

# Time planning and Cost Management in Strategic Alliances

Ana-Maria Giurea <sup>1</sup>

*The paper highlights a mutual support example out of ten simulations regarding strategic alliances based on the hypothesis that every partner allocates its resources and budget in an equitable manner according to total expected time (PERT). In today's strategic alliances, the partner plays an essential role regarding the support capacity of the firm, assuming the statement: "many hands make light work". The equitable allocations of time and cost, that the firms are able to honor, will be an advantage within the strategic mutual support. If one of the partners fails to respond with the same resources that the other partner offers, within a certain phase of the process, he will have the possibility to prove his capacity of support in another phase, when the other partner cannot afford to allocate the same resources. Mutual support between partners, time planning and cost management represent the best ways for a complex mechanism, such as the strategic alliance, to work properly.*

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## Introduction

Caves (1994) argues that "a strategic alliance is a convention/commitment of collaboration that a company makes with its competitors, suppliers, clients, dealers or firms that belong to other sectors of activity for the purpose of

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<sup>1</sup>Ana-Maria Giurea, The Bucharest University of Economic Studies, Economics And International Business, PhD Student, Bucharest, Romania, E-mail: ana.giurea@yahoo.com

*developing/producing/delivering or launching onto the market a product or a service”*. Strategic alliances can be efficient ways in which the firms could use their technological advance in order to access new markets, being able to surpass the restrictive governmental barriers with the help of top firms. These strategic alliances are not easy to set up, as it is necessary to get support from both parties involved. For example, if management tactical errors are not identified in time, the firms can risk losing the entire strategic partnership. By preparing the strategic plan in time, with the good will of the firms involved in the agreement, successful strategic alliances can be created. It is also important, to focus on the expectations/preferences and to forecast the earnings for each party.

Before 1970, companies had preferred to operate alone in different sectors of activity, as they were not in favor of inter-firms collaborations (Mowery et al., 1996).

Thus, immediately after the ‘70s, the number of collaborations/strategic alliances between firms has started to increase significantly, especially in the intensive industry sector (Powell, 1990) and in the high-tech field (Lee et al., 2010). Nowadays, the economic world reoriented itself towards other strategies. Therefore, economic rivals prefer research and development (R&D) collaborations (Oxley and Sampson, 2004).

## **II. Strategic Alliances – Focusing on Results**

Strategic alliances became ways of reducing risk and instruments for increasing the performance of research and development (Silverman and Baum, 2002). These collaborations between firms generate economic results. The static analysis of a result generated by a set of agents, that have the same purpose, is not sufficient anymore. This occurs because the output has become sensitive to minor events that take place during the implementation of a certain process.

According to economists Lee et al. (2010), a thorough analysis of the minor events that generate a result becomes necessary. The model used by these economists is based on the Schumpeterian dynamics. In other words, the imitative threats of the competitors put continuous pressure on the companies in order to develop new products. The economists' study targeted the analysis of the pharmaceutical industry and the semi-conductor industry, because in these cases, developing new products is crucial for the survival of the firms.

The main triggers of the Schumpeterian competition are the innovation and imitation adopted by the competitors in the market. Joseph A. Schumpeter has argued in some of his papers that the engine of long-term development is innovation. Innovation shows up when there is competition. Innovations are the ones that bring to market new goods as well as market services, put to the consumers' satisfaction test (Croitoru, 2012). The economist, Joseph Schumpeter stated, that the main quality of a market economy is the capacity of innovation (Croitoru, 2012). At the same time, firms that hold the monopoly on the market bring better life standards for consumers on a long term. The study of the four economists includes an analysis regarding the way that collaboration between firms leads to progress in each R&D departments of the companies. In contrast, in case of a Schumpeterian regime, the rivals in the market hold competitive advantages, while the surviving firms and the market leaders, constantly undergo changes generated by the destructing innovation and abusive imitation of competitors. The three specialists think that strategic alliances are not the best growth strategies on a long term, when the partners focus their objectives on cost reductions. In this situation, there is a positive result with substantial benefits for the allies.

The four economists argue that there is a polemic between short-term benefit and long term costs, because the short-term benefit is

considered a reduction of risk that helps the firm survive on the market.

