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**DESIGNING AN INTEGRATIVE FRAMEWORK  
FOR MANAGEMENT EDUCATION:  
HINTS FROM COMPLEXITY SCIENCE**

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## **EXECUTIVE SUMMARY**

Profound changes are taking place in the global business environment and they are putting big pressures on business firms to adapt. Business environment is becoming more global and more complex, making management hard to be handled as firms are no longer protected by borders or able to easily take advantage of information asymmetries around the world. In this context, there is a need for more sophisticated management, for new ideas and for faster rates of innovation. In such a scenario, management education achieves a crucial role to play in optimizing the way organizations are managed, with the aim of ensuring the best possible level of growth and success (Cornuel, 2005).

The reduction of the half-life of a worker's human capital needs a continuous updating of competences through a "short lead time" learning solution. This phenomenon is particularly evident for some professional profiles. The greatest effects of technological and organizational change do not occur in the high-tech sectors, as assumed by e.g. Neuman & Weiss (1995). It is the workers employed in the business, banking and insurance sector who have the largest score on the technological and organizational change indicator. Also the sector public administration and education has a high score on the technological and organizational change index, due to the extensive diffusion of information technology.

How can organizations enable complex, knowledge-intensive processes to adapt to change in their environment? Gibbons et al. (1994) argue that knowledge is generated in the context of application. It is trans-disciplinary and it is problem oriented in the sense that it involves participants with different forms of knowledge.

Through the lens of complexity science, it is possible to investigate business environment and firms as very complex social systems (Sanchez & Heene, 1996; Sanchez, Heene & Thomas, 1996) of interconnected capabilities and resources and *lifelong learning* and *competence building* can be analysed as self-organising processes of such systems. Actually the efficacy with which the business leader can acquire the right competencies becomes the real key factor in order to compete on the edge of chaos.

Generalizing the concept of *catalysis* (Roberts, 2000), we can say that each transformation has to be catalyzed by an information system, reducing the lead time of learning, in order to face the emergence of competence obsolescence that is mainly referred to managerial competencies.

This implies the need to maximize both the knowledge productivity and the learning productivity in building competences. On the one hand, the increase of knowledge productivity calls for new forms of knowledge architectures, the way in which a knowledge base is organized and managed. On the other hand, the increase of learning productivity refers to learning strategies and approach that enable lead time reduction.

Starting from the challenges of the actual complex scenario, this research focuses on the enhancement of the knowledge and learning productivity related to the education in Business Management, through the adoption of an Inter-disciplinary and Integrative approach of the same matter.

The theoretical foundations of this work rely on the review of the state of the art of the research about the evolution of management thinking during the last century, the complexity approach as business world metaphor, and the role of learning in facing competence obsolescence.

The work started with a depth study of the problem area and the description of the scenario in which organizations have to compete today. Supported by the common patterns followed by some successful companies, it is emphasized the role of knowledge and how management is changed in recent years, moving toward *continuous learning* as a key strategy. As management education should fit management characteristics, a literature searching about the traditional programs of MBA highlighted the mismatch between traditional approach to education and the complexity that management has to deal with.

Once defined the global environment and the limits of the traditional approaches to Management Education, key concepts from Complexity Science have been adopted as analytical framework to be used in order to design a more effective educational approach. Actually, the adoption of some complexity key concepts as *self-organization*, *holistic models* and *trans-disciplinarity*, is suitable to allow the reorganization of management education in a more effective way. This choice has been also corroborated by the main guidelines coming from *Constructivism Theory* (Vygotsky, 1978) and *Problem-based Learning* (Engel, 1991).

The present work is organized in 7 chapters as follows.

Chapter 1 focuses on the *introduction* to the problem area, the main research's objective and the research questions.

Chapter 2 contains a *review of literature* related to the research questions and a conceptualization of the main constructs of this study.

Chapter 3 includes a description of the *research method* of the study; this include the research design and the general road map of the work.

Chapter 4 refers to the lessons learned from three companies' histories that should emphasize the need to rethink the approach to management education.

Chapter 5 focuses on the main developments in business and management Education, with a particular attention to Business Schools and MBA programs in order to highlight the main criticisms and limitations.

Chapter 6 presents the main contributions of the research and describes the characteristics of a new approach to Business Management Education, linking them to the methodological premises of the work and to its conceptual framework.

Chapter 7 focuses on the overall *conclusions* that can be drawn from the research. Furthermore, the chapter includes limitation of the study and further research within the area.

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## **1. INTRODUCTION**

### **1.1 Introduction To The Problem Area**

The Research problem identification moves from the recent developments of the research about the role of *knowledge* and *learning* in the actual complex scenario, and the need to focus on these strategic assets in order to gain and maintain competitive advantage.

Organizations of 21st century are characterized by a new orientation and Management is increasingly founded on the ability to cope with constant change. As a matter of fact, the actual economic and social scenario is affected by a deep change in economic and trade relationship. Some of the main drivers of such change are (Romano et al., 2003): the diffusion of Information and Communication Technologies, the globalization of the markets, the changing patterns of employment, and the rise of the knowledge as a strategic and economic resource. The high frequency with which radical and dramatic innovations occur have created a competitive accelerator, making time and speed to become crucial factors in remaining competitive. This implied a rapid transition from an industrial society into a knowledge society (Baets, Van der Linden, 2003). The real need of an organization is to be ready (Greenwood and Hinings, 1996) to adapt to the complexity of technological, political, and social changes of the environment: as the complex and self-organizing (Miles et al., 1998) environment changes, the organization has to survive and to succeed. The more the world is interconnected, the more knowledge become the real key factor of survival, grasping the opportunities of information technology (Coleman, Jr., 1999).

Facing the continuous changes of the actual scenario, organizations are deeply affected by several theories and Lundvall and Johnson (1994) defined the same context as a 'Learning Economy'. According to the same authors, people can be considered as the natural resource and capital asset of the organizations and the most important source of sustainable competitive advantage. The Learning Economy is an economy where the ability to learn is crucial for the economic success of individuals, firms, regions and national economies (Lundvall & Johnson, 1994; Lundvall, 1996). The power of knowledge relies in his strong relationship with productivity; knowledge applied to knowledge is innovation (Drucker, 1993).

The metaphor ‘knowledge society’ emphasises that ‘knowledge’ and ‘knowledge production’ play radically new and increasingly dominant roles in society (Lundvall and Johnson, 1994). Castells (1996), sees revolutionary character of knowledge society to consist not in the centrality of knowledge itself but in ‘the application of knowledge and information to knowledge generation and information/processing/communication devices, in a cumulative feedback loop between innovation and the uses of innovation. One way to understand how firms and clusters interact with external sources of new knowledge in their environments is through the lens of complexity theory (Allen, 2001; Arthur et al., 2001). Actually the efficacy with which business leader can acquire the right competencies becomes the real key factor in order to compete on the edge of chaos.

With the emergence of knowledge as the main key factor in gaining competitive advantage it becomes necessary to be able to learn and one of the main consequences of the knowledge revolution currently unfolding is the continuous decrease of the half-life of any employee’s base of expertise that is often a few years rather than a few decades.

This phenomenon is well known as *competence obsolescence* and it is mainly referred to managerial competencies. *Obsolescence of human capital* is strictly related to one of the most important challenge the actual economies face: to realize the transformation towards a *knowledge-based society* by means of *lifelong learning* that is considered as a potential remedy to the human capital obsolescence. Human resources cover a central role in the knowledge economy that, as the human capital embodied in both high-tech capital goods and the working population is the major determinant of the performance of organizations and whole economies (De Grip, 2006).

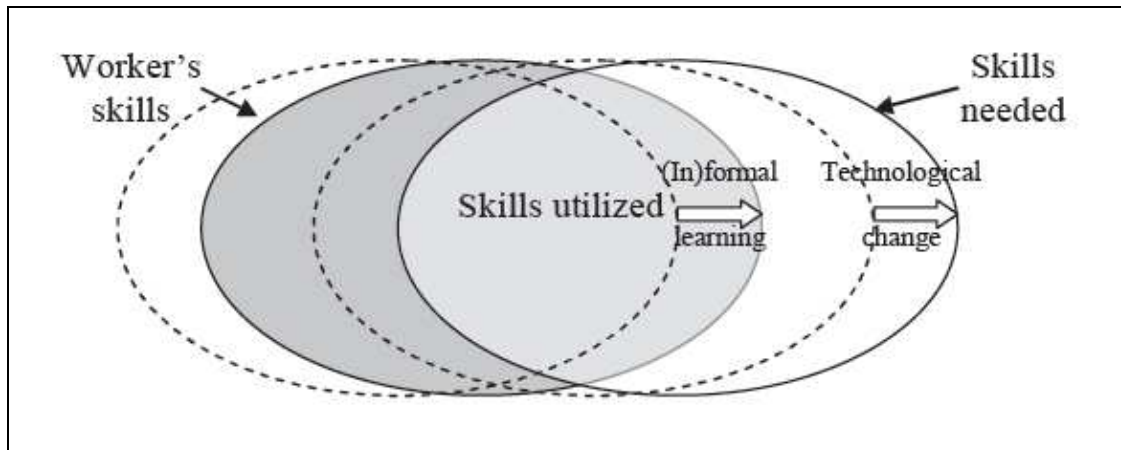
The worker skills may be deteriorated by the upgrading of the skill level and the shifts in the type of skills demanded. This phenomenon refers to the notion of the *half-life* of a worker’s human capital, that can be described as “the time after completion of professional training when, because of new developments, practicing professionals have become roughly half as competent as they were upon graduation to meet the demands of their profession” (Dubin, 1972). Workers employed in the business, banking and insurance, and education sector and general managerial profiles, more than technical ones, are rapidly affected by competence obsolescence (Neuman & Weiss, 1995).

De Grip (2006) refers to two different kinds of obsolescence of human capital: technical and economic obsolescence of human capital.

Technical obsolescence of human capital affects the skills of a worker and refers to the wear of skills due to the natural aging process, or to the atrophy of skills due to unemployment and career interruptions.

