order to do so, we build model 1 and include only companies with alliance experience and their corresponding change in Return on Assets.

In Model 1, we discovered that, alliance experience is negatively related to post-acquisition performance. However, although the sign for experience is negative, it is not significant.

Having found that alliance experience all by itself does not significantly influence post-acquisition performance significantly, we next by means of Model 2 try to determine an answer to hypothesis 1.

Results from Model 2 show that an acquirer's alliance experience with a similar target to the one it acquired is positively related to post-acquisition performance. However, although the sign for alliance experience with a target similar to the one acquired is positive, it is not significant. It suggests that an acquirer's alliance experience with a target that is in some respects, similar to a previous alliance partner has no significant influence post-acquisition performance. When we include both alliance experience and alliance experience with a target similar to the one acquired as explanatory variables together into the analysis in Model 2 the  $R^2$  increased slightly from 0.007 to 0.008. Overall, this analysis provides no support for Hypothesis 1. **Thus, we do not reject the null hypothesis.** This implies that in answer to sub-question 1, there is not enough evidence to conclude that alliance experience with a target similar to the acquired target does significantly influence post-acquisition performance.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	(Coeff./t-stat)	Coeff./t-stat)	Coeff./t-stat)	Coeff./t-stat)	Coeff./t-stat)	Coeff./t-stat)
- Alliance experience	-0.400/-1.376	-0.595/-1.667	-0.405/-1.391	-0.402/-1.318	-0.418/-1.279	-0.616/-1.555
- Alliance experience With similar target		0.372/0.942	----	----	----	0.376/0.925
- Alliance experience With same target			0.725/0.308	----	----	0.650/0.273
- Alliance experience In R&D				0.011/0.022	----	0.014/0.027
- Alliance experience In Licensing					0.051/0.124	0.045/0.109
- Acquirer with acquisition experience	-0.355/-1.156	-0.355/-1.156	-0.356/-1.157	-0.356/-1.155	-0.359/-1.162	-0.359/-1.160
- Method of Payment	-0.476/-1.647	-0.462/-1.595	-0.476/-1.647	-0.476/-1.64	-0.480/-1.651	-0.465/-1.596
- Friendliness of deal	-0.390/-0.083	-0.577/-0.123	-0.395/-0.084	-0.392/-0.083	-0.409/-0.087	-0.598/-0.127
R <sup>2</sup>	0.007	0.008	0.007	0.007	0.007	0.008
F-value	1.840	1.649	1.490	1.470	1.473	1.039
No. of observations	1070	1070	1070	1070	1070	1070

**Table 2: Regression analysis examining the relationships among explanatory and dependent variables.**

Having found that alliance experience with a target similar to the one acquired all by itself does not significantly influence post-acquisition performance significantly, we next by means of Model 3 try to determine an answer to hypothesis 2.

As illustrated in Table 2, in Model 3 we found that alliance experience with the same target as the one acquired is positively related to post-acquisition performance. The sign for experience with the same target is positive but is not significant ( $p > 0.05$ ). This finding is in consonance with results obtained in the bivariate analysis. This indicates that having alliance experience with the target an acquirer later acquires cannot significantly increase post-acquisition performance. When we include both alliance experience and alliance experience with the same target acquired as explanatory variables together into the

analysis in Model 3, the R2 decreased slightly from 0.008 to 0.007. Overall, this analysis provides remote support for Hypothesis 2. **However, we do not reject the null hypothesis.** This implies that in answer to sub-question 2, there is not enough evidence to conclude that alliance experience with the same target as the acquired target does significantly influence post-acquisition performance.

In a bid to determine an answer to our hypothesis 3, we built model 4.

Results of Model 4 show that an acquirer's alliance experience in research and development is positively related to post-acquisition performance. However, although the sign for alliance experience in research and development is positive, it is not significant ( $p > 0.05$ ). This finding confirms the results obtained earlier in the bivariate analysis. It suggests that an acquirer's alliance experience in research and development has no significant influence on post-acquisition performance. Overall, this analysis provides no support for Hypothesis 3. **Thus, we do not reject the null hypothesis.**

In an effort to determine an answer to our hypothesis 4, we built model 5.