Economic studies include a vast series of classifications regarding strategic alliances. Mainly, their objective is to underline more explicitly the types of arrangements that take place between firms.

a) Porter (1986) classifies strategic alliances in two types: X and Y (Hurduzeu, 2006). The X type alliances include firms that share their activities between one another in a certain field. For an X type alliance, the existence of a strong relation between firms is very important, especially if the companies voluntarily unite their forces for the activities that they cannot carry on alone in a more efficient way. Type Y alliances include the firms that share actions in a single or more activities. The firms focus their attention on different chains of activities when they are producing a good/service. The purpose of such a collaboration or coalition is to create scale economies and substantially reduce risks.

b) Functional strategic alliances involve four main goals: production, marketing, reducing financial risks and R&D. Thus, regarding the targeted field of activity, functional strategic alliances can take place on three different levels: *horizontally* (Huang et al., 2013) - between firms with complementary products and between competitors with interchangeable products; *vertically* - where partners belong to different phases of the common field of activity; *diagonally/ totally* (Heidtmann, 2011)- where the actors come from different branches, and have distinct activities. Heidtmann (2011) quotes Contractor and Lorange (2003) regarding the degree of dependence between firms according to the type of alliance chose by these (Table 1).

**Table 1**

**Types of strategic alliances according to the degree of dependence**

degree of dependence						
low					high	
Technical training	Production agreement	License agreement	Franchise	<i>Know-how transfer</i>	Cooperation	<i>Joint-venture</i>

Source: Author's adaptation after Heidtmann (2011)

c) Depending on the type of association (with or without contribution) the business arrangements can be classified as: *without equity contribution* (the preliminary phases of a joint venture) and *with equity contribution* (the minority capital investments, swaps and joint ventures).

Immediately after the strategic alliances started forming, studies regarding costs, resources and know-how, began to emerge in order to motivate companies to direct themselves towards inter-firms collaborations. The economists Hoffmann (2007), Chen et al. (2009)] as well as others, think that the establishment of strategic alliances offers more benefits to the companies, related to risk dissemination and costs, as well as surpassing entry barriers on the market. Strategic alliances are methods that firms can use in order to obtain competitive advantages (Harrison et al., 2001) on the market.

Li et al. (2013) conducted a study based on the collection of data for 233 alliances in the low-tech industry and 192 alliances in the high-tech industry. They have concluded that in the high-tech industry, strategic alliances are only used in order to mitigate the dynamic environment. In the low-tech industry, strategic alliances are relevant for disseminating resources, costs and risks.

### III. Cost and Time Management

The economic reasons for creating strategic alliances between firms could be the following:

a) *Saving time in order to obtain a growth strategy and access new markets.* A study (Elmuti and Yunus, 2001) quotes Ohmae (1992) who underlines the fact that “*companies simply do not have time anymore to conquer new markets separately, one by one (...) because time in the world of economics goes by really fast*”. Therefore, creating allies among other active players on new markets, offers an advantage to companies, because these actors have good knowledge of the business environment. Thus, the companies’ efforts to start all over again on a new market will be cancelled by the knowledge held by their allies. The partnership with an international company will increase the sales area of the products for the firms in question and it will offer them a better efficiency of their inherent mechanism. Time remains an enemy that companies are trying to control with the support received from other firms.

b) *Cost management efficiency, pooling resources and getting support from the strategic partners based on their experience on the market in order to obtain new technologies.* The protection of the know-how is the key towards success for a company that wishes to maintain a leading position, directing itself towards innovation strategies and durable development. This fact can be preserved through patents and licenses. The reduction of financial risk established through the partnership, may offer a possibility for companies to obtain loans from financial institutions more easily, because their warranties are in fact their partners. Das and Teng (2000) examine the role of the resources belonging to the firms involved in strategic alliances. Their theory illustrates four major aspects regarding strategic alliances: “rationale, formation, structure and performance” (Das and Teng, 2000). The authors classify the resources based on two dimensions: similarity and usage. Thus, four types of alignment (Das and Teng, 2000) result: supplementary, surplus, complementary, and wasteful.

According to the economists Murray and Kotabe, when the firms choose to establish strategic alliances with different partners, they should take into consideration the complementarity and similarity of

the partner's capacities (Murray and Kotabe, 2005). In contrast, if the partners of a strategic alliance hold the same types of resources, the exchange of knowledge will be lower and the mutual benefits will diminish. In this case, the alliance's partners must share their basic and relevant knowledge regarding resource processing, managing and supporting the partnership. If this lacks, then the companies will assimilate incomplete information regarding the identification of the right partners for the economic agreement. Thus, they will make wrong decisions. The economists Kim and Inkpen think that there is an omnipresent tension between the two partners when they face the need for diversified resources and for similar resources (Inkpen and Beamish, 1997). Likewise, the great similarity between the resources of the partners indicates the fact that they have far too little to learn from one another - a situation that limits the development pace of the alliance.