Economic obsolescence of human capital affects the value of the human capital of workers and is caused by changes in the job or work environment. These changes in job content are usually related to technological and organizational change.

It is obvious that greying knowledge economies have to face both kinds of obsolescence of human capital. This addresses the need for lifelong learning in order to maintain the employability of the working population in the western economies.



**Figure 1.1: The effects on the mismatch between utilized and needed skills. Source: adapted form Allen, De Grip, 2007.**

In such a complex environment, in which individuals and organizations have to survive and self-organize themselves on the basis of the external conditions, it seems that the actual offer of Management Education maintain the traditional view of the world. The emergence of competence obsolescence calls for the maximization of both knowledge productivity and learning productivity in building competences. On the one hand, the increase of knowledge productivity calls for new forms of knowledge architectures, the way in which a knowledge base is organized and managed. On the other hand, the increase of learning productivity refers to learning strategies and approach that enable lead time reduction.

## 1.2 Purpose Of The Study

Starting from the challenges of the actual complex scenario, this research focuses on the enhancement of the knowledge and learning productivity related to the education in Business Management, through the adoption of an Inter-disciplinary and Integrative approach of the same matter.

In such a complex environment, in which individuals and organizations have to survive and self-organize themselves on the basis of the external conditions, we argue that the actual approach to Management Education maintain the traditional view of the world.

The achievement of the presented objective has been guided by the identification of the manager's educational needs and by the evaluation of main criticism about the traditional management education offer.

In order to identify the manager's educational needs, a descriptive case study (Yin, 1994) based on histories has been conducted, involving three examples of organizations that had the ability to survive and succeed in the present complex environment. On the other hand, the definition of the traditional offer of Management Education has been gathered through a literature searching (Bell, 1999), with a particular focus on the mismatch between the design of the major MBA programs and the real managers' educational needs. The main sources of information adopted are books, journals and Internet sources.

The common patterns emerging from the three histories and the main criticism emerging from the recent development in Business and Management Education highlighted the characteristics of an Interdisciplinary Approach to Business Management Education that should be suitable to the complexity that management has to deal with. The design of such an approach has be guided by the adoption of some adoption of some complexity key concepts, as *self-organization*, *trans-disciplinarity* and *holistic perspective*, that would allow to reorganize management education in a more effective way, by suggesting a new form of knowledge architectures, and learning strategies that enable lead time reduction.

## **2. THEORETICAL BACKGROUND**

### **2.1 Introduction**

The theoretical foundations of this work rely on the review of the state of the art of the research about the evolution of management, the complexity approach as business world metaphor, and the role of learning in facing competence obsolescence.

The first paragraph refers to the changing scenario and the evolution of management in the last century, with a particular attention to the way in which societal, technological, geographical and economic changes influenced management thinking.

The second paragraph focuses on the main theoretical foundation about Complexity approach, on the debate about the adoption of complexity as a metaphor for managerial mindset and the application of concepts coming from complexity theory to organisational settings.

The third paragraph refers to the role of learning and knowledge in the actual complex scenario, with a particular focus on competence obsolescence as the main threat of the Knowledge Society (Lundvall and Johnson, 1994). The conclusion of this part of the chapter focus on the main implications for Management Education.

AREA	KEY CONTRIBUTIONS
<b><i>Evolution of Management Thinking</i></b>	<p>Stages of Societal Evolution (<i>Banathy, 1996</i>)</p> <p>Scientific Management (<i>Smith, 1776; Taylor, 1911; Weber, 1947; Mayo, 1933</i>).</p> <p>Operations Research (<i>Chandler, 1962; Lawrence and Lorsch, 1969</i>)</p> <p>Paradigm shifts between XX and XXI century organizations and drivers of change (<i>Barney, 1991; Nonaka and Tacheuky, 1995; Prahalad and Doz, 1987; Castells, 1996; Dunning 1997</i>).</p>
<b><i>Complexity Approach</i></b>	<p>Complexity Theory (<i>Prigogine and Stengers, 1987, Waldrop, 1992; Jacobson and Wilensky, 2006</i>)</p> <p>Chaos theory (<i>Prigogine and Stengers, 1984</i>)</p> <p>Complex Adaptive Systems (CAS) (<i>Stacey, 1996</i>)</p> <p>Transdisciplinary (<i>Sommerer and Mignonneau, 2002</i>)</p> <p>Coevolution and self-organising behaviour (<i>Cilliers, 1998; McKelvey, 1999</i>)</p> <p>Complexity as a Business World metaphor (<i>Lewin and Koza, 2001; Allen, 2001; Arthur et al., 2001; Chen, 1997; McKelvey, 1997, 1999; Anderson, 1999; Clippinger (1999a)</i>)</p>
<b><i>Knowledge and Learning Issues</i></b>	<p>The role of knowledge and learning in the actual scenario (<i>McElroy, 2000; Lundvall &amp; Johnson, 1994</i>)</p> <p>Learning Organization (<i>Senge, 1993; Garvin, 1993</i>)</p> <p>Obsolescence of human capital (<i>Neuman and Weiss, 1995; Van Loo et al., 2001; McDowell, 1982; Bartel &amp; Sicherman, 1993</i>)</p> <p>Lifelong Learning (<i>Bartel &amp; Sicherman, 1993; Kokosalakis and Kogan, 2001</i>)</p>

**Table 2.1: Research Areas and Main Contributions**

## **2.2 Changing Scenario and Management Evolution**

Since the advent of the so called “global era”, a number of elements related to society and business have evolved and changed; this situation has generated several opportunities and risks for individuals and organisations.

The old 20<sup>th</sup> century scenario has been replaced by an emerging market characterized by uncertainty, rapid technological innovation, several global players, growing competition, constant and unpredictable change, increasingly rapid, pervasive, and nonlinear. Due to the complexity of the political and technological changes, organizations need to promptly adapt to the environment in which they operate (Greenwood and Hinings, 1996). The increasing interconnection of people across the globe is helping to accelerate change, as diverse new customer demands are communicated faster and innovative organizational responses are enabled by collaboration through information technology (Coleman, Jr., 1999).

According to Eisenhardt and Martin (2000) the strategic challenge in such a scenario is to build and maintain a competitive advantage, starting from the consideration that the duration of that advantage is inherently unpredictable, and time has become a crucial aspect of strategy. As a matter of fact, technological innovation is experiencing an unprecedented acceleration, and consumer expectations shift and raise accordingly. A direct consequence of this acceleration of technological innovation refers to the reduction of products life cycles, and to the rapid depreciation of knowledge as the products in which is embedded. This is leading to the need to accelerate the renewal and to increase the effectiveness of organization’s competences.

As accelerating speed of change shapes the world of business, the ability of adaptation becomes crucial for the survival, but the acknowledgment of the increasing impact of knowledge as a primary driver of economic growth still needs to be addressed by many organizations” (Van den Berg et al, 2003).

According to Lundvall and Johnson (1994) the central role of learning and knowledge was established by three main phenomena occurred in the second half of the last century:

- a. the development of ICT (Information and Communication Technologies) allowed the empowerment of the information management, enabling the easy creation of interactive information networks.
- b. the introduction of a flexible specialization encouraged the communication and cooperation among workers, facilitating the organizational capability to adapt rapidly and at low costs to changes in demand and to shifts in the general business environment.
- c. the process of innovation, became a necessity for the organizations survival, implied the enhancement of continuous learning.

Knowledge has emerged as the creator of wealth in today's global economy: knowledge applied to work is productivity; knowledge applied to knowledge is innovation (Drucker, 1993). Particularly with the increasing customer demands for innovation, the "management" of knowledge through enabling organization design and controls promotes self-organizing behavior in businesses. Accumulating knowledge is applied to the marketplace by some self-organizing, entrepreneurial companies in the process of adaptation to change (Miles et al., 1998).

The evaluation, acquisition, integration and utilisation of new outside knowledge characterises a firm's absorptive capacity (Cohen and Levinthal, 1990). The higher the absorptive capacity, the more proactive the firm, and the more likely it will be to use exploration to pursue opportunities present in its environment (Lindsay, 2005).

Concepts like knowledge production and acquisition, and intellectual contributions calls for the consideration of the field of management research, and to issues relating to its current status.

### **2.2.1 Societal Evolution and Business Metaphors**

Over the years, business world has been influenced by metaphors in order to explain and analyze the behaviour, the strategies and the processes of organizations. Solomon (1999) analyzed common metaphors; the *jungle* metaphor is one of the most pervasive one that brings into business the classical Darwinian view of the survival, where the rule is kill or be killed. But this metaphor is grounded on fundamentally



wrong scientific premises, as it totally ignore the *evolutionary systems theory* (Mitchell and Newman, 2002) and how cooperation is an essentially strategy in nature.

Another famous metaphor comes from the *mechanistic thinking* (Kofman and Senge, 1993) and relies on the idea of business as a “money-making machine”; According to Jackson (1991), such a perspective reduces all kinds of decision in a relation between causes and effects. With introduction of information technology the machine metaphor has been improved through the processing capacity of computers and tools.

Banathy (1996) provided a historical view of the evolution and society, that is represented in the figure below; in this evolution, technological innovation can be considered as one of the motors of change, moving from technologies that allow people to survive and satisfy the basic human needs to technologies that expand physical and cognitive capacities (Laszlo, 2001).

<i>STAGE</i>	<i>Rate of change</i>	<i>Communication</i>	<i>Local dimension</i>	<i>Technology</i>	<i>Dominant Paradigm</i>
<b><i>Hunting Gathering</i></b>	500.000 years	Speech	Wandering tribes	Survival technology	Magic-myth paradigm
<b><i>Agricultural Society</i></b>	10 thousand years	Writing	Communities city-states	Fabricating technology	Philosophical paradigm
<b><i>Industrial Society</i></b>	5 hundred years	Print	Nation states	Machine technology	Scientific paradigm
<b><i>Post-Industrial Society</i></b>	50 years	Electronic Communication	Regional/Global Societies	Intellectual technology	Systems paradigm

**Table 2.2: Stages of Societal Evolution (Source: adapted from Laszlo, 2001)**

The Table above illustrates the acceleration in the rate of change, the trend toward global integration, and the emergence of the systems paradigm.

