Selecting a strategic partner: A value maximization approach

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ABSTRACT

At a recent symposium delivered to representatives from a wide range of not-for-profit financial literacy training organizations, the topic "Selecting the Right Strategic Partners" was presented. A quasi-analytical approach to selecting a strategic partner was proposed, which purported to identify potential strategic partnerships which would be valuable to both parties. A fundamental proposition was that strong partnerships will only succeed if benefits to the partnership accrue to both parties.

At the seminar, exercises were conducted in which the various organizations evaluated potential partnerships with peer organizations using the proposed approach. A stunning result was that in the vast majority of cases, potential partners recommended that steps be undertaken to consummate a collaboration. It is certainly difficult to imagine, especially in an environment with constrained funding available, that this result would obtain if potential partners are making optimal decisions.

This research project evaluates partners' decision making within the framework of standard economic valuation maximization subject to a budget constraint; both a general solution and a numerical example are provided. The primary analytical result demonstrated is that it is reasonable to expect that partners (choosing optimally) will allocate available partnership funds to only a subset of available partners and will explicitly eliminate some potential partners from consideration (contrary to the seminar exercise results!).

Keywords: strategic partner, value maximization, collaboration, partnership benefits, constrained funding

BACKGROUND AND MOTIVATION

At a recent symposium delivered to representatives from a wide range of not-for-profit financial literacy training organizations, the topic "Selecting the Right Strategic Partners" was presented. The symposium, *Nonprofit Marketing and Distribution Strategies for Investor Education*, held in Hanover, New Hampshire, during May 2007, was sponsored by the National Association of Securities Dealers (NASD) Investor Education Foundation to encourage activities that provide financial literacy training across all demographics.

A quasi-analytical approach to selecting a strategic partner was presented, which purported to identify potential strategic partnerships which would be valuable to both parties. A fundamental proposition was that strong partnerships will only succeed if benefits to the partnership accrue to both parties.

For example, suppose organization A is considering two potential strategic partners: SP1 and SP2. Under the presented approach, A will want to "calculate" the:

- Value OF each strategic partner; and
- Value TO each strategic partner

The calculation will depend upon the strategic goals of A, SP1 and SP2; weightings measuring the relative importance of goals (arbitrarily set to total 100 points for each organization); and ratings measuring the extent to which a strategic partner would be helpful in meeting goals (arbitrarily chosen with scores between 1 (not helpful) to 10 (extremely helpful)). To illustrate application of this approach, the symposium facilitator provided Table 1 (Appendix) to calculate the value OF SP1 and SP2 to A.

In this case, A has identified five key goals ranging from "Targeting new audiences" to "Increasing diversity". Weights, capturing the relative importance of the goals are attributed to each goal by A. Finally, based on comprehensive discussions between A and SP1 and A and SP2, ratings are assigned to both SP1 and SP2 for each of A's goals. These ratings measure how helpful SP1 and SP2, respectively, would be in working jointly with A to promote A's goals. Using this data, a "score" is calculated for both SP1 and SP2 by summing the product of rating and weights for each of A's five goals. Under this model, the higher the score, the more desirable the strategic partner will be to A.

At the same time, using a similar rubric, A will also want to evaluate its value as a strategic partner TO both SP1 and SP2. The facilitator provided companion Table 2 (Appendix).

Ideally, working closely with SP1 and SP2, A identifies the key goals for SP1 and SP2. To make the exposition less cluttered, Table 2 assumes that SP1 and SP2 have the same set of goals and weightings. If this were not the case, A would simply prepare a separate Table 2 for SP1 and SP2. In Table 2 (Appendix), ratings measure the extent to which each potential partner believes that A will help them meet their goals (A clearly may not have full and accurate information). Final numerical scores are then calculated for SP1 and SP2. The higher the numerical score, the more helpful the potential partners believe, in A's opinion, that A will be in assisting to promote the partner's goals.