By processing these vectors, we can identify a series of risks: financial (additional costs, non-recovering of investments), relational (conflicts and tensions between competitors), control (the loss of control, failure to comply with the attributions), the lack of trust (the omission of sending information, restricting the access to the databases, using the partner's know-how in an own purpose).

The efficient management of strategic alliances can be sustained by the following objective approaches: measuring cost strategies, setting time strategies and continuous partnership and market monitoring.

In Ramo's paper, the relation between economic time and precisely established terms prevails in the project's management. Time is the factor of efficiency and at the same time, the main opponent of the company in its crucial moments generated by problems regarding efficiency (Ramo, 2002).

The work of Atkinson R. offers ideas for achieving success through the correlation of the following three elements that are considered interdependent: cost, time and quality (*the iron triangle* (Atkinson, 1999)).



Cost and time are “assumptions” that are calculated for different projects, and “quality is a phenomenon, it is an emergent property of people’s different attitudes and beliefs, which often change over the development life-cycle of a project” (Atkinson, 1999). In his paper, Atkinson quotes The UK Association of Project Management regarding the definition of project management, which is considered “the planning, organization, monitoring and control of all aspects of the project and the motivation of all involved to achieve the project objectives safely and within agreed time, cost and performance criteria” (Atkinson, 1999). Atkinson quotes Oisen, who concluded that time, cost and quality represent criteria for the definition of success (Atkinson, 1999). Turner (1996), Wirth and Tryloff (1995) as well as other economists complemented his work and agreed regarding the three key elements cited by Oisen. They have included in their work, different additional aspects regarding Oisen’s contribution.

The problem of time and cost management has a direct impact on collaborations. Thus, the perception on the risks to which the firms are being exposed is obvious, and through this awareness, two crucial components of the partnership are being lost: control and the trust in the partner and its capacities.

Taking into consideration the aforementioned pros and cons, the establishment of strategic alliances remains a good solution for companies. Its success mainly depends on their objectives and their existing approaches on the market in order to satisfy consumers’ standards. According to the position that the firm holds in the market and its affiliation to a certain industry, successful strategic alliances can be considered ways of survival, performance and growth on a long term. On the other hand, harmful strategic alliances appear when an ally considers his partner to be only a lever in difficult situations and not a member of the team. Successful collaborations are sustained by mutual respect between partners and efficient information sharing



regarding the aspects that unfold in the implementation period of a project/contract.

I think that if the partners of a strategic alliance realize that pooling resources will lead to cost reduction and economic time saving, the reached agreement will be a successful one and its performance will be guaranteed. This is the reason why, in the present paper I will analyze this fact using an analysis tool.

#### **IV. Program Evaluation and Review Technique (PERT)**

In this article, I have used the quantitative research tool Program Evaluation and Review Technique (PERT) for the measurement of the expected time for companies A and B that I will continue to analyze. This is a project management tool used for the planning and organization of activities in a certain project. PERT is a way for analyzing objectives/activities involved in a certain project and it is a method that helps measuring the minimum implementation period of a project

The main objective of the PERT analysis represents the reduction of time and costs for an adequate implementation of a project.

I will use PERT in order to make the difference between the value with the highest probability and the expected value.

According to the PERT analysis, there are three time estimations for each objective/activity: optimistic time, most likely time and pessimistic time. It is determined by the following formula (Equation 1):

$$T_A = \frac{TO + 4 \cdot TR + TP}{6} \quad 1$$

$T_A$  = expected time

$TO$  = optimistic time is considered the shortest time in which an activity can be completed.  $TR$  = most likely time represents the time

of accomplishment with the highest probability. This is different to the expected time.

In order to calculate the times mentioned above we need to calculate the variation time. This can be calculated using the following formula (Equation 2):

$$V = \frac{(TP - TO)^2}{6} \quad 2$$

V = variation time

Then TO, TP will be calculated according to the calculation of the standard deviation and the time average. The standard deviation is a measure that shows how much values are being scattered according to the value of the average. The formula (Danciu et al., 2009) is written down below (Equation 3):

$$\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{(n-1)}} \quad 3$$

$\sigma$  = standard deviation

x = values

$\bar{x}$  = average values

n = number of values

In the analyzed case, the PERT tool helps in finding the expected time for the entire project and it determines the completion probabilities before a certain time. The tool holds a series of disadvantages: time estimations for activities are subjective and depend on everyone's judgement. Even if the estimation times are well estimated, the current time distribution may be different; the time for the completion of the project can be underestimated.