Hunting Gathering stage was characterized by a rate of change of about half million years, speech communication, shrunk local dimension, survival technology; in this stage the dominant paradigm was *Magic-myth*.

Agricultural Society stage was characterized by a rate of change of about ten thousand years, writing communication, local dimension referred to city/states, fabricating technology; in this stage the dominant paradigm was the *Philosophic* one.

Industrial Society stage was characterized by a rate of change of about five hundreds years, print communication, local dimension referred to nation/states, machine technology; in this stage the dominant paradigm was the *Scientific* one.

Post-Industrial Society stage was characterized by a rate of change of about fifty years, electronic communication, local dimension referred to regional and global society, intellectual technology; in this stage the dominant paradigm was the *System* one.

Each stage can be considered as a period of relative stability; the transitions, or bifurcation points (Laszlo, 2001), from one stage to another are periods characterized by a certain chaos in which the changes in the environment imply an evolution process.

With a particular focus on the XX Century, different important shifts in managerial mindset can be identified between early and late part of the same century.

Early XX Century was characterized by Scientific Management that is based on a rigorous application of techniques of observation and measurement and on the assumption that the business environment is linear and predictable. The main economics theories of this stage span from the *invisible hand* (Smith, 1776) to the Classic Organization Theory (Taylor, 1911; Weber, 1947) and Neoclassical Organization Theory (Mayo, 1933). Scientific management is also characterized by a strongly hierarchical organization, with a huge division and specialization of work. Manager tasks focuses on the achievement of efficiency, through the reduction of fixed costs through reduction of time and a high degree of specialization of work.; as a consequence the strategic assets in this view are capital and work.

Late XX Century was characterized by Operations Research by a new role of management based on rational principles: decision theory, financial analysis, operations research, planning. This type of perspective is founded on the assumption that the environment is characterized by a growing speed in change, introduction of computer functionalities, focus on customer, reduction of half-life of product design. The main economics theories of this stage span from Chandler's visible hand (1962) according to which "once a managerial hierarchy does its job, it becomes its own source of permanence, power, and continued growth" to the Contingency Theory (Lawrence and Lorsch, 1969) in which environmental conditions are regarded as a direct cause of

variation in organizational forms. Operations Research is also characterized by a Multiunit, multidivisional organization that acts in a rational, sequential and linear manner to adapt to changes of the environment. In such a view, the role of management is based on rational principles: decision theory, financial analysis, operations research, planning. The task of manager focuses on optimal solution, facing the complexity of the environment with strong simplifying hypothesis. Finally, focus is still on Capital and Organization.

The following table summarized the main differences between early and late XX Century in terms of environment, economics theories, organization, management, managers tasks and focus.

	<b><i>Early XX Century:</i></b> <b><i>SCIENTIFIC MANAGEMENT</i></b>	<b><i>Late XX Century:</i></b> <b><i>OPERATIONS RESEARCH</i></b>
<b><i>Environment</i></b>	Linear and predictable	Growing speed in change.
<b><i>Economic Theories</i></b>	From <i>invisible hand</i> to Classic Neoclassical Organization Theory.	From Chandler's <i>visible hand</i> to the Contingency Theory.
<b><i>Organization</i></b>	Hierarchical	Multiunit, multidivisional
<b><i>Management</i></b>	Rigorous application of techniques of observation and measurement	decision theory, financial analysis, planning
<b><i>Manager Tasks</i></b>	Efficiency meant as reduction of fixed costs.	Optimal solution starting from strong simplifying hypothesis.
<b><i>Focus</i></b>	Capital and Work	Capital and Organization

**Table 2.3: Shifts in Managerial Mindset in XX Century**

### **2.2.2 Changes and paradigm shifts between XX and XXI century organisations**

Passage between the two centuries was strongly affected by a deep change that can be highlighted by the identification of technological, geographical and economic drivers.

From a *technological* point of view, the main drivers of change are: the higher diffusion and convergence of technology (Kobrin, 1997), and the increase of knowledge

intensity (Barney, 1991; Nonaka and Takeuchi, 1995). Technology promotes flexibility, allowing people to work from anywhere, not confined to a physical space (Baets and Van der Linden, 2003) so it is strictly related to the geographical aspect of change.

Actually, the main *geographical* drivers are:

- Increasing social and cultural interconnection, economic, financial and market integration (Bartlett and Ghoshal, 1989; Prahalad and Doz, 1987)
- Internationalization, Transnationalization, Globalization (Castells, 1996).
- The decentralization and the rising of new Geographical Areas at the centre of the market (Sudgen, R., Wilson, J.R., 2001).

According to Dunning (1997) the main *economic* drivers are: the increasing complexity and specialization of economic activity, the growing interdependence of intermediate market product, the acceleration allowed by information/innovation driven economy, the widening territorial firms' boundaries, the increasing significance of created assets in the value-adding process, the evolvement of new institutions and organizational forms, and finally the re-evaluation of organizational cultures and behavioural norms.

As we are in the stage of a sustainable society, organizations have to be ready to change their strategies and to implement new processes and structures, but these actions require capable people that understand the challenges and that recognize the new scientific paradigm (Laszlo, 2001).

The 21st Century is challenging traditional organizational models and assumptions on people and work itself. The knowledge-based economy calls for a renewed focus on human capital that should be considered as an asset. As a consequence, those organizations need to rethink their assumptions about people, their work, the role of technology, the locus of leadership and even the goals of organizations. In particular, Kochan et al. (2003) suggest that the passage between the two centuries implies a different assumptions about people, work, technology, leadership and goal.

People cannot be considered as a cost to be monitored and controlled but now represent an important asset that should be valued and developed in order to create value for the organization.

Work of the same people becomes a collaborative network of self-coordinated teams, rather than a sequence of standardized, assigned individual tasks.

Technology is not designed in isolation to minimize human error and control work, but it becomes integrated with the social dimension in order to enhance people and work productivity and to enable knowledge-based work.

Leadership is no more reserved to the executives and technical experts, but it is a distributed capability that involves multiple people and groups at all levels in the organization;

Goal of the organizations now reflects the need to create different forms of value for several stakeholders and it is no more focused only on the generation of returns for shareholders.

Fortunately, accompanying the changes of the business environment and management thinking is an interesting framework known as Complex Adaptive Systems (CAS) or Self-Organizing Systems, that abstracts the basic principles governing complex physical and biological systems and may be adopted to all forms of organizations (Clippinger III, 1999).

### **2.3 Complexity: a Theory or a Framework?**

The new sciences, also known as the sciences of complexity, offer new insights that support the idea of an interconnected, collaborative, participatory, and creative universe (Goerner, 1994). New metaphors and powerful images are being born as this new scientific understanding spreads, as the introduction of the idea of business ecosystems (Moore, 1997) based on a new type of cooperative and competitive relationships that take place in today's business world.

Jacobson and Wilensky (2006) use the term "framework" as it does not appear that there is a general "theory of complex systems" at this time. Rather, the multidisciplinary fields that study various types of complex systems use a set of conceptual perspectives or principles (e.g., multiscale hierarchical organization, emergent patterning, dynamical attractors, scale-free networks) and methods of doing science that function as a shared framework for the discourse and representations used in the conduct of scientific inquiry.

Nowadays several definitions of "Complexity" already exist. Rather than a science or a theory, complexity deals with a different approach studying natural and social phenomena, that implies a change in the relation between philosophy and

science. “Complexity” represents an attempt to interpret regularities that derive from the observation of natural and social phenomena and shows that an order can emerge from apparently chaotic systems.

In general the main discussion is about “complex systems”, in order to underline the interaction among components and the emergence of properties that are not visible through the observation of the single components. There is an *holistic perspective* according to which the whole system is more than the sum of the parts and only the analysis of the interactions among them allows the knowledge of the phenomenon as a whole.

Furthermore the system interacts with the environment: the system reacts to external stimuli by changing and adapting through self-organization. These systems, called adaptive, can evolve between order and chaos, in an intermediate zone called edge of chaos. Self-organization is possible only at the edge of chaos: the “order” crystallizes the system and “chaos” makes impossible any organization, both spontaneous and induced (Frederick, 1998).

Chaos theory (Prigogine and Stengers, 1984), one of the key concepts of Complexity Science, describes a phenomenon called the *butterfly effect*: in bifurcation points, the turbulent conditions in a complex dynamic system allow that small changes lead to an overall transformation of the system. As Prigogine argued:

*“Our hope arises from the knowledge that even small fluctuations may grow and change the overall structure. As a result, individual activity is not doomed to insignificance”*

The study of complexity runs somewhat contrary to the normal or reductionism approach followed in physics, chemistry, biology, and economics. The central tenet of reductionist viewpoint is that if one understands the elementary building blocks or subparts, it becomes possible to formulate problems and infer consequences marching upward in scales. However, it is clear that this approach, although successful in the past, presents some limits.

Complexity theory was first pioneered in the study of physical systems (e.g. Prigogine and Stengers, 1987), and Waldorp (1992) later reported the application of complexity theory to economic systems.

Pryor (1995) and Stodder (1995) emphasized a structural view-point on

complexity, meaning that there are lots of complicated interrelationships and institutional structures within the economy.

Referring to researchers at the Santa Fe Institute, Mitchell Waldrop (1992) declares “they believe that their common theoretical framework is allowing them to understand the spontaneous, self-organizing dynamics of the world in a way that no one ever has before, with the potential for immense impact on the conduct of economics, business, and even politics”.

The field of complexity is considered *Transdisciplinary*, as it cuts across all traditional disciplines of science, as well as those of engineering, management, and medicine. It focuses on certain questions about parts, wholes and relationships (Sommerer and Mignonneau, 2002). These questions are relevant to all traditional fields.

Nicolis and Prigogine (1989) argued that “it is more natural to speak of complex behaviour rather than complex systems. The study of such behaviour will reveal certain common characteristics among different classes of systems and will allow us to arrive at a proper understanding of complexity”. Complex behaviour refers to the behaviour that arises from the interplay of the characteristics or principles of *complex systems*.