In choosing a strategic partner, A will look at (Value OF,Value TO) ordered pairs, hoping to find an ordered pair with high scores in both dimensions. In this example, the ordered pairs are:

(A,SP1) : (690,749)

(A,SP2) : (320,230)

Ultimately, A must make a qualitative judgment as to which ordered pair is optimal. In the given example, it would be intuitive to judge that the (A,SP1) choice dominated (A,SP2) since (A,SP1) is numerically higher in both dimensions. In actual practice, especially when evaluating more that two potential partner candidates, it is likely that no dominant ordered pair will obtain. In such cases, A is left to perform an (undefined) calculus to select a partner or partners to pursue.

While it could be productive to evaluate the arbitrary nature of the model specification and functional form, this paper concentrates on a practical aspect in the implementation of the procedure that came to light during exercises at the NASD symposium. The exercises asked representatives from the various investor organizations present to work with colleagues in other organizations to build "Value OF the strategic partner" and "Value TO the strategic partner" tables to determine if partnerships could be viable. At the end of the exercise session, results were presented to the symposium.

A stunning result was that in the vast majority of cases, potential partners recommended that steps be undertaken to consummate collaboration. In some cases, the potential partners reported high ordered pairs, and exhibited a strong desire to collaborate consistent with the intent of the model. In some other cases, the ordered pair scores were relatively low, but the potential partners worked to identify some subset of respective goals on which they could collaborate. So while high total scores had not obtained, "high enough" scores on selected criteria justified next steps towards collaboration. How about cases in which the ordered pair scores were low and there were no meaningful matches even on individual criteria? Surprisingly, many of the candidate partners decided to proceed together even in these cases. Justifications to proceed in these cases ranged from "strong interpersonal matches between principals in our organizations" to "a collaboration will be a low cost strategy, so let's try it". Clearly, these explanations violate the spirit of the Value OF/Value TO model. Furthermore, while "strong interpersonal matches between principals in our organizations" could well be a necessary condition for a successful collaboration, it is by no means a sufficient condition. In particular, per the model, compatibility of the goals is required. Regarding "collaboration will be a low cost strategy, so let's try it", it is a common error to underestimate costs in project accounting.

The fascinating point here is that a very high proportion of potential strategic partner pairs "found" a way to work together either via direct application of the model or via extra-model approaches. However, ex ante it would seem reasonable to expect that it is not optimal for almost all potential partnerships to be viable.

The purpose of this paper will be to explore these partnering opportunities using an economic value maximizing approach. The modeling environment will be illustrated using the symposium example from Tables 1 and 2 (Appendix). The model will take the numerical ordered pairs as Bayesian estimates for potential partnership benefits. These estimates will then be combined with partners' monetary constraints and valuation functions to select optimal levels of collaboration.

While in the illustrations A will often choose to work with both SP1 and SP2, the model additionally presents the optimal level of monetary participation in each partnership alliance. Further, reasonable functional forms could be specified in which the model would find a "corner solution", namely, the commitment of all available partnership funds to one superior partner, thereby explicitly eliminating collaboration with the second potential partner. Future research

will address this issue in the n-partner case, wherein it would be expected that a corner solution (namely, the allocation of available partnership funds to a subset of the available partners) would be quite common.

BRIEF LITERATURE REVIEW

Recent research on strategic partner selection has ranged from the conceptual to the analytically sublime. As an example of the former, Dubow (2006) posits ten steps for evaluating and selecting a strategic partner. Dubow lists common sense strategies that managers of healthcare organizations could use, including:

- Identify imperatives for partnering
- Set criteria for evaluating potential partners
- Complete a detailed assessment and prioritize potential partners
- Close the deal

It would be difficult to argue against these recommendations, and they are in fact quite consistent with the approach presented at the NASD symposium. The intent herein is to remain true to the precepts in the Dubow and symposium approaches, but to make them more analytical in application.