#### **IV.1. Hypothesis**

The example described below represents a simulation out of ten other that I have reviewed. All 10 cases were based on the same hypothesis and had the same outcome: cost and time allocation is a strong point for an efficient collaboration management. The data values are randomly assigned.

Two companies, A and B, establish a strategic alliance for the implementation of a project. The strategic alliance is based on the reasons raised in the paper, which are: the reduction of time and a well-developed cost management. The most likely time for completing the six proposed activities (A, B, C, D, E, and F) is 58 months, with a total cost of Euro 60,000. The activities are independent throughout the ongoing project. Therefore, the parties establish by contract the following aspects related to time and cost:

- a) time is unequally shared between activities; allocated time modifies according to the competences/capabilities of the firms;
- b) costs are unequally shared according to activity in relation to the new value of time (expected time).

#### **IV.2. Expected time savings after time allocation for A – F activities**

Time allocation is made by each company according to the degree of competences/capabilities of the firm for each activity. In other words, according to the above table, if an ally holds certain economic advantages in the completion of an activity it will grant a shorter time for the fulfillment of the activity. In contrast, its partner needs to grant more time to that activity (Not because the firm does not hold the assets/advantages of its partner, but because the company has to learn different tactics from its ally, or it needs more time in order to complete the activity).

**Table 2**

**The values of the most likely time for each activity according to the competences/capabilities of the firms in the arrangement**

Main activities of the project	TR	TR Company A	TR Company B
A	6 months	3 months	3 months
B	6 months	2 months	4 months
C	7 months	3 months	4 months
D	10 months	5 months	5 months
E	12 months	6 months	6 months
F	17 months	10 months	7 months
TOTAL	58 (100%)	29 months	29 months

Source: Made by the author

According to Table 2, each company allocates a certain time according to the competences/capabilities. The alliance between the two economic actors (company A and company B) is established in relation to the companies' competences/capabilities, in order to reduce the time for the activity and obtain an efficient and justified cost management. The ally's experience represents continuous learning for the other company. The "lost" time of the partner that does not hold a consistent advantage in the performance of an activity is not in fact completely lost. It is lost only on a short term during the project, but on a long term, it is a great plus for the company regarding time management in similar situations. Therefore, on a long term, the lost time is cancelled in virtue of the knowledge accumulated thanks to the partner. According to the PERT formulas, the calculations have revealed the following values shown in Table 3

**Table 3**

**The values of the expected allocated time (TAa) for each analyzed company**

Activity	TR company A	TAa company A	(TR-TAa) company A	TR company B	TAa company B	TR- TAa company B
A	3	4.146777	-1.146776761	2	2.5908	-0.590800475
B	2	2.992296	-0.992295619	5	5.452001	-0.452001187
C	3	4.146777	-1.146776761	4	4.498268	-0.498267616
D	5	6.455739	-1.455739047	6	6.405735	-0.405734758
E	6	7.61022	-1.610220189	5	5.452001	-0.452001187
F	10	12.22814	-2.22814476	7	7.359468	-0.359468328

Source: Made by the author

After calculating the expected time values for each activity, the total amount of expected time for each company is shown in the table below (Table 4):

**Table 4**

**Total expected time for activities A-F after each company's time allocation**

Activity	TR	TAfa Activity	TR - TAfa	TAa Activity	(TR-TAa)
A	5	7.617078	-2.617078166	6.737577236	-1.737577236
B	7	10.39058	-3.390576099	8.444296806	-1.444296806
C	7	10.39058	-3.390576099	8.645044377	-1.645044377
D	11	15.93757	-	12.8614738	-1.861473804

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			4.937571965		
E	11	15.93757	- 4.937571965	13.06222138	-2.062221376
F	17	24.25807	- 7.258065764	19.58761309	-2.587613088

Source: Made by the author

Further on, in Table 5 we can observe the calculations made using PERT, of the total expected time during the entire activity, for both companies accordingly: A-5 months, B – 7 months, C – 7 months, D – 11 months, E – 11 months, F – 17 months.