Actually, Complexity Sciences are often referred to as the study of complex adaptive systems (CAS) (Stacey, 1996), within which much of the work on complexity is situated (Anderson, 1999; Frederick, 1998; McElroy, 2000). Coevolution and *self-organising behaviour* are important characteristics of complex adaptive systems (McKelvey, 1999).

The modern study of complex systems focuses on three different directions: (1) studying how interactions give rise to patterns of behaviour; (2) understanding the ways to describe complex systems; and (3) studying the process of formation of complex systems through pattern formation and evolution (Bar-Yam, 2000).

A discussion about complex systems has to start with the definition and a distinction: what is complex and how does it differ from the merely complicated? In complicated systems, parts have to work in unison to accomplish a function. The stock market, a termite colony, cities, or the human brain are complex. The number of parts, e.g., the number of termites in a colony, is not the critical issue. The key characteristic is adaptability. The systems respond to external conditions. A food source is obstructed, and an ant colony finds a way to go around the object; or a few species become extinct and ecosystems adapt (Ottino, 2003).

A complex system is a system with a large number of elements capable of interacting with one another and with their environment. The interaction between elements may occur only with immediate neighbours or with distant ones; the agents can be all identical or different; they may move in space or occupy fixed positions, and can be in one state or multiple states (Ottino, 2003). The common characteristic of all complex systems is that they display organization without any external organizing principle being applied. In the most elaborate examples, the agents can learn from past history and modify their states accordingly. Complex systems cannot be understood by studying parts in isolation. The very essence of the system lies in the interaction between parts and the overall behaviour that emerges from the interactions. The system must be analyzed as a *whole*.

Common to all studies on complexity are systems with multiple elements adapting or reacting to the pattern these elements create (Arthur, 1999). Although there is no exact definition of what a complex system is, there is now an understanding that, when a set of evolving autonomous particles or agents interact, the resulting global system displays emergent collective properties, evolution and critical behavior having universal characteristics. These agents or particles may be complex molecules, cells, living organisms, animal groups human societies, industrial firms, competing technologies, etc. All of them are aggregates of matter, energy and information that display the following characteristics (Sommerer and Mignonneau, 2002). They:

- learn, adapt and organize
- mutate and evolve
- increase in diversity
- react to their neighbours and to external control
- explore their options.

Elements and the patterns they respond vary from one context to another; as the elements react, the aggregate changes; as the aggregate changes, elements react anew. Arthur (1999) argues that complex systems are systems in process that constantly evolve and unfold over time.

Cilliers (1998) argues that *self-organisation* is a property of complex systems which enables them to develop or change internal structure spontaneously and adaptively in order to cope with their environment. Similarly, the structure of a self-organising system is continuously transformed through the interaction of contingent and external and internal factors in a process of reflexive coevolutionary adaptation.



External pressures for change promote macro-coevolution of the system with its environment, while internal structural changes occur through micro-coevolutionary adaptations within the system (McKelvey, 1997). Complex adaptive systems move between stability and change by combining and recombining both path dependent and path creation processes (Baum and Korn, 1999). Complex adaptive systems not only organize their structure through coevolutionary change and self-organisation, but have a tendency to do so in an optimal way (Cilliers, 1998). This arises from the concept of self-organised criticality (Bak and Chen, 1991), where, “the system tunes itself towards optimal sensitivity to external inputs” (Cilliers, 1998).

### **2.3.1 Complexity as a Business World Metaphor**

Complexity theory is encompassed within the wider study of the complexity sciences, but it has relatively recently been applied to the study of organisations (Lewin and Koza, 2001); many authors have applied concepts coming from complexity theory as *self-organisation* and *coevolution* to organisational settings (e.g. Allen, 2001; Arthur et al., 2001; Chen, 1997; McKelvey, 1997, 1999).

The paradox of organizations (Anderson, 1999) is that the achievement of efficiency often tends to undermine adaptability: in particular, the more the organization is fragmented in the division of labour the more it is difficult to understand the organization as a whole.

On the other hand, the application of complexity theory in organizational studies provides conceptual tools and features that are important in the study of organizational development and change (Anderson, 1999; Frederick, 1998). In organization science, complexity theory is concerned with explaining the sources of, and interplay between, stability and change (Stacey, 2001), or order and chaos (Kauffman, 1993). Complexity theory thus helps in understanding the dynamics of change and the emergence and development of industries, or groups of firms. McKelvey (1999) suggests that it is particularly useful in situations where external change is greater than internal change, such as in rapidly changing environments.

Kauffman (1995) argues that all complex adaptive systems evolve to a point called ‘the edge of chaos’. The edge of chaos is where a system reaches a state of dynamic equilibrium, between order and chaos, or stability and change. It is where

innovation and creativity are at their optimum (Brown and Eisenhardt, 1998), and where systems outperform those systems not driven to the edge of chaos (Kauffman, 1995).

Drawing particularly on Kauffmann (1993), McKelvey (1999) has described how organisations evolve to the edge of chaos through a coevolutionary reflexive process, such that adaptation occurs in the organisation and its environment (Lewin and Volberda, 1999). McKelvey (1999) also notes that evolving beyond the edge of chaos to a situation of too much complexity can limit the adaptive success of a coevolutionary system, leading, in an organisational setting, to diminished competitive advantage.

Clippinger (1999a) argued that the CAS approach to Management provides a broad set of concepts, methods and measure and in general its perspective is less reductive than the classical view. Furthermore, he suggested reliable indicators of order and disorder to help managers map out the *fitness landscape* of their organizations and develop CAS-based strategies for competing and surviving under highly complex and volatile conditions.

Coming back to the managerial mindset, complexity metaphors can be represented through the dimensions seen in the previous paragraph: environment, theories, organization, management, manager task and focus.

According to the Complexity metaphor, the organizations' environment is not linear, unpredictable, close to the complexity of the natural environment. It is characterized by deregulation, conflicting constraints, variables that shift rapidly, and value chain relationships that change time to time. Fundamental theoretical contributions for this stage are the System Theories, Complexity theory and Biology Metaphor (Volberda, 1998; Kauffman, 1995; Anderson, 1999a). According to System Theory (Kast and Rosenzweig, 1972) the components of an organization are interrelated, organizations are viewed as open systems continuously interacting with the environment and they are in a dynamic equilibrium as they adapt to external changes.

The type of organization that is more suitable to complex metaphor is flat, networked; flexible, horizontally integrated, and characterized by distributed leadership; it is Learning organization (Senge P., 1996), continually enhancing their capacity to create. Management relies on improvisation, co adaptation, experimentation, regeneration and it is summarized by Eisenhardt (1998) as "Leading at the *edge of chaos*". For this reason the manager tasks become adaptation, survival, change, as survival and competitive advantage depend on the speed with which tacit knowledge embodied in the flows and interactions of the enterprise is made explicit, tagged,

aggregated, and recombined into emergent models (Clippinger, 1999a). The focus is no more on Capital but on Knowledge, human capital and continuous learning.

	<b>COMPLEXITY METAPHOR</b>
<b>Environment</b>	Not linear, unpredictable.
<b>Fundamental Theories</b>	System Theory; Complexity theory and Biology Metaphor.
<b>Organization</b>	Flat, networked; flexible; horizontally integrated.
<b>Management</b>	Leading at the "edge of chaos"
<b>Manager Tasks</b>	Adaptation, survival, change.
<b>Focus</b>	Knowledge, human capital and continuous learning

**Table 2.4: Managerial Mindset coming from Complexity Metaphor**

As stated before, complex systems are evolving systems and a living organism is capable of self maintenance, self-renewal, and self-transcendence (Capra, 1996). Evolution is a process of self-organization into higher levels of functional and structural complexity (Laszlo, 1996). The new evolutionary stage could be labelled "sustainable society" (Laszlo, 2001) and humans have become integral and conscious agents of evolution.

According to McIntosh et al. (1998) a company that acts like a living organism will naturally be a *learning organization* which absorbs and reacts to information in an evolutionary manner. Companies that are conceived of as machines, rather than living organisms, are unlikely to be aware of external shifts and relationships.

## 2.4 Knowledge and Learning Issues

Even if in different way, knowledge has always been relevant for the good performance of business; actually, the kind of relevant knowledge to develop and maintain competitive advantage has changed over time (Laszlo, 2001). Until 1950s

when scientific management was dominant, successful companies focused on improving their internal processes in order to gain efficiency.

With the increase in competition and expansion of the economy made it necessary to focus on the market, the industry, the consumers in order to learn more about the environment. In this perspective, the contribute of Porter (1980) about competitive had a great impact in the 80's. Anyway this view reflects a reductionism and mechanistic scientific paradigm that is portrayed in the business metaphors of the jungle and machine.

The machine metaphor applied to an organization does not consider its human character and reduces it as a static system. As organizations are human activity systems that reflect the purposes, values, expectations and emotions of the people that comprise them, a more appropriate metaphor for the organization is a living organism, that makes explicit the dynamic complexity of organizational life (Lazslo, 2001).

The organizations of the 21st century, the emerging evolutionary corporations, call for Business knowledge (Laszlo, 2001), that comprises an understanding of the organizational environment and draws insight from the sciences of complexity in order to implement strategy for innovative value creation. In the era of CAS management (Clippinger, 1999a), survival and competitive fitness depend on the speed with which knowledge embodied in the flows and interactions of the organization is made explicit and recombined into emergent models.

The central role of knowledge in contemporary management is widely discussed in the well-known field of knowledge management and in particular in the two generations (McElroy, 2000) of KM. First generation focused on knowledge *sharing* with the aim to transfer and distribute existing organizational knowledge, usually through technology; the second generation focused on knowledge *creation* – how to satisfy organizational needs for new knowledge, usually through processes of *learning*. Following the second generation of KM, learning has become the main sources of sustainable competitive advantage (Senge, 1993). According to the same author, the process that creates value in the business world is learning through *collaboration*, that is *organizational learning*. Knowledge and innovation are the results of collaborative processes that create the conditions for creativity and synergy. This is the vision of a *learning organization*, which, in words of Peter Senge (1993), is a place where:

*“people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together “*

Few years later Garvin (1993) defined the learning organization as *“an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights”*.

