THE FIRM INTERPRETED AS OPERATING SYSTEM FOR EFFICIENT TRANSFORMATION

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Abstract

When viewed as viable systems, capitalistic firms can be interpreted as operating systems for efficient transformation that carry out five parallel transformations:

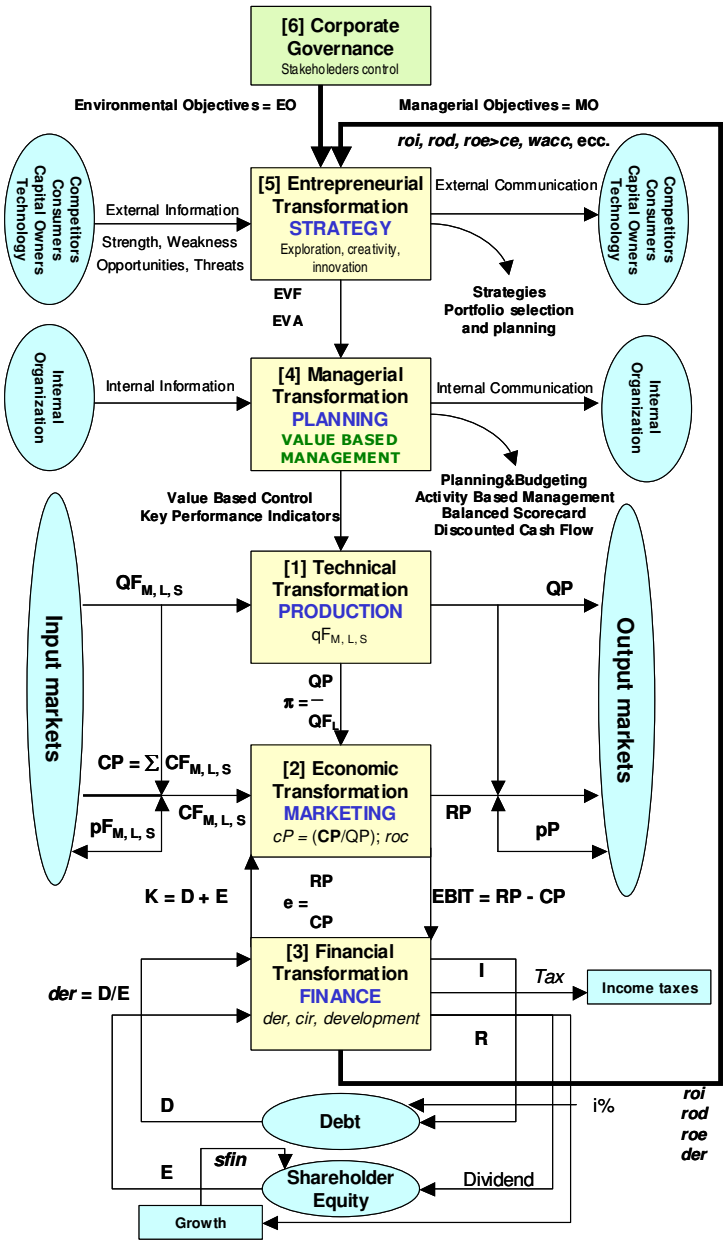
- *a productive transformation of factors into production;*
- *an economic transformation of costs and revenues into operating income;*
- *a financial transformation of capital into returns in order to maintain the financial integrity;*
- *an entrepreneurial transformation of information into strategies, which leads to a continual readjustment of the firm's strategic position;*
- *a managerial (organizational) transformation of strategies into actions of management control.*

Production oriented organizations. Three fundamental transformations

DEFINITION 1 - A *production-oriented organization* is a particular *system of transformation*[1] consisting of three fundamental connected transformations as shown in figure 1 (excluding the fourth and fifth transformation ahead).