A "sublime" approach to the issue can be found in Ding and Liang (2005). Herein, the authors employ fuzzy set theory and fuzzy multiple criteria decision making to evaluate viable strategic alliances in the shipping industry. While this approach sensibly emphasizes the imprecise nature of goals, partnership expectations, etc., it remains to be seen if the "fuzzy set theory employed a practical model for business purpose (sic)". It is obvious that the modeling environment is quite elegant, but there exists considerable literature putting in doubt whether highly complex approaches will be adopted by managers as a preferred model. For example, Fehr and Bristol (2006) provide a description of the failure of three complex financial models to be implemented.

There is also recognition in the literature that financial cost associated with a potential collaboration and the monetary constraints of the partners are crucial. Chang (2006), in the context of a chief learning officer needing to choose a strategic partner or vendor to provide external learning resources, reports that "finding and contracting can be a time consuming and costly process". The approach here is to explicitly include monetary constraints in the analytical model. Note that financial constraints/conditions were not considered explicitly by the NASD symposium model in the first stages of partnering evaluation. The presumption was that monetary issues would be addressed in any Memorandum of Understanding between the parties. An economics driven approach will prefer to make financial considerations a key endogenous element of decision making from the start.

It is also the case that, for the purposes of this paper, the problem has been narrowed down to explore a methodology for selection of an optimal partner(s) from a list of potential candidates. Of course, the range of issues is significantly larger. For example, where does the list of potential partners come from? How are candidate strategic partners identified? Buksbaum (1999) suggests that approaches could include exploitation of media opportunities and using high profile events that not only guarantee credibility, but also participation by many organizations. Clearly, the NASD symposium was such an event.

In another vein, behavioral economists would likely be interested in the symposium phenomenon which had virtually every organization proposing to work together under some format. For example, is rational evaluation being trumped by a more fundamental desire to be complementary and accommodating even when business considerations might suggest otherwise; see Thaler and Shefrin (1981) for the foundations of behavioral economics.

TWO POTENTIAL PARTNER MODEL

Let us consider A's evaluation of potential strategic partners SP1 and SP2 relying on the data in Tables 1 and 2 (Appendix). Define

W_0 = total amount of funding that A will be able to commit to partnership activities

D_1 = dollars to be committed to partner SP1

D_2 = dollars to be committed to partner SP2

where $D_1, D_2 \geq 0$.

A will want to optimally allocate W_0 between D_1 and D_2. A will do so by using the ordered pairs generated from the Tables coupled with functions that measure "value" to A and the amount of funding to be applied to partnership activities. The general case solution will be presented, along with an illustration using a quadratic valuation function.

Let

M_1 = value OF strategic partner SP1 to A, e.g., 690 from Table 1(Appendix)

P_1 = value TO strategic partner SP1 in working with A, e.g., 749 from Table 2 (Appendix)

M_2 = value OF strategic partner SP2 to A, e.g., 320 from Table 1(Appendix)

P_2 = value TO strategic partner SP1 in working with A, e.g., 320 from Table 2 (Appendix)

M_1, P_1, M_2 and P_2 can be thought of as Bayesian priors on the viability of potential partnerships. The actual value of the partnerships will also be functionally dependent upon the funding applied to any partnership. The valuation function considered will be of the form (f will denote the function for the potential SP1 partnership and a similar function g for the SP2 partnership)

$$f(D_1, M_1, P_1)$$

where

$$\frac{\partial f}{\partial D_1} > 0$$

$$\frac{\partial f}{\partial M_1} > 0$$

$$\frac{\partial f}{\partial P_1} > 0$$

The first positive partial derivative above guarantees that the value of any partnership will be increasing in funds applied, given scores M_1 and P_1. It is also reasonable to require that the valuation function be increasing in M_1 since M_1 measures A's prior of the value of the partner to A, before considering any funding. Further, as argued previously, the value to A is increasing in P_1, since any partner will have a greater incentive to make the partnership work; the larger is the value of the partnership to it. Also,

$$\frac{\partial^2 f}{\partial D_1^2} < 0$$

That is, the valuation function is posited to be concave downward so as to introduce decreasing scale returns, consistent with the usual economic assumption for production-like functions.