Others definitions of learning organizations may be gathered in literature: *“an entity learns if, through its processing of information, the range of its potential behaviours is changed”* (Huber, G. P., 1991) or *“Organizational learning occurs through shared insights, knowledge, and mental models...and builds on past knowledge and experience”* (Stata, 1989)

According to Lundvall & Johnson, (1994) the main reason why learning has become more important is the relations between Learning and Change. Rapid Change implies a need for Rapid Learning, and those involved in rapid learning impose change on the environment and on other people. In the Learning Economy, innovations and their *time-to-market* will be more and more critical as knowledge depreciates as quickly as the products in which is embedded. This is leading to the need to accelerate the renewal and to increase the effectiveness of individual's and organization's competences and learning processes.

#### **2.4.1 Competence Obsolescence and Lifelong Learning**

One of the main consequences of the knowledge revolution currently unfolding, is the continuous decrease of the half-life of any employee's base of expertise; this phenomenon is well known as *competence obsolescence* and it is mainly referred to managerial competencies.

Human capital is an important input factor in research & development, which is in particular emphasized by endogenous growth theory (e.g. Romer, 1990). High-skilled workers are of crucial importance for the diffusion of new technologies in the various sectors of the economy (Bartel and Lichtenberg, 1987).

Economic theory particularly focuses on the causes of the upgrading process in the labour market in the ‘trade versus technology’ debate.

Whereas e.g. Wood (1994) states that international specialisation is the driving force behind the increasing skill intensity of the economies in the Western world, many other authors see technological developments and in particular the diffusion of information technology as the main determinant of the increasing skill intensity (e.g. Autor, Katz & Krueger, 1998 and Machin and Van Reenen, 1998). Green et al. (2000) find that in particular problem-solving skills, communication and social skills and computing skills are becoming increasingly important in many jobs, whereas the market price of manual skills declines. These shifts in the skills demanded in many jobs can be related to the organizational changes that accompany the diffusion of ICT.

Both the upgrading of the skill level and shifts in the type of skills demanded may deteriorate the skills workers acquired in the past. This refers to the notion of the *half-life* of a worker’s human capital described as “the time after completion of professional training when, because of new developments, practicing professionals have become roughly half as competent as they were upon graduation to meet the demands of their profession” (Dubin, 1972).

Several studies indicate that all kinds of human capital obsolescence distinguished occur in practice. It may occur due to technological or organisational innovations that change the skills demanded for a particular kind of jobs.

Obsolescence of human capital might, however, both lower the productivity of the working population (e.g. Neuman and Weiss, 1995) and the labour market participation of workers with obsolete skills (e.g. Van Loo et al., 2001). It could therefore cause a slow down of productivity at the firm level as well as the macro level.

In particular Neuman & Weiss (1995) found that particularly high-skilled workers who are employed in high-tech sectors may suffer from the obsolescence of their human capital, as indicated by the effect of experience on workers’ wages. The results of their analysis confirm this expectation, indicating that the returns to education depreciate faster in high-tech sectors of industry.

McDowell (1982) measured the rate of human capital obsolescence for seven academic disciplines by the age profile, and found that knowledge in physics and chemistry becomes more rapidly obsolete than in humanities.

Bartel & Sicherman (1993) showed that it is unexpected technology shocks that induce skill obsolescence among older workers, measured in terms of a higher

probability of retirement. On the other hand, a more continuous flow of gradual changes in the skills demanded due to technological developments stimulates workers to invest more in additional training, which reduces the risk that their human capital becomes obsolete.

Aubert, Caroli & Roger (2004) found that the diffusion of information technology (IT) and the related organizational changes are a major cause of skill obsolescence, which they measure in the employment inflows and outflows of the various age groups in three occupational sectors (managers, clerks and blue colour workers).

In general technological and organizational change decreases early exit from the labour market, as these workers continuously invest in learning (Bartel & Sicherman, 1993). Obsolescence of human capital probably belongs to the heart of the economic challenge the western economies face: to realize the transformation towards a knowledge-based society by means of *lifelong learning*.

The remedy that is most commonly prescribed for the skills and competence obsolescence is to make additional investments in human capital, and this is generally known as lifelong learning. Actually, if workers in changing organizations are continuously updating their skills to meet the changing requirements, they should be no more at risk of losing their jobs than workers in more stable organizations.

The idea of learning throughout life can be traced back to *Solon* and to Greek classical philosophy. It was a basic premise of *Socrates* that learning should be a continuous lifelong process and that inquisitiveness constitutes the basis of knowledge and self development. Lifelong Learning is an evolving, even evolutionary concept which is immediately linked to social change and education policy and to educational philosophy and practice.

In a society where globalization, technical progress and communication technologies underline the essential value of human capital, the concept of lifelong learning reinforces the importance of the processes of acquiring and updating knowledge and competences.

Lifelong learning can be defined as a continuously supportive process which stimulates and empowers individuals to acquire all the knowledge, values, skills, and understanding they will require throughout their lifetimes and to applying them with confidence, creativity and enjoyment in all roles, circumstances and environments .

Lifelong Learning was generally found to comprise the following connected elements (Kokosalakis and Kogan, 2001):

- *focus on learning*, rather than teaching, and linked to learning for both professional development and self-fulfillment. This emphasis implies that LLL will be demand- rather than supply-driven;
- *broad access* in terms of social class, age, gender and ethnic groups. This entails flexible delivery and alternative modes of learning;
- *creation of knowledge and skill base* for a competitive economy in the age of the 'knowledge' or 'information' society and rapid change in technologies and labour markets.

It could be not enough simply to extend traditional education throughout life, new methods are needed.

Investments in Lifelong Learning generally focuses on *formal* training, rather than *informal* one even if it is clear that workers learn all the time, and not just during periods of formal training. This has implications for the analysis of lifelong learning as a remedy for human capital obsolescence, but also for the way in which obsolescence itself is conceived (Allen and De Grip, 2007).

The rhetoric of Lifelong Learning speaks of shifts:

- a. from discipline to domain-based programmes,
- b. from teaching to learning processes,
- c. from directed to negotiated curricula and
- d. from knowledge to skills;

LLL also implies a renewal of the traditional role of the teacher, especially in higher education, that shifts from someone who possess and transmits knowledge to someone who assists and facilitates the process of learning. The objective for the teacher and the learner alike is that the latter acquires the skill of independent learning and become a 'reflective practitioner'. The teacher function is to help learners to learn how to retrieve, systematize and synthesize information, use prior experience, present and summaries results and reach sound conclusions.



## 2.5 Conclusions

As soon as changes become faster, more and more markets will experience a fundamental shift from *knowledge-driven* to *learning-driven* competitive dynamics, in which people with imagination, ability to learn fast, change and cope with uncertainty will become the most important strategic assets.

As a consequence, Management has to combine a good deal of craft, namely experience, with a certain amount of art, as vision and insight, and some science, particularly in the form of analysis and technique. The creation of such a kind of human capital entails fundamental paradigm shifts in the way knowledge is produced and in the nature of the learning strategies and processes.

Implementing lifelong learning, embracing education, training and adult learning (Commission of the European Communities, 2006), are some of the main needs of a knowledge-based economy where it is not knowledge in itself that makes the difference, rather it is the ability to apply it effectively which creates the basis for pursuing a knowledge based competitive advantage (Romano, et al., 2005).

Since Education is one of the ways in which moral values and positions are developed in society, a transition to sustainability may require some changes in the educational programs (Clayton & Radcliffe, 1996). Milbrath (1989) suggests that educational institutions should focus on helping people learn *systems thinking*, futures design, creativity, values inquiry, and ethical reasoning.

In particular, management education, dedicated to the development of the talent for the business world, should reflect the emergent evolutionary paradigm both in processes and contents. It has an important role to play, at two levels at least.

First, the techniques and methods being taught and research should lead to a general improvement in managerial modes, and therefore to optimized economic growth. Second, the soft elements integrated into the curricula should raise awareness of the role of managers in society as regards the objective of creating more social cohesion inside and outside private, public, and not-for-profit organisations (Cornuel, 2005).

Contemporary business education fails to fulfil this new need; actually it should facilitate the development of the knowledge, skills, values and attitudes that are strictly related to evolutionary management (Laszlo, 2001). Banathy (1996) highlighted a distinction between *maintenance* and *evolutionary* learning.

Maintenance Learning is adaptive and it implies the acquisition of standard methods, and rules of dealing with known and predictable events. This kind of learning is, according to the author, appropriate during periods of socio-cultural stability.

On the other hand, Evolutionary Learning is more innovative and it allows the learner to cope with uncertainty and change, and to face co-evolutionary human systems. This kind of learning is a more appropriate learning approach during bifurcation points.

In general, Business Schools and the other educational systems have been focused primarily on maintenance learning and the creation of knower that knows a lot about existing business knowledge and approaches. But the new scenario and global challenges call for evolutionary learning and the empowerment of learners capable of generating new knowledge and processes to respond to the changing socio-cultural environment (Laszlo, 2001).

Recent studies about complexity theory suggest that management education should be based on integrated, holistic approach, rather than rational and reductionism paradigms as in the past. Business education programs should satisfy the current need to develop creative problem solvers, self-organized learners, managers of complexity, and cross-cultural leaders, encouraging self-motivation and introducing self-organized learning methodologies (Laszlo, 2001).

### **3. RESEARCH METHOD**

#### **3.1 Introduction**

This Chapter describes the logic underlying the present research work, presented in five points, as highlighted below.

*Research Questions.* The problem statement draws the proposal of an Interdisciplinary Approach to Business Management Education that should be suitable to the complexity that management has to deal with, and the methodology design is developed following a general and two secondary research questions.

*Research Strategy.* As the problem statement leads to the definition of a general and two secondary research questions, the study is characterized by the adoption of a mixed strategy that relies on the adoption of a *multiple descriptive case study* (Yin, 1994) and on a literature searching (Bell, 1999) about Management Education with a particular focus on the main MBA programs.