Model 5 results show that an acquirer's alliance experience in licensing is positively related to post-acquisition performance. The sign for alliance experience in Licensing is positive but is not significant ( $p > 0.05$ ). This finding confirms the results obtained earlier in the bivariate analysis. It suggests that an acquirer's alliance experience in Licensing has a remotely significant influence on post-acquisition performance. Overall, this analysis provides no support for Hypothesis 4. **Thus, we do not reject the null hypothesis.**

After testing our 4 hypotheses, we next try to determine what the effect is of all the independent variables on post-acquisition performance. In order to do this, we built Model 6.

Results of Model 6 show that increase in an acquirer's post-acquisition performance can be 0.9% explained by the explanatory variables included in the model. It suggests that an acquirer's post-acquisition performance may be influenced by a host other variables not included in this model.

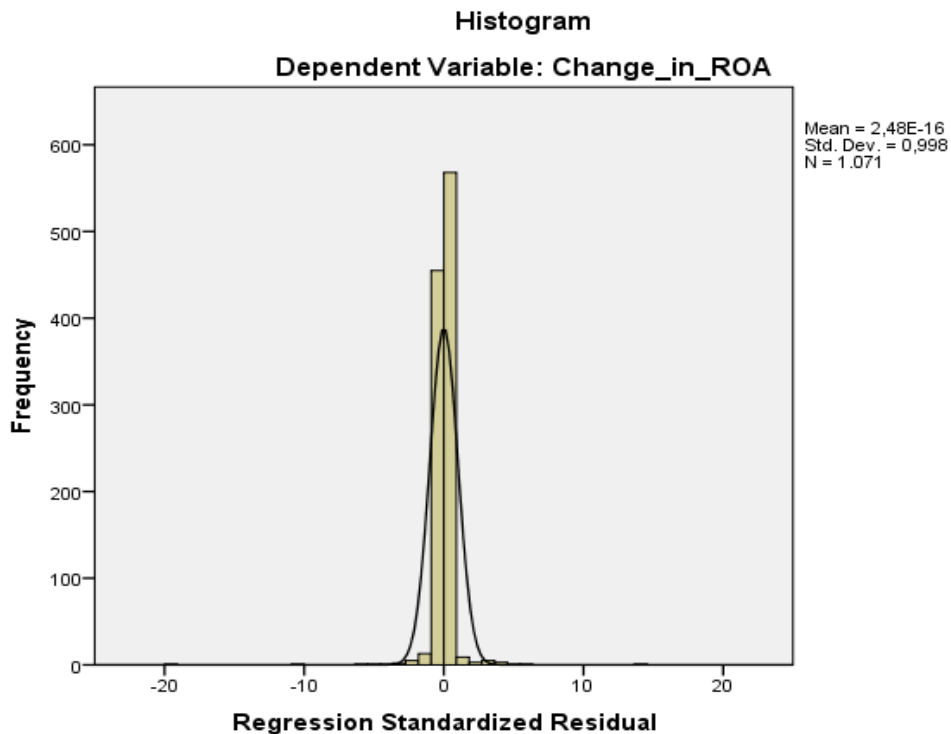
**Summary of results**

<b>Hypothesis number</b>	<b>Null hypothesis</b>	<b>Results</b>
Hypothesis 1	<i>An acquirer's prior alliance experience with similar targets will <b>not</b> positively correlate with post-acquisition performance.</i>	Do not reject null hypothesis
Hypothesis 2	<i>An acquirer's prior alliance experience with the same target it acquired does <b>not</b> positively correlates with post-acquisition performance.</i>	Do not reject null hypothesis
Hypothesis 3	<i>An acquirer's prior alliance experience in R&amp;D with a target will <b>not</b> most significantly correlate with post-acquisition performance</i>	Do not reject null hypothesis
Hypothesis 4	<i>An acquirer's prior alliance experience in Licensing with a target will <b>not</b> correlate with post-acquisition performance.</i>	Do not reject null hypothesis