In general, A's problem is

$$\text{MAX} \qquad f(D_1, M_1, P_1) + g(D_2, M_2, P_2)$$

$$\text{s.t.} \qquad \begin{aligned} D_1 + D_2 &= W_0 \\ D_1, D_2 &\geq 0 \end{aligned}$$

A will maximize the total valuation score to working with both SP1 and SP2 subject to a budget constraint and non-negativity constraints on funds to be invested; decision variables are D_1 and D_2.

Form the lagrangian

$$f(D_1, M_1, P_1) + g(D_2, M_2, P_2) + \lambda(D_1 + D_2 - W_0)$$

where λ is the lagrangian multiplier.

First order conditions are

$$\begin{aligned} \frac{\partial}{\partial D_1}: &\quad f_1 + \lambda = 0 \\ \frac{\partial}{\partial D_2}: &\quad g_1 + \lambda = 0 \\ \frac{\partial}{\partial \lambda}: &\quad D_1 + D_2 = W_0 \end{aligned}$$

where f_1 and g_1 represent partial derivatives with respect to the first argument.

So optimal D_1^* and D_2^* are chosen so that

$$f_1(D_1^*, M_1, P_1) = g_1(D_2^*, M_2, P_2)$$

$$D_1^* + D_2^* = W_0$$

Now consider using the Tables 1 and 2 (Appendix) data in conjunction with quadratic valuation functions.

Define

$$f(D_1, M_1, P_1) = D_1 - \frac{b}{2}D_1^2 \qquad 0 \le D_1 \le \frac{1}{b}$$

$$g(D_2, M_2, P_2) = D_2 - \frac{c}{2}D_2^2 \qquad 0 \le D_2 \le \frac{1}{c}$$

where the inequality restrictions on D_1 and D_2 insure that $\frac{\partial f}{\partial D_1} > 0$ and $\frac{\partial g}{\partial D_2} > 0$. To incorporate Table 1 and 2 (Appendix) data, let

$$b = \frac{1}{M_1^{\alpha} P_1} \qquad \alpha \ge 1$$

$$c = \frac{1}{M_2^{\beta} P_2} \qquad \beta \ge 1$$

The functional forms for b and c insure that $\frac{\partial f}{\partial M_1} > 0, \frac{\partial f}{\partial P_1} > 0, \frac{\partial g}{\partial M_2} > 0$ and $\frac{\partial g}{\partial P_2} > 0$.

The exponential terms α and β allow additional generality in specifying the importance of M relative to P. For example, with $\alpha > 1$ and $\beta > 1$, M scores are deemed to be more important than P scores.

First order conditions are

$$1 - \frac{D_1^*}{M_1^{\alpha} P_1} = 1 - \frac{D_2^*}{M_2^{\beta} P_2}$$

$$D_1^* + D_2^* = W_0$$

Solving these linear equations

$$D_1^* = W_0[1 - \frac{M_2^{\beta} P_2}{M_2^{\beta} P_2 + M_1^{\alpha} P_1}]$$

$$D_2^* = W_0[\frac{M_2^{\beta} P_2}{M_2^{\beta} P_2 + M_1^{\alpha} P_1}]$$

NUMERICAL RESULTS – QUADRATIC VALUATION FUNCTION

Table 3 (Appendix) presents calculated value for D_1^* and D_2^* working with quadratic valuation functions and Tables 1 and 2 (Appendix) data. Recall from the Tables that

$M_1 = 690$

$P_1 = 749$

$M_2 = 320$

$P_2 = 230$

W_0 is arbitrarily set at 100. Table 3 could easily be modified for different W_0 since the quadratic function first order conditions are proportional to W_0.

Scenario #1 can be thought of as a base case in which the relative importance of M and P are the same. Not surprisingly, given that M_1 and P_1 are significantly larger than M_2 and P_2, most of A's available partnership monies are committed to SP1. Scenario #2 depicts a functional form for SP1 wherein the M_1 score is intensified, i.e., $\alpha>1$, leading to more funding being applied to SP1.