*Research Design.* This section defines the process of collecting, analyzing and interpreting the case-related observations, points the chosen units of analysis, explaining the logic links between data and propositions and the interpretation criteria.

*Validation of Research Design.* The criteria followed to evaluate the research validity are the proper ones of Social Science Research: Construct Validity, Internal Validity, External Validity, Reliability. The convergence of multiple sources of common patterns, the replication logic of the multiple case strategy and the iterative mode allowed by the nature of the case, together with the purpose to create an ordered list of instructions, with a precise and well organized set of different resources related to the research steps, represent the methods exerted to strengthen the validity of the work.

### 3.2 Research Questions

As stated above, the objective of the present work is to define and describe an Interdisciplinary Approach to Business Management Education that should be suitable to the complexity that management has to deal with. The achievement of the presented objective has been conducted under the guide of a primary research question, that is:

**Research Question:** *How can we identify and define the characteristics of a complexity approach to Business Management Education?*

The previous research question leads to the identification of two secondary questions that are:

Sub-Question 1. *Which are the managers' educational needs in the actual complex scenario?*

Sub-Question 2. *Which are the main drawbacks of the traditional approach to Business Management Education?*

In order to answer the first question, a descriptive case study (Yin, 1994) based on histories has been conducted, involving three examples of organizations that had the ability to survive and succeed in the present complex environment. The details of such a research strategy will be deeply explained in the following paragraphs of the present chapter.

The answer to the second question has been gathered through a literature searching (Bell, 1999) about developments in Business and Management Education, with a particular focus on the mismatch between the design of the major MBA programs and the real managers' educational needs. The main sources of information adopted are books, journals and Internet sources and the results of this part of the study will be illustrated in chapter 5.

### 3.2.1 General Road Map and Study propositions

Each study proposition is important to give a direction of the overall study and they come from the research questions and from the theoretical background of this research.

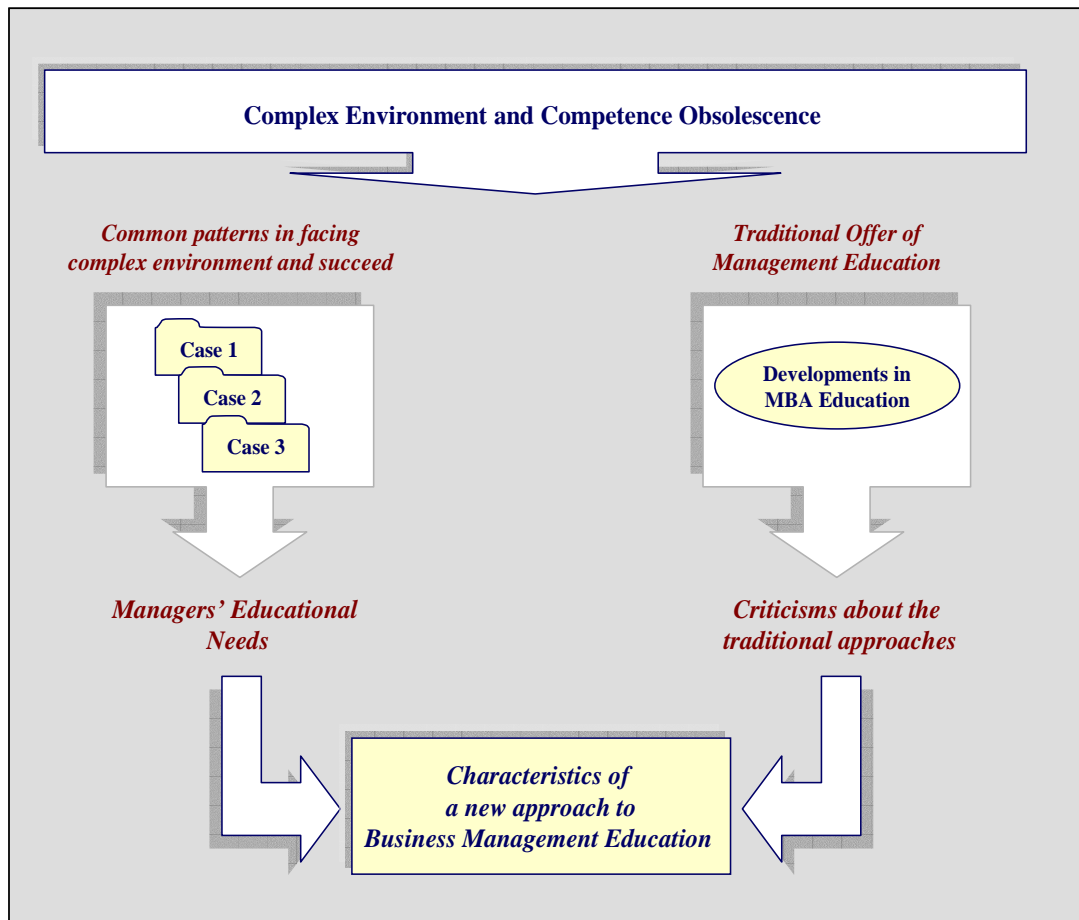
*Proposition 1.* The *complex environment* and the resulting emergence of *competence obsolescence*, mainly referred to managerial competencies, imply the need to rethink the approach to management education.

*Proposition 2.* The educational needs of a business manager can be identified through the common patterns followed by firms that was able to succeed in the actual complex scenario.

*Proposition 3.* The actual offer of Management Education can be represented by the recent developments of Educational Institutions and MBA programs.

*Proposition 4.* Common patterns followed by successful organizations and the criticisms about MBA education can lead to the identification of the characteristics of a new educational approach to Business Management, based on complexity hints.

The propositions above frame the conceptual model represented in the following figure:



**Figure 3.1: Research Conceptual Model**

In order to define a roadmap of the present work, the following steps can be identified:

*Step 1 – Identification of Managers' learning needs.* It is based on a descriptive multiple case study that deals three examples of organizations that had the ability to survive and succeed in the present complex environment; these organizations are McKinsey, 3M and ABB. Other interesting cases are shortly presented in order to highlight and reinforce the common patterns of the main three cases. The aim of the first step is answer the first sub-question of the present work.

*Step 2 – Identification of the main weakness of the actual offer of management education.* This step aims to answer the second sub-question and it is based on literature searching about management education, with particular attention to the main MBA programs.

*Step 3 – Definition of the characteristics of a new approach to Business Management Education.* This steps directly depends on the deliverables of the previous two steps, and it also relies on some basic concepts of complexity approach and on the main guidelines coming from Constructivism Theory and Problem-based Learning.

The rest of the present chapter is mainly referred to the methodological choices in order to answer the first sub-question.

### 3.3 Research Strategy

Social Science Research can be conducted adopting different kinds of research strategy. A common misconception is that case study is appropriate for the exploratory phase of an investigation and that surveys and histories are appropriate for the descriptive phase (Platt, 1992). The more appropriate view of these strategies is that each strategy can be used for different purposes: exploratory, descriptive, or explanatory. Actually, the choice of the research strategy depends on (Yin, 1994):

- the type of research questions,
- the control that the researcher has on the events
- the degree of focus on contemporary or historical phenomena.

<i>Research Strategy</i>	<i>Form of Research Question</i>	<i>Requires control over behavioural events</i>	<i>Focuses on contemporary events</i>
Experiment	How, why	yes	yes
Survey	Who, what, where, how many, how much	no	yes
Archival Analysis	Who, what, where, how many, how much	no	Yes/no
History	How, why	no	no
Case Study	How, why	no	yes

**Table 3.1: Different kinds of Research Strategy (Source: adopted from Yin, 1994)**

As stated in the previous section, the second sub-question of the present research will be addressed through a literature searching about Management Education, whose conclusions will be fully presented in chapter 5.

In order to answer the first sub-question the adopted research strategy is the “descriptive case study” that traces the sequence of events over time and discovers key phenomena in the units of analysis.

Several definitions of the Case Study as a Research Strategy already exist; Schramm (1971) argued that “the essence of a case study is that it tries to illuminate a ‘decision’ or set of decisions: why they were taken, how they were implemented, and with what result”. Yin’s definition (Yin, 1994) of case study strategy clarifies that a case study “ investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”.

This choice of Case Study as the Research Strategy to answer sub-question 1 can be justified discussing the three conditions stated above:

- The research question of the present work is aimed at the design of a framework and it is introduced by a “how” that is more likely to deal with links needed to be traced over time, rather than frequencies. Establishing the “how” of a human situation is a classic example of the use of case studies.
- As in this case relevant behaviours cannot be manipulated and the analysis refers to contemporary events, case study remains the more suitable strategy as it is represented in table 3.1.

The adoption of the case study is also justified by the versatility of such a strategy, as its application is recommended even when the objective is to *explore* and *illustrate* certain topics in a descriptive mode (Yin, 1994).



### 3.4 Research Design

There is not a unique definition of a Research Design; intuitively it refers to an action plan for getting from the initial set of questions to a set of conclusions (Yin, 1994). Philliber et al. (1980) refer to Research Design as a blueprint of the research, dealing with the questions to study, the relevant data and how to analyse the results.

The Research Design of the present work can be described analysing the following components:

- *Units of Analysis*
- *The logic linking data and propositions*
- *Interpretation criteria*

#### 3.4.1 Units of Analysis

This component of the Research Design refers to the definition of what the case is and which are the criteria to choose it.

In order to design a case study and to define its units of analysis, it is necessary to make a distinction depending on the nature of the case study itself. A primary distinction is between *single* and *multiple* case study (Yin, 1994); in the present work multiple cases are going to be used to address the first sub-question. The evidence of multiple case is often considered more robust (Herriott and Firestone, 1983) than single case, even if the choice between single and multiple case designs may remain in the same methodological logic. As a matter of fact, the choice of a multiple case design may be guided by a *replication* logic; each case must be carefully selected so that it either predicts similar results (a *literal* replication) or produces contrasting results but for predictable reasons (a *theoretical* replication).