In this chapter, we have performed the analysis and interpreted the findings. For all of our hypotheses, the null hypothesis cannot be rejected. Answers to sub-questions have been obtained. These all indicate that prior alliance experience with a target does not significantly influence post-acquisition performance. We are in the next chapter going to examine the data in order to check for anomalies. If absent, this will be an indication that the data used in this research is of good quality. As such, the findings will be credible.

## 6. OUTLIERS AND MULTICOLLINEARITY ANALYSIS

When plotting the Histogram (see below), we did not find any outliers in our regression model. However, we could possibly meet the problem of Multicollinearity, thus it needs to be checked carefully.



By definition, the problem of Multicollinearity means strong association among the explanatory variables. As a result the model may have high explanatory power, but separate effects are not significant (small  $t$ -values in combination with standard errors). Hence, if we encounter this problem, we must either combine or remove variables, or collect new data (not very practical). As a rule of thumb, A low tolerance ( $tol < 0.20$ ) means that the explanatory variable is highly correlated with (some) other explanatory variables in the model, so our purpose is just to find the variable tolerance level smaller than 0.20. Based on the SPSS output below, we infer that there is no occurrence of Multicollinearity since all Tolerance values are greater than 0.20.

**Model 7****Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5,758E-005	,003		,021	,983		
	d_has_alliance_experience	,003	,005	,023	,554	,579	,528	1,894
	d_has_alliance_exp_with_sim_target	,008	,005	,058	1,559	,119	,658	1,521
	d_has_alliance_exp_in_RD	,028	,007	,136	4,252	,000	,893	1,120
	d_has_alliance_exp_in_LIC	-,013	,005	-,088	-2,546	,011	,770	1,298
	Change_in_ROA	,000	,000	,008	,264	,792	,996	1,004

a. Dependent Variable: d\_has\_alliance\_exp\_with\_same\_target\_acquired

In order to establish the validity of the model, the following conditions should be satisfied:

- The standard error of estimate
- The coefficient of determination
- The F-test of the analysis of variance

The standard error of estimate is 4,6871. The mean is 8,091. Given that the standard error of estimate is not particularly small as compared to the mean value, we conclude that the model is valid. The coefficient of determination is 0,08 (8%). Given that this not zero, we conclude that the model is valid. Based on the tests performed in this chapter, we conclude that the data does not contain anomalies.

In this chapter, have checked our data for anomalies and have found none. In the next chapter, we are going to present our summary, conclusion and limitations and future research.

## 7. CONCLUSION

### 7.1 Summary

This research project is designed to determine which variables are determinants of the change in ROA. This is considered very relevant information for corporations, shareholders and managers. The independent variables in our research project were chosen with respect to the original variables used by Patrizia Porrini. When we tested the variables using different techniques, we found no interesting and significant relationships with the dependent variable, Change\_in\_ROA.

In the bivariate analysis we found that the variable `d_has_alliance_exp_with_same_target_acquired` had a slight positive linear relationship with the dependent variable Change\_in\_ROA. Subsequently the regression analysis revealed that `d_has_alliance_exp_with_same_target_acquired` only has a slight influence on Change\_in\_ROA. This indicates that the relationship between the variables is autonomous. The logical explanation could be the fact that alliance experience with the same target acquired offers a special case of organizational learning during which an acquirer may draw inferences and target-specific knowledge. (Levitt & March, 1988). Furthermore, eliciting of very specific target information and resources by an acquirer about a target's potential compatibility with the acquirer is made possible when alliances are repeatedly performed by an acquirer and a target (Kale et al, 2000). This result however does not confirm the findings and theory of Patricia Porrini. Managers can infer from this result that it is not conclusively in the best interest of the company and shareholders to first perform a form of alliance with a prospective target before deciding whether to acquire the target or not.