[1] I define a system of *transformation* as one that carries out a process of *transformation* of some kind (qualitative or quantitative) involving input variables [x(t)] that become output variables [y(t)] by means of the state [s(t)], according to an appropriate network of *operative processes* regulated by appropriate *transformation functions* managed by the system's operative *programme*. Each *transformation system* that carries out these processes is characterized by several measures of *performance;* I mention: *efficiency* = e(t) = y(t')/x(t); *unit input requirements* = f(t) = x(t)/y(t'); *result* = R(t) = y(t') – x(t), and *return on input* = roi(t) = R(t)/x(t) = e(t) –1. For systems set up to achieve a given output objective, y*(t*), other performance measures are: *effectiveness* = p(t) = y(t)/y*(t*), *variance* (error) = ε(t) = y(t) – y*(t*), and *delay*, r = (t - t*) (Mella, 2005).

Fig. 1 – The firm as an operating system for efficient transformation *(Mella, 2005)*



[1] Technical or productive transformation or PRODUCTION

This is a typical transformation of the *utility* of input factors into a greater *utility* of output production.

I indicate[2] by $qF_{M,\ L,\ S}$ the elements of the vector qF(T) = [qM, qL, qS][3] , which expresses the average requirement coefficients for factors in T, given a selected production function, such that:

$$[1] \quad QF_{M,\ L,\ S} = QP_{\theta}\ qF_{M,\ L,\ S}$$

represent the elements of the vector of Factor Quantities [QM, QL, QS] in period $T_n = (t_{n-1}, t_n)$ to produce the quantity QP_{θ} at a given level of quality "θ". Materials, components, services (M) and Labor (L) represent the

[2] From now on we will use the notation $F_{M,\ L,\ S}$ to indicate F = M, L, S.

[3] In general, we will use capital letters (Q, T, P, etc.) to symbolize overall volumes or periods, and lower case letters (q, t, c, etc.) to indicate unitary or instant quantities. Capital letters are also used to designate the names of the varriables (M, L, S).

operative factors; buildings, machines, facilities, patents, indirect labor, etc. are structural factors of production (S), material or immaterial, that is capacity factors.

The main performance measures of productive efficiency are the average productivity ratios or factor returns:

$$[2] \quad \pi F(T) = QP_{\theta}(T)/\ QF_{M,\ L,\ S}(T),$$

and their inverse ratios, which represent the *unitary factor requirements*, $qF_{M,\ L,\ S}$, which are already indicated in [1][4]

[2] Economic or market transformation, or MARKETING.

This is a transformation of *values*. The factors with a given value are transformed into production with a greater *value*.

The *economic transformation* depends on the price function and on the average prices consistent with the market volume. I indicate by $pF_{M,\ L,\ S}$ the vector of the average prices, in T, for the factor inputs, and by pP a vector of average prices in T for the production output.

Recalling equation [1], the cost of supplies, or the value of the factors at time T, is:

$$[3] \quad QF_{M,\ L,\ S}\ pF_{M,\ L,\ S} = [QP_{\theta}\ (qM\ pP),\ QP_{\theta}\ (qL\ pL),\ [(QP_{\theta}\ qS)/KP]\ pS]$$

where $NS = [(QP_{\theta}\ qI)/KP]$ represents the number of structure factors to acquire at time T, and $CS = NS\ pS$ is the cost of the structure factors needed to produce $QP_{\theta}(T)$.

The full production cost for period T, using the chosen technology and supply policies, with QP_{θ} being the independent variable T, is:

$$[4] \quad CP(T) = \Sigma_{M,\ L,\ S}\ CF_{M,\ L,\ S} = QP_{\theta}\ (cM + cL) + CS.$$

The *average unit cost of production* is:

$$[5] \quad cP(T) = CP(T)/QP_{\theta}(T).$$

I quantify the value of production, or revenue, as:

$$[6] \quad RP(T) = QP_{\theta}(T)\ pP(T).$$

The difference between revenue and the cost of production is the *operational income* or *earning before interests and taxes*[5]:

$$[7] \quad EBIT(7) = RP(T) - CP(T) = [RP(T) - QP_{\theta}\ (cM + cL)] - CS$$

The main performance measures of *economic efficiency* are:

the *return on cost*: [8] $roc = OR/CP = (pP - cP)/cP$

a) the *margin of safety* [9] $ms = (QP - QP^{e})/QP$

where QP^{e} is the quantity that corresponds to the *Break Even Point* for each product P:

$$[10] \quad QP^{e} = CS\ /\ (pP - cM - cL)$$

b) the *market share*, which can be expressed by the ratio: [11] $mksP = QP/MKP$

where mksP is the *market share* for product P and QP the sales volume, which is compared to the total market volumes expressed by MKP;

[4] From [2] it follows that an increase in productivity means: an increase in the quantity (and/or quality) of goods (numerator); b) a reduction in the quantity of labor needed to produce these goods (denominator); and c) a combination of the preceding effects.