The second distinction is between *embedded* and *holistic* case studies; Yin (1994) refers to the first type when the same case involve more units and subunits of analysis and suggests the holistic design when the relevant theory underlying the case study is holistic itself. The second type is used in the present work as the units of analysis refer to organizations considered as a whole and focusing on how these

organizations works and why they succeed in the actual complex scenario. As a consequence data collection will be address the need to highlight organizational policies and outcomes, rather than individual behaviour or perceptions.

### **3.4.2 Data Collection**

Data collection for case studies may rely on several sources of evidence (Patton, 1987) that can span from documents, archival records, interviews, direct and participant observation, and physical artefacts. The choice among the different sources depends on their strengths and weaknesses and on the real possibility to gather them. The following table, adapted from Yin (1984) shows the main strengths and weaknesses of the different sources of evidence:

<i>Source of Evidence</i>	<i>Strengths</i>	<i>Weaknesses</i>
<b>Interview</b>	<i>Targeted</i> – focuses directly on case study topic <i>Insightful</i> – provides perceived causal inferences	<i>Bias</i> - due to poorly constructed questions <i>Response bias</i> <i>Inaccuracies</i> - due to poor recall <i>Reflexivity</i> – interviewee gives what interviewer want to hear
<b>Documentation</b>	<i>Stable</i> – can be reviewed repeatedly <i>Unobtrusive</i> – not created as a result of the case study <i>Exact</i> – contains exact details of an event <i>Broad coverage</i> – long span of time, many events, and many settings	<i>Low Retrievability</i> <i>Biased selectivity</i> – if collection is incomplete <i>Reporting Bias</i> – reflects unknown bias of author <i>Access</i> – may be deliberately blocked
<b>Archival Records</b>	<i>Same as for documentation</i> <i>Precise and quantitative</i>	<i>Same as for documentation</i> <i>Low Accessibility</i> - due to privacy reasons
<b>Direct Observations</b>	<i>Contextual</i> – covers context of event <i>Reality</i> – covers events in real time	<i>Time consuming</i> <i>Selectivity</i> – unless broad Coverage <i>Reflexivity</i> – event may proceed differently because it is being observed <i>Cost</i> – hours needed by human observer
<b>Participant Observations</b>	<i>Same as for direct observations</i> <i>Insightful</i> - into interpersonal behaviour and motives	<i>Same as for direct Observations</i> <i>Bias</i> - due to investigator's manipulation of events
<b>Physical Artifacts</b>	<i>Insightful into cultural features</i> <i>Insightful into technical operations</i>	<i>Selectivity</i> <i>Availability</i>

Table 3.2: Six Sources of Evidence (Source: adapted from Yin, 1994)

As stated above, the first research question leads to the adoption of a descriptive case study based on histories: the units of analysis are represented by three examples of organizations that had the ability to survive and succeed in the present complex environment. In this research, the contextual use of different sources of data (Kidder, Judd, 1986) is carried out through the adoption of:

*a. Archival Records:* the main source of evidence is represented by organizational records, such as charts and budgets of a period of time, and records and data collected in previous studies. Archival data used in this work are both quantitative and qualitative information.

*b. Documentations:* different kinds of documents are considered to corroborate evidences in the present research, such as written reports of events, formal studies and academic articles of the same cases under study.

The use of multiple sources of evidence should allow the development of *converging lines of inquiry* (Yin, 1994), a process of triangulation (Patton, 1987) that can be achieved from several points of view. The present study relies on data triangulation, referring to data sources, and on theory triangulation, referring on different perspective on the same data set.

### **3.4.3 Data Analysis**

The analysis of the presente case evidences mainly relies on the development of a *case description* and the *theoretical orientation*.

The first strategy refers to the development of a case description that may be useful in to identify the appropriate casual links to be analyzed.

Theoretical orientation consists in following the theoretical propositions that led the case study; as Yin (1994) argues, the objectives and the design of the case study are strictly related to some theoretical propositions that can be adopted as a key or perspective in analysing collected data.

Linking data to proposition can be done in different ways; Campbell (1969) suggests the idea of “*pattern-matching*”, whereby several pieces of information from the same case may be related to some theoretical propositions.

A special type of pattern-matching is known as *explanation-building* and its goal is to analyze the case study data by building an explanation about the case (Yin, 1982). Explanation-building is characterized by a iterative process according to which the final explanation of the whole case is driven by a series of steps:

- Making an initial theoretical statement or proposition about social behaviour;
- Comparing the findings of an initial sub-case against such a statement or proposition;
- Revising the statement or proposition;
- Comparing other details of the case;
- Again revising the statement;
- Comparing the revision to the facts of a second, third or more sub-cases;
- Repeating the process as many times as is needed.

Explanation-building is a suitable strategy also when it occurs in a narrative form: such narratives should reflect some theoretically significant propositions.

### **3.5 Validation of Research Design**

Kidder and Judd (1986) suggest four tests to be used to evaluate the quality of a social research: they are construct validity, internal validity, external validity, and reliability.

#### **3.5.1 Construct Validity**

Research Constructs are abstract concepts associated with phenomena or behaviour that the study is intended to measure; the “operational definition” of a

construct is referred to the set of procedures used to handle and manipulate it. Social Science Research requires generally to be validated through the successful measure of the theoretical constructs: so the degree of accurateness of the translation of the research constructs in well representative variables on which the researcher has gathered data is the validity of the construct, that is to say “how well is the construct operationalized” (Hoyle, Harris, Judd, 2002).

For Case Studies the validation of the construct is sometimes particularly hard, due to the risk to fail in developing a sufficiently operational set of measures, especially when personal judgement are employed to collect data (Yin, 1994).

In order to achieve validity of construct some expressed strategies have been presented in literature. The first and main strategy relies on the consideration according to which variables are likely to capture the construct if different ways of measuring the same constructs give similar results. So employing multiple operational definitions, that is multiple ways of measuring, and then comparing them to see whether they seem to measure the same thing is the first recommended action (Hoyle et al, ie). Moreover the use of a Key Informant to review step by step the case report could be both a further source of evidence and a test for the preliminary as well as for the final findings.

Consistently with the construct validation strategy, the present work relies on the convergence of *multiple sources of evidence* (Patton, 1987), mainly *archival records* such as charts and budgets of a period of time, and records and data collected in previous studies; *documentation*, like articles about the organizations, internal projects deliverable, written reports about the organization events, publications about the organizations outcomes downloadable from the official websites or journals, newspaper clippings and other articles appeared in the mass media.

### **3.5.2 Internal Validity**

Internal Validity concerns the extent to which conclusions can be derived from the causal effects of one variable on another; it is mainly adopted in experimental research rather than in descriptive studies as the present one. Yin (1994) extended the adoption of internal validity to the broader problem of making

inferences, and referring to the specific case study method, he suggested *pattern-matching* and *explanation-building* as the analytic modes to apply it.

As described in the previous paragraphs, during the phase of data collection the present work followed a *pattern-matching model*. The replication logic of the multiple cases provided the basis for a cross-cases analysis: the patterns of explanation of each one may be compared with the others following the replication mode. Finally the findings of the cross- case analysis will be compared and general and comprehensive conclusions has been traced. Furthermore, the present study followed also the Yin *explanation-building model* of the case study with an iterative mode; following his guidelines the final explanation of the overall case has been driven by a series of iterations.

### 3.5.3 External Validity

External Validity refers to the extent to which the study's findings are generalizable beyond the considered case (Yin, 1994). A common criticism moved to case studies is that is very hard to generalize from one case to another, even if the analyst try to select a "representative" set of cases. The critic can be avoid generalizing findings to theory (Jacobs, 1961), in other words relying on an *analytical* generalization.

Adopting an analytical generalization an investigator tries to extend a particular set of findings to a wider theory; in other words, a previously developed theory is used as a template for the comparison of the empirical results of the case study. The suggested replication logic to be applied is represented in the present work by its multiple case nature, as explained before.

Furthermore the present study is based on archival research, that benefits from the non reactivity of the research procedures, that drive a "naturalness seeking" (Tunnell, 1977).

### **3.5.4 Reliability**

Reliability has the objective to ensure that the same procedures adopted by another investigator can lead to the same findings and conclusions. The first prerequisite to gain reliability is to document all the steps and procedures of the study, so that a later investigator could repeat the same list of instruction to arrive at the same results.

In order to ensure reliability, the present study has been conducted filling an articulated database of procedures, documents, both from the literature review and from the specific cases, and results. The systematic collection of the investigator's notes could represent an useful handbook for the reuse of the cited resources.



## **4. LESSONS LEARNED FROM CORPORATE WORLD: THREE HISTORIES**

### **4.1 Introduction**

The aim of this chapter is to answer the first sub-question of the present work that is: *How can we identify the managers' educational needs in the actual scenario?*

According to the characteristics of the 21st century context, managers are expected to nurture a complex amalgamation of technical, functional and socio-cultural skills to cope with the new paradigm. They are increasingly conceived as pillars and architects of organizational competitiveness, linking people, opportunities and resources (Chapman, 2001). Accordingly to this view, companies are more than a collection of individuals and individual capabilities can rarely succeed in isolation (Ghoshal and Bartlett, 1997).

Patterns followed by successful global companies can give an indication of the effectiveness of new managerial approaches centred on the “human dimension” of the organizations, and can highlight the real educational needs of a business manager.

As shown in chapter 3, the analysis of the cases mainly relies on the development of a *case description* adopting a *theoretical orientation*. Theoretical orientation consists in following the theoretical propositions that led the case study; as Yin (1994) argues, the objectives and the design of the case study are strictly related to some theoretical propositions that can be adopted as a key or perspective in analysing collected data. In this case, such theoretical propositions are:

- a) *Knowledge can be considered the new strategic organizational asset to continuously adapt to change and to survive in complex environment (Ghoshal and Bartlett, 1997)*
- b) *Knowledge is generated in the context of application (Gibbson et al., 1994)*
- c) *Firms interact with external sources of knowledge, as suggested in the complexity approach (Allen, 2001; Arthur et al., 2001).*

The following paragraphs refers to the case description of three global companies: McKinsey & Company, Minnesota Mining & Manufacturing Corporation (3M), and Asea Brown Boveri (ABB).