In the bivariate analysis we found that the variable `d_has_alliance_exp_with_sim_target` had a weak negative linear relationship with the dependent variable (Change\_in\_ROA). Subsequently the regression analysis revealed that `d_has_alliance_exp_with_sim_target` did not have a significant influence on Change\_in\_ROA. A logical explanation for this relationship could be the fact that each target is significantly different from others. As such, applying target specific knowledge from one target to the other becomes a complex issue. This finding is significantly different from that of Patrizia Porrini.

Also in the bivariate analysis, we found that the variable `d_has_alliance_exp_in_RD` had a weak negative linear relationship with Change\_in\_ROA. This was confirmed in the regression analysis which implies that this relationship is autonomous. This finding is significantly different from that of Patrizia Porrini.

The bivariate analysis indicated that the variable `d_has_alliance_exp_in_LIC` had a weak negative linear relationship with Change\_in\_ROA. This was confirmed in the regression analysis where it was found that `d_has_alliance_exp_in_LIC` had no significant influence on Change\_in\_ROA. This finding is significantly different from that of Patrizia Porrini.



## 7.2 Discussion

The findings indicate that a previous alliance between an acquirer and the same target acquired only slightly benefits post-acquisition performance. This suggests that target-specific information and experience is not per definition an advantage-producing resource, benefiting selection, valuation and integration of acquisitions. Overall, the results indicate that acquirers can learn from a previous alliance with the same target, that target-specific learning is greater in less specific forms of alliances, and that target-specific learning benefits acquisition performance. One interesting observation is that alliance experience by itself is not sufficiently specialized to benefit the acquirer. This holds true for alliance experience with a target similar to that which is acquired.

This empirical work contributes to research on post-acquisition performance in that it indicates that post-acquisition performance does not depend on an acquirer merely having alliance experience. A further contribution to research on acquisitions and alliances is the finding that a previous alliance between an acquirer and the same target acquired benefits acquisition performance. The findings imply that there are gains to alliance experience in acquisitions when the alliance experience is target-specific (Cohen & Levinthal, 1990). This indicates there is target-specific absorptive capacity in acquisitions where an acquirer's previous alliance with the same target acquired improves an acquirer's future applications of target-specific learning. Finally, this study does not confirm the findings of prior work on alliances that has mainly found statistically significant differences in learning effects between licensing alliances and less specific alliance types such as R&D. In response to our initial research question, we conclude that post-acquisition performance can only be to a remote extent influenced by an acquirer's alliance experience with the same target acquired.

On a practical level, the findings of this empirical work highlights the importance of target-specific experience in acquisitions, as an acquirer's previous alliance experience with the same target acquired proves to be better than alliance experience with a target similar to that acquired or no experience at all. Target-specific information and experience can be beneficial to acquirers during selection, valuation and integration of targets and can ultimately improve acquisition performance. It may be that acquirers that have had an alliance with the target they acquired are more careful and have more objectivity when acquiring the target. Understanding this point and applying it when trying to achieve organic growth can enable practitioners achieve higher synergies. Thus, a previous alliance with the same target acquired can give acquirers more accurate target specific information about the targets' resources and compatibility. This sort of experience is better than having had alliance experience with a target similar to one acquired or no experience at all. An additional benefit is that a previous alliance with a target may ease performance pressure because alliances are dissolvable thus they provide excellent platforms on which acquirers can test or build their compatibility with targets.

### *7.3 Limitations and future research*

This research includes additional information sourced from academic resources. In our empirical work, we have only established that an alliance performed by an acquirer and the target it acquired is only remotely linked to better post-acquisition performance. However certain variables in the Causal relations scheme do not have a clear-cut influence on an acquirer's post-acquisition performance (*Change\_in\_ROA*) *in this model*.