5 We can define a succession of margins: Value Added: VA(T) = RP(T) – CM(T), Contribution Margin: CMG = VA(T) – CL(T) = RP(T) – CM(T) – CL(T), so that: EBIT(T) = CM(T) – CS(T).

c) the *return on investment* or Return on Invested Capital[6] at time t_0, K, or[7]:

$$[12] \quad roi = EBIT(T)/K(t_0)$$

d) the *contribution margins*:

$$[13] \quad CMG(T) = [\sum_n CMG_n(T) - CS_n] - CS_{COM}$$

where CS_n are the specific structure factors for each production, and CS_{COM} the structure factors common to the entire production vector (or business portfolio)[8], taking account of the *capacity constraints* for all M productions: $QF = \sum_m QP_{m\theta}\, qF \leq QF^{MAX}$, where F = [M, L, S].

[3] Financial transformation or FINANCE

Is a typical transformation of risk: invested capital is transformed into returns[9].

I indicate by $E(t_0)$ the Equity capital and by $D(t_0)$ the portfolio of financings that represents the Debt that constitute the *investment capital* (K); thus I write:

$$[14] \quad K(t_0) = D(t_0) + E(t_0).$$

In general we can state that in independent capitalistic production organizations $E(t_0)>0$.

If $E(t_0)=0$ we have a *non-independent* production organization, or a *labor production organization*

The rotation of the invested capital, or *cost/investment ratio*: *cir* = CP/K(t) and the *debit/dquity ratio*, or *financial leverage*, *der* = $D(t_0)/E(t_0)$ define the financial structure of the production organization.

If $D(t_0)$ is invested for period T at the rate i(T), then we obtain an interest amount equal to: $I(T) = D(t_0)\, i(T)$. Assuming that the income tax, Tax(T), is proportional to the *tax* rates, then the net earning is given by the following difference:

$$[15] \quad R(T) = EBIT(T) - I(T) - Tax(T) = [OI(T) - D(t_0)\, i(T)]\, (1\text{-}tax)$$

The main performance measures of *financial efficiency* are:

a) the *return on equity*: [16] *roe* = R/E,
b) the *return on debt*: [17] *rod* = I/D.

Taking account of [12], we can wrote:

$$[18] \quad roe = roi + spread(D)\ der$$

$$[19] \quad spread(E) = spread(D)\ der$$

where

c) [20] *spread(D) = roi – rod,* indicates the differential between the return on invested capital and the cost of finance capital raised through debt;
d) [21] *spread(E) = roe – roi,* indicates the differential between the return on equity capital and that on invested capital;

[22] *der* = $D(t_0)/E(t_0)$ (debit-equity ratio) represents the *financial leverage*, as a multiplier of the spread.

Business and for-profit organizations

DEFINITION 2 – A *business organization* is a particular *production-oriented organization* [see Def. 1] that develops business, selling products in markets, at a price $pP \geq cP$, and whose managerial transformation operates to obtain an EBIT ≥ 0.

DEFINITION 3 – A *business organization* see Def. 2] is a *for-profit organization* if the managerial transformation seeks to pursue the maximum productive and economic performance: [cP←max→pP]; if its objective is to obtain [cP→min←pP], then we have a *non-profit* or *not-for-profit* business organization. A *distributing organization* is a production oriented organization whose production is distributed to some class of users with a tariff $tP \leq pP$.

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[6] The *return on invested capital*, or *roi*, is also known as the *accountant's rate of profit* (ARP), the *accountant's rate of return* (ARR), or the *book yield* (Luckett, 1984; Fisher/McGowan, 1983).