Scenario #3 exaggerates the scenario #2 effect, essentially eliminating A's desire to partner with SP2. So even in the two partner case, it is not necessary to posit "exotic" valuation functions to produce optimal solutions contrary to the NASD symposium result that virtually all potential partners wanted to work together. Intuition would suggest that, in an n-partner environment, corner solutions eliminating some potential partners would be even more common.

Scenario #4 shows the sensible result that even the weaker potential partner based on the Bayesian priors can garner a larger share (relative to the base case) of A's partnering funds if SP2's valuation function is more intense. However, because of the high Bayesian scores for SP1, it would be more difficult to present cases in which all of A's funding would be applied to SP2 (compare scenario #5 with scenario #3).

Scenario #6 presents the case in which the intensities of both M_1 and M_2 are increased.

SUMMARY

The purpose of this paper was to react to a counter intuitive economic result observed at a recent practitioner symposium for financial literacy training organizations. When given an opportunity to select peers as potential collaborators, virtually all such organizations "found" a way to partner with almost all potential candidates. It is difficult to imagine, especially in an environment with constrained funding available, that this result would obtain if potential partners are making optimal decisions.

Firstly, this paper structures partners' decision making within the framework of standard economic valuation maximization subject to a budget constraint. For the two partner case, optimality conditions for both the general formulation and a numerical illustration are presented.

Secondly, the paper sets the stage for future research to explore the counter intuitive result that has virtually all potential partners working together. It is expected that, in the n-partner case with a realistic range of Bayesian priors, the optimization approach will find a corner solution in which some subset of potential partners receives no funding. To support this claim, it is shown in Scenario #3 that the two partner numerical example could be specified to effectively eliminate one potential partner.

It is the case in this paper that the valuation functions f and g are left largely unspecified. If the proposed maximization procedure is to become operational, valuation functions must be

specified (the quadratic case was simply meant as an illustration). Further research will explore what analogies can be drawn to other production function applications.

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APPENDIX

TABLE 1

Value OF the Strategic Partner

Criteria (Your Goals)	Weighting (1-100)	Rating* (1-10) SP1	Rating* (1-10) SP2	Rating x Weighting SP1	Rating x Weighting SP2
Targeting new audiences	20	8	4	160	80
Reducing overhead	10	7	3	70	30
Garnering expertise in a key function	30	9	2	270	60
Obtaining scale	30	6	2	180	60
Increasing diversity	10	1	9	10	90
	Total = 100		Score:	690	320

*Rate the extent to which each SP will meet your goals: 1=not at all; 10=extremely well

Source: *Nonprofit Marketing and Distribution Strategies for Investor Education: A Symposium*, sponsored by the NASD Investor Education Foundation at Tuck Executive Education at Dartmouth, May 7-9, 2007

TABLE 2

Value TO the Strategic Partner

Criteria (SP's Goals)	Weighting (1-100)	Rating (1-10) SP1	Rating (1-10) SP2	Rating x Weighting SP1	Rating x Weighting SP2
Enhancing reputation/PR	20	8	4	160	80
Giving back to the community	10	7	1	70	10
Increasing customer power	30	9	3	270	90
Enhancing credibility	30	8	1	240	30
Increasing membership	10	9	2	90	20
	Total = 100		Score:	749	230

*Rate the extent to which each SP thinks you will meet their goals: 1=not at all; 10=extremely well

Source: *Nonprofit Marketing and Distribution Strategies for Investor Education: A Symposium*, sponsored by the NASD Investor Education Foundation at Tuck Executive Education at Dartmouth, May 7-9, 2007

TABLE 3

Scenario #	α	β	D_1^*	D_2^*
1	1	1	$87.53	$12.47
2	1.1	1	93.10	6.90
3	1.5	1	99.46	0.54
4	1	1.1	79.77	20.23
5	1	1.5	28.19	71.81
6	1.1	1.1	88.35	11.65