The logic of reality would suggest that an acquirer's post-acquisition performance may be influenced by a variety of variables. These may include, managerial capabilities, employees capabilities, technological improvements, process or product redesign. These variables are difficult to quantify and thus were not included in our model. This may have been a limitation of our research. Yet another limitation may be the fact that our sample only consisted of slightly more than a hundred companies. A third potential limitation is that the study does not consider informal ties or report on the duration of the alliances that were included, which may also be important when examining a previous alliance between an acquirer and a target. And lastly, peculiar limitations of the secondary data, since it was collected for a different purposes it may not be accurate and dependable.

We did not include the effect of a target's alliance experience on post-acquisition. There is however reason to believe that a target's alliance experience may have an influence on post-acquisition performance. This is due to the fact that synergies can be derived if both the acquirer as well as the target possesses sufficient relevant experience. Since very little information and empirical work has been done on this topic, we recommend the effect of a target's alliance experience on post-acquisition performance for further research.

Furthermore, the robustness of this study's findings could be enhanced if another accounting variable such as Earnings per share (EPS) should be used instead of ROA. This would be our recommendation for future research.

## Appendix 1. Sample T-test, F-test and correlation 7 steps scheme

### Correlation test for *d\_has\_alliance\_exp\_with\_sam\_target* and *Change\_in\_ROA*

#### One-sided t-test

Step 1:  $H_0: \rho = 0$

$H_1: \rho > 0$

Step 2:

$$T = \frac{r}{\sqrt{\frac{1-r^2}{n-2}}}$$

Step 3:  $T \sim t_{(n-2)} \sim t_{1069}$

Step 4:  $T >> 0$

Step 5:  $\alpha = 0.05$

Step 6:  $t_{1069, 0.05} = + 1.645$

$$T_{\text{obs}} = \frac{0.006}{\sqrt{\frac{1-0.006^2}{1069-2}}}$$

Step 7:  $T_{\text{obs}} = 0.196 < 1.645$ , thus we do not reject  $H_0$  at a 5% significance level. There is not enough evidence to conclude that there is a linear relationship between *d\_has\_alliance\_exp\_with\_sam\_target* and *Change\_in\_ROA*.

**(Regression analysis)****Seven step scheme****T-Test ( test the individual relationship of the explanatory variable to the corresponding equation***d\_has\_alliance\_exp\_with\_sam\_target and Change\_in\_ROA)*

Step 1. Formulate $H_0$ and $H_1$	$H_0: \beta_1 = 0$ $H_1: \beta_1 \neq 0$
Step 2. Determine the test statistic	$T_B = \frac{\hat{\beta}_1 - \beta_1}{S_{\beta_1}}$
Step 3. State the distribution of the test statistic	$T \sim t(n-k-1) = t(1071-5-1)$
Step 4. Assess the intuitive rejection area	$\beta_1 \ll 0$ or $\beta_1 \gg 0$
Step 5. Decide upon the significance level	$\alpha = 0.05$
Step 6. Look up the critical values	$T > T_{.025,1065} = 1.645$ or $T < -T_{.025,1065} = -1.645$
Step 7. Perform the test	Since $T_{obs} = 0.196$ is smaller than 1.645, $H_0$ is not rejected.
P-value	$0.836 > 0.05$ , $H_0$ is not rejected.
Inference at $\alpha=0.05$ : $H_1: \beta_1 \neq 0$	

## Appendix 2. Bivariate analysis

In this section different 2-way relationships would be investigated using different, but appropriate techniques for each relationship.

Furthermore, we undertook an investigation for outliers before each analysis, and discovered none. Outliers are extreme observation(s) from the sample mean, that occurs mostly in quantitative variables and tends to influence both sample mean and standard deviation and also instrumental in gaining further insight into the underlying model.