[7] If we assume that the sum total of K(t) depends on the investment in structural factors, then we can write, in order to simplify: $K(t_0) = k\, CS$, where k≥1 indicates the influence of inventory on capital investement.

[8] In general the non-negativity condition QP ≥ 0 holds; but we could also introduce minimum volume constraints: $QP \geq QP^{min}$.

[9] *Investment* is the activity by which an *investor risks* a share of his wealth – transforming it into *capital* – for a given period, with the *hope* of having a future benefit in terms of greater wealth. The *investment* assumes, on the one hand, that there is an *accumulation of capital*, and on the other the acceptance of a *risk* linked to a *hope* for future gain.

In the *business for-profit organizations*– the economic performance must evaluate the capability to achieve the max *e*(T) that – from [6], [3] and [2] – can be translated as follows:

$$[23] \quad e(T) = \frac{QP_{\theta}}{QF_{M,\,L,\,S}} \times \frac{pP}{pF_{M,\,L,\,S}} = \pi F_{M,\,L,\,S} \times \frac{pP}{\overline{pF}_{M,\,L,\,S}}, \; F = M, L \text{ and } S.$$

Thus, a necessary and sufficient condition to achieve the max *e*(T), is that the *business for-profit organizations:*

1. maximize the *productive efficiency* (or technical, or combination, or internal efficiency), expressed by $\pi F_{M,\,L,\,S}$ – or inversely by $qF_{M,\,L,\,S}$ – and by the *quality* of the production, θP;
2. maximize the *business efficiency* (or market, or negotiating, or external efficiency), expressed by the *price differentials* that represent the efficiency of the *market* (last factor in [23]).

The profit organizations that mainly pursue productive efficiency can be defined as *production efficient*. Those that mainly pursue business efficiency can be defined as *marketing efficient*.

[4] Managerial transformation in Business for-profit organizations: PLANNING AND CONTROLLING

Independent business for-profit organizations must develop a very efficient *managerial transformation* in order to guarantee the efficiency of the first three transformation.

The *managerial transformation* directs the transformations down the road, transforming internal and external information into decisions rules (Prahalad/Bettis,1986; Lax/Sebenius, 1986) regarding the production function, the system of prices, and the financing system.

The heart of the managerial transformation is the set of managerial calculations and choiches needed to rationally decide how to achieve the maximum efficiency, and the set of control procedures to determine and possibly eliminate the divergences between the objectives and standards of performance and the actual performance; we define these as *managerial calculations and control*.

The output of the managerial transformation is represented by a system of planning, programming and budgeting that aims at maximum efficiency, as well as a system of controls for the productive, economic and financial efficiency of present and future transformations.

The *productive choices* to maximize value must adhere to the rules for maximizing *quality* as a fundamental variable in the selling price, and to those for maximizing *productivity* as a fundamental variable in the cost of production, by reducing the unit factor requirements by means of an efficient *production function*.

The *economic choices* must adhere to the following rules: (1) choose the businesses which guarantee the maximum profit margin, compatible with capacity constraints; (2) sell on markets while searching as much as possible for possible positions of dominance or monopoly, in order to influence prices and reduce the risks from competition (Rappaport, 1998); (3) acquire inputs from markets where competition exists, in order to reduce the purchase costs and the supply risks (Ashworth/James, 2001); (4) locate production and selling where knowledge is appropriate, labour costs are low and infrastructures are efficient; (5) choose businesses with the highest Cost/Investment Ratio.

The *financial choices* must adhere to the following rules (Cornelius and Davies, 1997; Bernstein, 1989):

(1) arrange the business portfolio so that $roe \geq roe^*$, where roe^* indicates the return on equity expected by shareholders;

(2) choose the investment where $roi > 0$ and $roi > rod$;

(3) choose those businesses with $roi > roi^*$ and with *roi* max (roi^* indicates the objectives of roi necessary to achieve the objectives of roe^*);

(4) choose the financing with *rod* minimum;

(5) if $rod < roi$, then increase Debt (D) and reduce Equity (E) to the level of Invested Capital (IC); thus, if it is necessary to increase IC, finance this with D if $rod < 1$;

(6) substitute business A with business B if $roi(B) > roi(A)$;

(7) substitute financing G with financing J if $rod(J) < rod(G)$.