Table 5

**Expected time savings for A – F activities**

Activity	TAfa Activity	TAa Activity	Saving TAa and TAfa
A	7.617078	6.737577236	0.879500764
B	10.39058	8.444296806	1.946283194
C	10.39058	8.645044377	1.745535623
D	15.93757	12.8614738	3.0760962
E	15.93757	13.06222138	2.87534862
F	24.25807	19.58761309	4.67045691

Source: Made by the author

The total allocated expected time is 11 months longer than the most likely time. The expected time without individual allocation is 26 months longer than the most likely time. Therefore, the allocation of time made by the two firms, represents an advantage (the reduction of time according to activity with approximately 15 months) because this way, the firms can share their time according to their competences/capabilities.

#### **IV.3. Budget savings after cost allocation for A – F activities**

Further, the approach is based on costs for each activity. Hence, we consider the costs of the six activities to be equally proportional to the expected time per activity. The two companies share their costs according to the result of the PERT calculation. Therefore, company A will allocate a budget of Euro 35,864.6, and company B will allocate a budget of Euro 35,864.6. The “rule of three” has been used in order to calculate these total amounts. Thus, for each activity, the budget allocations will look according to Table 6:



Table 6

**Budget allocations according to PERT values**

Activity – expected time/activi ty	TAa Company A	TA %	BTAA company A	TAa Company B	TA %	BTAA Company B
A - 6.737577	4.1467767 61	11 %	3957.4953 52	2.5908004 7	8%	2925.7894 82
B - 8.444297	2.9922956 19	8%	2855.7109 98	5.4520011 87	17 %	6156.9417 97
C - 8.645044	4.1467767 61	11 %	3957.4953 52	4.4982676 16	14 %	5079.8910 26
D - 12.86147	6.4557390 47	17 %	6161.0640 61	6.4057347 58	20 %	7233.9925 69
E - 13.06222	7.6102201 89	20 %	7262.8484 15	5.4520011 87	17 %	6156.9417 97
F - 19.58761	12.228144 76	33 %	11669.985 83	7.3594683 28	23 %	8311.0433 4
Total	37.579953 14		35864.6	31.758273 55		35864.6

Source: Made by the author

In the table above, we can notice that the budget is allocated in a different way according to the expected time of each company. The values of the budget have been allocated as a percentage of the TA % columns. Next, the savings of the budget have been calculated as the difference between the budget of the total allocated time and the budget of the total time without allocation (Table 7).

Table 7

**Budget savings for A – F activities**

Activity	BTAa Company A	BTAa Company B	Total BTAa	Total BTafa	Saving BTAa and BTafa
A	3957.495352	2925.789482	6883.284835	7879.736034	996.4511989
B	2855.710998	6156.941797	9012.652795	10748.87183	1736.219031
C	3957.495352	5079.891026	9037.386378	10748.87183	1711.485449
D	6161.064061	7233.992569	13395.05663	16487.14341	3092.086782
E	7262.848415	6156.941797	13419.79021	16487.14341	3067.3532
F	11669.98583	8311.04334	19981.02917	25094.55079	5113.521618
Total	35864.6	35864.6	71729.20002	87446.3173	15717.11728

Source: Made by the author

## V. Conclusion

Thus, when the firms allocate their individual budget according to the expected time, they obtain savings in the budget valued at Euro 15,718. If the companies decide to adopt this strategy, the total budget will be Euro 71,729.

Therefore, if each company allocates its time and cost according to the competences/capabilities, then we will see an efficient management of costs and a significant reduction of time for the two companies.

The article analyses a collaboration scenario that has a direct impact on the efficiency of time and costs management. If the partners of the strategic alliance are aware of the resources that they own, and if the responsibilities and tasks that they allocate to one another through the partnership are being respected and fulfilled, then, the result will be a positive one for both partners. Another aspect that must be taken into consideration is the openness towards the partner. If a partner finds itself in a situation where it is impossible to carry on alone, or if the partner needs a longer time to fulfil a task, the ally should come to assist and offer support in order to streamline the process. The blockage of its partner has a certain impact on the alliance, because

before the establishment of the alliance, the result has been „conceived” with the help of both partners’ competences/capabilities. As mentioned before, the example represents a case out of ten that I have reviewed. All ten cases were based on the same hypothesis and had the same outcome. Therefore, in a future article, I will create a model to validate the allocation hypothesis (cost and time allocation represents a strong point for an efficient management of the collaboration). All in all, in order to strengthen the hypothesis I will use econometric tools to validate the model.

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