### 2.1 Correlation Coefficient tests

The correlation coefficient is used to assess the relationship between two quantitative variables in terms of strength and direction. It is a standardized covariance measure that investigates linear dependence. The Pearson correlation coefficient of variation measures the degree of linear dependence that exists between two variables. It ranges from -1 to 1, where -1 is a negative perfect linear relationship and 1 is a positive perfect linear relationship. Values in between indicate the degree of dependence; negative values represent negative dependence while positive values correspond to positive dependence. The closer the values are to -1 or 1 the stronger is the correlation. In the case that the correlation coefficient equals 0 (zero) there is said to be no linear dependence.

The table below shows a summary of the results of the bivariate correlation analysis.

Dependent (Y)	Independent (X)	<i>r</i>	T	<i>P</i>
<i>Change_in_ROA</i>	<i>d_has_alliance_exp_with_sim_target</i>	-0.004	-0.131	0.886
<i>Change_in_ROA</i>	<i>d_has_alliance_exp_with_sam_target_acquired</i>	+0.006	0.196	0.836
<i>Change_in_ROA</i>	<i>d_has_alliance_exp_in_RD</i>	-0.021	-0.687	0.501
<i>Change_in_ROA</i>	<i>d_has_alliance_exp_in_LIC</i>	-0.030	-0.981	0.334

**Table 4:**

### 2.1.1 *d\_has\_alliance\_exp\_with\_sim\_target and Change\_in\_ROA*

Question on Hypothesis 1: Is there a linear relationship between post-acquisition performance and the fact that an acquirer has alliance experience with a target similar to the one it acquired?

$$H_0: \rho = 0; H_1: \rho > 0$$

As indicated in *Table 4*, there exists a positive moderately weak<sup>3</sup> relationship between an acquirer's alliance experience with similar target(s) and its post-acquisition performance.

$$(r = -0.004, T = -0.131, p = 0.886).$$

**Hence we do not reject the null hypothesis** since  $-0.131 < 1.960$  for the one-sided test. However, there is not enough evidence at 5% significance level to infer that an acquirer's post-acquisition performance does not depend on the acquirer's alliance experience with a target similar to the one it acquired. A logical explanation for this relationship could be the fact that each target is significantly different from others. As such, applying target specific knowledge from one target to the other becomes a complex issue.

### 2.1.2 *d\_has\_alliance\_exp\_with\_same\_target and Change\_in\_ROA*

Question on Hypothesis 2: Is there a linear relationship between post-acquisition performance and the fact that an acquirer has alliance experience with same target it acquired?

$$H_0: \rho = 0; H_1: \rho > 0$$

The research shows that there is a positive, fairly weak relationship between an acquirer's alliance experience with same target and its post-acquisition performance.

$$(r = +0.006, T = 0.196, p = 0.836).$$

**Hence we do not reject the null hypothesis** since  $0.196 < 1.960$  for the one-sided test. Thus, there's insufficient evidence to infer that at 5% significance level, an acquirer's alliance experience with the same target it acquired will positively increase post-acquisition performance. This finding is not logical and is in contrast with the fact the acquirer can better integrate the target since it already has a previous alliance with the target. Furthermore, target specific knowledge is possible to be gathered by the acquirer. On the basis of the target specific knowledge, the acquirer could better determine whether to acquire the target or not. Knowing much about a target certainly results in better integration and higher synergies. These synergies are expected to have a positive influence on post-acquisition performance.

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<sup>3</sup> See Appendix? for 7-step scheme



### 2.1.3 *d\_has\_alliance\_exp\_in\_RD and Change\_in\_ROA*

Question on Hypothesis 3: Is there linear dependency between the fact that an acquirer has alliance experience in research and development (R&D) and its post-acquisition performance?

$$H_0: \rho = 0; H_1: \rho > 0$$

The research shows that there is a very weak positive relationship between the acquirer's alliance experience in R&D and its post-acquisition performance.

( $r = -0.021$ ,  $T = -0.687$ ,  $p = 0.501$ ).