If all these choices are correctly carried out at every level of the organization, the maximization of the *roe* is guaranteed, as indicated in the well-known equation (Modigliani and Miller, 1958):

$$[24] \quad roe = [roi + (spread \times der)].$$

The system of risks

The *business profit organizations* bear three types of correlated risks:

a) *technical,* or *production, risk* entails not being able to *attain* production goals;
b) *economic,* or *market, risk* is the risk of not being able to *sell* the production obtained; there are two kinds of risk in this case:
   1) *demand risk* which derives from *consumer* freedom
   2) *competitive risk* which derives from the *freedom to take economic initiatives.*
c) *financial risks*, connected to the impossibility of maintaining IC and E *financially integral*.

LEMMA – A capital $K(t_0)$ that yields an income R(T), with a $roi = R(T)/K(t_0)$, is kept *financially integral* at the end of period $T = [t_0, t_1]$ if $roi \geq roi^*$, where roi^* is the *opportunity cost* of $K(t_0)$ defined as the best roi^* of all the alternative available investments.

PROOF – The financial value K^F of a capital K that yields an income R(T) can, for simplicity's sake, be set equal to the present value of R(T) at rate *i*: $K^F = R/i$.

By definition, K is *financially integral* at the end of T if $K^F \geq K$. If $i = roi = R/K$, then $K^F = K$. If i <(>) *roi,* then K^F >(<) K. Setting $i = roi^*$ we obtain the following conclusion: in order to maintain a capital K financially integral the *roi* that is obtained must be greater than the opportunity cost.

Capitalistic Firms. [5] Entrepreneurial transformation or strategy

DEFINITION 4 – An autonomous *business-for-profit organization* that develops a *business portfolio* and activates a *financing portfolio,* accepting the system of risks (Ruefli and al., 1999), and that is constituted in order to maintain $E(t_0)$ *financially integral*, and that thus pursues the max *roe,* is defined as a *capitalistic firm.*

PROPOSITION 1 - From the preceding definition we can assume that a necessary condition for a *capitalistic firm* to be created and continue to exist for period T is that $E^F \geq E(t_0)$, where $E^F = R(T)/roe^*$ and roe^* is the minimum acceptable return for *equity holders* to maintain their capital invested in the firm.

PROPOSITION 2 - If $E^F \geq E(t_0)$, and if R*(T) is the net income that assures roe^*, then the difference *sfin* = R(T) – R*(T) prepresent the *self-financing* capital that can be invested for the growth of the firm.

To represent the capitalistic firm, the model in figure 1 also shows the fifth transformation: the entrepreneurial transformation.

This manages the system mainly on the basis of external information and representations of the environment (Macintosh/Maclean 1999); it produces an *innovative,* and therefore *creative,* way of thinking (Christensen, 1997; Deephouse, 1999) by trying to change the *strategic position* of the firm in the environment (Nonaka/Takeuchi, 1995; Mintzberg and al., 1998), in order to achieve the max*roe* necessary for maintaining the invested capital financially integral. By taking advantage of [24], the entrepreneurial transformation transforms the external information (sector, market, technology, etc.) into a *strategy* for creating the optimal mix of the *business* and *financing portfolios* (Jensen, 2000) according to the following rules (Seajin/Harbir,1999):

1. set the objective of roe^* in order that $E^F \geq E(t_0)$, but try to achieve max $roe \geq roe^*$ by also exploiting its financial leverage, thereby controlling the *spread* and the *der*;
2. manage the *business portfolio* in order to produce a sufficient EBIT(T) that guarantees a minroi^*;
3. manage the *financing portfolio* at a financial cost I(T) such that max$rod \leq$ minroi^*.

Measures of performance of the entrepreneurial transformation. The Value Based Management

The *performance* of the *entrepreneurial transformation* can thus be evaluated on the basis of a constructed indicator for the adequacy of the obtained roe^*, and in particular by referring to the Economic Value of the Firm (EVF) and the Economic Value Added (EVA) – or actual economic result – which can be viewed, in capitalistic firms, as the best synthetic measures of the value created for shareholders 1991, 1994, ; Ehbar, 1998

Then

$$[25] \quad EVF = R(T)/roe^{\circ},$$

is the value of the firm considered as an asset for the shareholders, and in its simplest form corresponds to the financial value of the capital that derives from the capitalization of the earnings R(T) at a rate equal to the opportunity cost to the shareholders (roe°).

From the previous lemma we see that if $roe^{\circ} <$ (= >) $roe^* < roe$, and R(T) represents the average standard earnings, then EVF > (= <) E.

Thus EVF is a *dynamic performance indicator,* since it takes account of the variations over time in the *opportunity cost* of the capital for the shareholders (roe°) and of the strategy's capability to produce a roe^* sufficient to exceed this.

Then

[26] EVA = IC (*roi* - *coi),*

can be viewed as the value added by the firm to the original invested capital, K(t0): that is, the extra return after having paid the interest on debt and granted a proper *roe°* to shareholders[10]. With reference to the entire period T, this represents the equivalent of the company's goodwill, synthetically determined.

The cost of invested capital or capital cost rate: ccr = coi – or also the weighted average capital cost (wacc) – represents the cost of investment and is determined by the following expression:

$$[27] \quad coi = \frac{rod\,D + roe^{\circ}\,E}{K} = rod\,\frac{D}{K} + roe^{\circ}\,\frac{E}{K} = wacc = ccr.$$

So, while *roi* is the *return on investment* as defined by [12], the *wacc* represents the part of this return that is needed to pay the interest on the Debt, at an average cost equal to *rod*, as well as to guarantee the shareholders a proper return equal to their opportunity cost, *roe°*.

Conclusion: for any *capitalitstic firm* the fundamental variable is the *roi*, because all fundamental measures of performance of the economic, financial and entrepreneurial transformations depend on it.

PROPOSITION 3 - An economic condition for the existence of the *capitalistic firm*, as defined in DEFINITION 4, is that it succeeds in producing an *roi* such that *roi* > *coi*, which, as we can also see from [27], implies that *roe* > *roe°* (Porter/McGahan,1997; 1999).

If this second condition is met, then also EVF>E, thereby achieving the financial integrity of the capital invested by the shareholders, as can be seen in [26].

A high *roe* guarantees the production of value; since it depends on the *roi* as well as on the *der*, these become the *maximum management objectives* on which the other operating objectives depend: the *volume* of production and sales, *costs, quality,* and unit *prices*.

The real problem today for economically "healthy" firms is to guarantee investors a financial return (interest or dividends) at least equal to the opportunity costs of their best alternative investments, by maintaining an acceptable degree of risk (actuarial integrity) preserving, in any case, the purchasing power of their capital (monetary integrity) (Boulton, 2000).

When the wealth is relatively scarce, and the capital is needed in order to start up and maintain the production processes, the efficiency in the management transformation is sufficient to assure the viability of capitalistic firms. When the capital is abundant, it is the profitable businesses which are necessary in order to maintain the financial integrity of the capital invested and an efficient entrepreneurial transformation also becomes necessary for the persistence of the firm.

This makes evident that *growing capitalistic firms* must consider necessary – in fact, inevitable – to change the traditional managerial perspective that aims at profit maximization – which is valid for small firms in the immediate start-up period and for family-run enterprise – in favor of the new approach, the Value Based Management, that views the production of *shareholder value* as the primary objective of management.

According to Mc Taggart, Kontes and Mankins, value based management "is a formal, or systematic, approach to managing companies to achieve the governing objective of maximizing wealth creation and shareholder value over time" (Mc Taggart et al. 1994: p. 345).

As companies expand in size and complexity, and as the formation of diversified business portfolios becomes more frequent, it becomes natural and inevitable to introduce Value Based Management as a normal management approach.