**We do not reject the null hypothesis** since  $-0.687 < 1.960$  for the one-sided test. According to *Table 4*, there is not enough evidence at the 5% significance level to suggest that an acquirer's alliance experience in research and development (R&D) will positively increase post-acquisition performance. This implies that an acquirer's post-acquisition performance does not largely depend on the acquirer's alliance experience in R&D. This is an illogical finding on this relationship since research and development alliances provide broader access to partner's resources. This is so because there are relatively less specification and restrictions. The broader access to partners' resources increases the possibility of eliciting target specific knowledge and determining whether the target possesses desired qualities.

### 2.1.4 *d\_has\_alliance\_exp\_in\_LIC and Change\_in\_ROA*

Question on Hypothesis 4: Is there linear dependency between the fact that an acquirer has alliance experience in licensing and its post-acquisition performance?

$$H_0: \rho = 0; H_1: \rho > 0$$

The research shows that there is a very weak negative relationship between an acquirer's alliance experience in licensing and its post-acquisition performance

( $r = -0.030$ ,  $T = -0.981$ ,  $p = 0.334$ ).

**We do not reject the null hypothesis** since  $-0.981 < 1.960$  for the one-sided test. Thus, there is no sufficient evidence at 5% significance level to infer that an acquirer's alliance experience in licensing will positively increase post-acquisition performance. This implies that an acquirer's post-acquisition performance does not depend on the acquirer's alliance experience in Licensing. A logical explanation for this relationship could be that licensing alliances provide a more rigid access to partner's resources. This is so because there are relatively more specification and restrictions in licensing than in research and development alliances. The more rigid access to partners' resources decreases the possibility of eliciting target specific knowledge and determining whether the target possesses desired qualities. This confirms findings by research that learning effects are weaker in licensing alliances than in alliances in R&D (Anand & Khana, 2000a).



In the next section, we are going to determine whether there really is a relationship between the type of alliance and post-acquisition performance. This will be done by means of a regression analysis.





### Appendix 3. T-test analysis

After formulating the regression equation, we need to test the significance of the regression coefficients to make sure that the explanatory variables really have an impact on the dependent variable.

The value of the T-test shows that, in the first equation, since

- $T_1 = -0,131$ ,  $P_1 = 0.334$  - We do not reject  $H_0$ , thus, there is not enough evidence to conclude at a 5% significance level that  $\beta_3$  is different from 0 (zero). Hence an acquirer's alliance experience with a target similar to the one it acquired (*d\_has\_alliance\_exp\_with\_sim\_target*) has no significant influence on post-acquisition performance (*Change\_in\_ROA*) *in this model*. This finding is not in line with our causal relation scheme.
- $T_2 = 0.196$ ,  $P_2 = 0.501$  - We do not reject  $H_0$ , thus, there is not enough evidence to conclude at a 5% significance level that  $\beta_4$  is different from 0 (zero). Hence an acquirer's alliance experience with the same target it acquired (*d\_has\_alliance\_exp\_with\_sam\_target*) has no significant influence on post-acquisition performance (*Change\_in\_ROA*). This finding is not in line with our causal relation scheme.
- $T_3 = -0.687$ ,  $P_3 = 0.886$  – We do not reject  $H_0$ , thus, there is not enough evidence at the 5% significance level to conclude that  $\beta_1$  is different from 0 (zero). Hence an acquirer's alliance experience in R&D (*d\_has\_alliance\_exp\_in\_RD*) has no significant influence on post-acquisition performance (*Change\_in\_ROA*) *in this model*. This finding is not in line with our causal relation scheme.
- $T_4 = -0.981$ ,  $P_4 = 0.836$  – We do not reject  $H_0$ , thus there is not enough evidence to conclude at 5% significance level that  $\beta_2$  is different from 0 (zero). Thus an acquirer's alliance experience in licensing (*d\_has\_alliance\_exp\_in\_LIC*) has no significant influence on post-acquisition performance (*Change\_in\_ROA*) *in this model*. This finding is not in line with our causal relation scheme.



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