References

1. Ashworth G., James P., "Value based management. Delivering superior shareholder value", Financial Times, Prentice Hall, Englewood Cliffs, New Jersey, 2001.
2. Bernstein L., "Financial Statement Analysis: Theory, Application, and Interpretation", Richard D. Irwin, 4th ed, 1989.
3. Boulton R. E. S., Libert B. D., Samek S. M., "Cracking the Value Code: How Successful Businesses are Creating Wealth in the New Economy, Harper Business, 2000.
4. Christensen C., "The Innovator's Dilemma", HBS Press, 1997.
5. Cornelius I., Davies M., "Shareholder Value", Financial Times, Pearson Professional, London, 1997.

[10] An equivalent definition is: EVA = OPBT – Tax – (IC *coc*) = NOPAT – (IC *coc*) where OPBT is the operating profit before tax and NOPAT is the net operating profit after tax.

6. Deephouse D. L., “To be Different, or to be the Same? It’s a Question (and Theory) of Strategic Balance”, Strategic Management Journal 20/2, February 1999: pp. 147-166.
7. Ehbar A., “EVA: the real key to creating wealth”, J. Wiley & Sons, New York, 1998.
8. Fisher F. M., McGowan J. J., “On the Misuse of Accounting Rates of Return to Infer Monopoly Profits”, American Economic Review 73/1, March 1983: pp. 82-97.
9. Jensen M. C., “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, in a theory of the firm: governance, residual claims and organizational forms”, Harvard University Press, 2000.
10. Lax D. A., Sebenius K. G., “The Manager as Negotiator”, New York: The Free Press, 1986.
11. Luckett P. F., ARR vs. IRR: a Review and an Analysis”, Journal of Business Finance and Accounting 11/2/, 1984: pp. 213-231.
12. Macintosh R., Maclean D., “Conditioned Emergence: a Dissipative Structures Approach to Transformation”, Strategic Management Journal 20/4, April 1999: pp. 297-316.
13. Mc Taggart J.M., Kontes PW., Mankins M.C., “The Value Imperative, Managing for superior shareholder returns”, The Free Press, 1994.
14. Mella, P., “Performance Indicators in Business Value-Creating Organizations”, Economia Aziendale 2000 web, 2/2005, at: www.ea2000.it: PP. 25-52.
15. Mintzberg H., Ahlstrand B., Lampel, J., “Strategy Safari. A Guided Tour Through the Wilds of Strategic Management”. Prentice Hall, New York, 1998.
16. Modigliani F., Miller M. H., “The Cost of Capital, Corporation Finance, and the Theory of Investment”, American Economic Review, XLVIII/3, June 1958: pp. 261-297.
17. Nonaka I., Takeuchi H., “The Knowledge-Creating Company”, Oxford University Press, New York, 1995.
18. Porter M., McGahan A., “How Much Does Industry Matter, Really?”, Strategic Management Journal 18/S1, July 1997: pp. 15-30.
19. Porter M., McGahan A., “The Persistence of Shocks to Profitability, Review of Economics and Statistics”, 81/1, February 1999: pp. 143-153.
20. Prahalad C and Bettis R., “The Dominant Logic: A New Linkage Between Diversity And Performance”, Strategic Management Journal, 7, 1986: pp.485-501.
21. Rappaport A. “Creating shareholder value”, J. Wiley & Sons, New York, 1998.
22. Ruefli T. W, Collins J. M., Lacugna J. R., “Risk Measures in Strategic Management Research: Auld Lang Syne?”, Strategic Management Journal 20/2, February 1999: pp. 167-194.
23. Seajin C. and Harbir S., “The Impact of Modes of Entry and Resource fit on Modes of Exit by Multibusiness Firms”, Strategic Management Journal 20/11, November 1999: pp. 1019-1035.
24. Stewart G. B, III, “EVAThe quest for value”, Harper business, 1991.
25. Stewart G. B. III, “EVA: Fact and fantasy”, Journal of Applied Corporate Finance, Volume, 7/2, 1994: pp 71-84.
26. Stewart G. B. **“**Bennett Stewart Explains How EVA®...”,
27. website: http://www.sternstewart.com/evaabout/whatis.shtml., 1999.

Note: Because of the extreme wealth of literature I’ve made the choice to mention only the fundamental and well known (or the very specific) contributions and web sites.