McKinsey & Company is a privately owned management consulting firm that focuses on solving issues of concern to senior management in large corporations and organizations<sup>1</sup>.

3M, formerly Minnesota Mining and Manufacturing Company until 2002, is an American multinational conglomerate corporation with a worldwide presence<sup>2</sup>.

ABB is a multinational corporation headquartered in Zurich, operating mainly in the power and automation technology areas. ABB is one of the largest engineering companies as well as one of the largest conglomerate companies in the world<sup>3</sup>.

At the end of the chapter a cross-cases description will be presented and, as anticipated in Chapter 3, the educational needs of a business manager will be identified through the identification common patterns followed by these three companies.

## **4.2 The Mckinsey Case**

### **4.2.1 Overview**

Today McKinsey has over 7,500 consultants in 90 offices across 51 countries. They help solve strategic, organizational, operational and technological problems, for some of the world's largest organizations. Clients include three of the world's five largest companies, two-thirds of the Fortune 1000, governments and other non-profit institutions. McKinsey also performs pro bono engagements for a number of charitable organizations and government agencies worldwide. 'Forbes' estimated the firm's 2005 revenues at \$3.8 billion in its list of largest private companies.

The firm was founded in Chicago in 1926 by James O. McKinsey who was a professor at the University of Chicago that pioneered budgeting as a management tool.

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<sup>1</sup> Available at [http://en.wikipedia.org/wiki/McKinsey\\_%26\\_Company](http://en.wikipedia.org/wiki/McKinsey_%26_Company)

<sup>2</sup> Available at [http://en.wikipedia.org/wiki/3M\\_Company](http://en.wikipedia.org/wiki/3M_Company)

<sup>3</sup> Available at [http://en.wikipedia.org/wiki/ABB\\_%28company%29](http://en.wikipedia.org/wiki/ABB_%28company%29)

Marshall Field's became a client in 1935, and soon convinced James McKinsey to leave the firm and become its CEO; however, he died unexpectedly in 1937.

Marvin Bower succeeded James McKinsey and with the help of the New York partners, he resurrected the New York office and named it McKinsey & Company. While he always gave James McKinsey credit for the firm's success, Bower established many of its guiding principles.

Bower determined that this group of “efficiency experts” needed to become a firm of professionals, with standards of personal integrity, technical excellence, and professional ethics. Only then, he believed, would the firm be able to attract and develop associates of outstanding ability and clients of stature and importance (Ghoshal and Barlett, 1997). At the heart of these values was the “one firm” principle that required all consultants to be recruited and advanced on a firm wide basis, all clients to be treated as McKinsey responsibility, and all profits to be shared from a single firm pool. Bower believed strongly that only by operating in this way could McKinsey ensure that its professional standards, its commitment to clients, and its spirits of partnership would be maintained.

Top management in the most effective learning organizations placed an enormous emphasis on establishing institutionalized systems for recruiting the best talent in their firms. McKinsey's recruitment system is legendary, with the top graduates from the best business schools around the world consistently ranking the firm as their first-choice employer.

#### **4.2.2 Organization**

McKinsey is formally organized as a corporation, but functions as a partnership; its managing director is elected for three years by the firm's senior shareholders, titled directors. Each managing director can only serve for three terms. Several committees develop policies and make critical decisions. Geographically based McKinsey operates under a practice of “up or out,” in which consultants must advance in their consulting careers within a time frame, or else are asked to leave the company.

A particular aspect of McKinsey's practice is that a conflict of interest could arise as different teams of consultants might work for direct competitors in the same industry. This works to the company's advantage, as it does not require it to rule out working for potential clients; furthermore, knowing that a competitor has hired

McKinsey has historically been a strong impetus for companies to seek McKinsey's assistance themselves. The policy also means McKinsey can keep its list of clients confidential. However, because of this there is great emphasis placed on client confidentiality within the firm, and consultants are forbidden to discuss details of their work with members of other teams. Consultants are also prohibited from serving direct competitors unless they wait three or more years between the date they cease serving one competitor and begin serving the next. In some cases, consultants are forbidden from ever serving a competitor.

#### **4.2.3 History**

In 1926 James O. McKinsey founded the firm<sup>4</sup>. He was determined to help senior management in American companies solve their most important business problems and in reorienting themselves to thrive in a turbulent business environment.

In 1933, the arrival of Marvin Bower provided James O. McKinsey with a strong advocate and a fellow visionary. Bower believed that management consulting should be held to the same high standards for professional conduct and performance as law and medicine. Following Mac's early death, Bower began to carefully shape the firm into its present form by insisting on "management consulting" instead of "management engineering".

World War II profoundly affected the American business landscape, and McKinsey did its commitment to "*one firm*" concept. The top management believed that only by remaining a single organization, rather than a loose confederation of offices, the firm could simultaneously deliver the best possible client service. This principle allowed and allows viewing the consultants as a global talent pool that can be drawn on as needed to provide the best service to the clients, regardless of location.

In 1950s due to the emergence of a more highly integrated world economy, McKinsey established its first international office in London. In the U.S. and abroad, McKinsey acquired a robust portfolio of new clients, including major government and military organizations, top conglomerates, and several key defence contractors.

In 1960s many major American and European companies reached beyond their own borders, and sought McKinsey's advice on how to organize as conglomerates. As a

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<sup>4</sup> Available at <http://www.mckinsey.com/aboutus/wherewestarted>

result, McKinsey began to expand its international presence. It established offices in the Netherlands, Germany, Italy, France, and Switzerland. In 1964 McKinsey also launched the McKinsey Quarterly that is its most innovative work on management theory to business leaders worldwide.

The 1970s proved to be McKinsey's most challenging decade, forcing it to learn some important lessons. They discovered that their growth in the 1960s had threatened their client relationships. So they took a hard look at their processes for selecting and evaluating consultants and at the quality of their knowledge. One outcome of this process was a substantial investment in *knowledge development*, particularly in their key areas of expertise, strategy, and organization.

In 1980s, business leaders made *value creation* and cross-border competitiveness a priority, which intensified merger and acquisition activity. And technology raced ahead, demanding new investment. As the business leaders of the 1980s were challenged to meet these new priorities, McKinsey felt the need to ramp up its ability to support them. It expanded the scope of its recruiting building knowledge in order to increase its breadth and depth of experience as well as the diversity of its consulting staff. It also invested heavily in codifying its knowledge and making it accessible across the firm, laying the foundation for the true global network that McKinsey is today.

The unprecedented globalization of the 1990s redefined the parameters of business. McKinsey was called upon to restructure entire industries. It flourished in the expanding economy, doubling to over 5,000 consultants and expanding into nearly 20 additional countries by 1999. It also established the McKinsey Global Institute (MGI) whose mission is to help us understand fundamental economic issues of consequence to McKinsey's clients, while providing economists and management with important "micro-based macro" views on the global economy. By the mid 1990s, nearly 20 percent of work was performed by consultants on short – or long term transfer to another office, moves that were inevitably designed to develop or deploy individual consultants' specialized knowledge or expertise (Ghoshal and Bartlett, 1997).

In 1992, after close to 60 years with McKinsey, Marvin Bower retired, but the firm continues to honour his philosophy.

#### **4.2.4 Lesson learnt from 1970s**

In the mid-1970s McKinsey's growth of the previous half century began to slow, as it had increasingly become compartmentalized into local offices and it was focused on developing deep and enduring relationships with clients rather than exploiting its own knowledge assets. After several years of stalled growth and internal turmoil, McKinsey's partners recognized that the firm could no longer succeed simply by building strong relationships with clients and assigning intelligent generalists to increasingly specialized problems.

When senior partners realized that competitors such as Boston Consulting Group began to make strong inroads into McKinsey's markets, the firm strongly invested huge efforts to build a truly integrated and interdependent organization able to develop and diffuse knowledge rapidly. The firm found that by forcing partners to take on the role of professors, they began to articulate and document knowledge that had long been tacit.

In order to face BCGs threat, it would have to develop "T-shaped consultants": individuals who supplemented their broad generalist perspective with an in depth "spike" of specific industry or functional expertise.

*John Stuckey, a director in McKinsey's Sydney office, was engaged to develop a financial services growth strategy for one of Australia's most successful companies. He had at his disposal few consultants with financial industry expertise, so he relied on McKinsey's knowledge network to support a relatively inexperienced local team through the initial stage of the study. To get started, Stuckey identified a three-persons team of available associates and began assembling a group of specialists and experts who could act as consulting directors to the team. The team of three young associates began scanning McKinsey's directories for leads on new ideas, core documents, and designated experts; they tapped into the Practice Development Network (PD Net) which contained over twelve thousand documents representing the processed knowledge and generalized insights developed by the firm's different practice areas. To identify internal McKinsey experts, they had access to the Knowledge Resources Directory, a small book that listed all firm experts and key documents titles by practice area. At the end of this first phase, the team convened a workshop designed to keep client management informed, involved, and committed to the emerging conclusions. The result of such an experiment was excellent and what is interesting in this story is that none of*

*the three young associated nor the engagement director had any significant experience in the financial services industry (Ghoshal and Bartlett, 1997).*

McKinsey worked hard to overlay a *one-firm* philosophy over its local offices; its consultants dispersed around the world quickly learned that the knowledge and expertise they needed to serve their clients resided not only in their offices. Supported by norms of mutual assistance, no associated hesitated to contact other consultants in some other offices. McKinsey began organizing around client service teams, a firmwide core of consultants who develop a detailed understanding of a clients and its problems over a long period.

#### **4.2.5 Developing Skills and Abilities in McKinsey**

The lesson learnt in 1970s led McKinsey to the decision that the partnership must invest much more intensively in the development of its bright young recruits to become *T-shaped* consultants. According to McKinsey philosophy, specialized industry knowledge or functional expertise acquired through formal training and focused experience has to be completed by the horizontal generalist problem-solving skills. This is the most important characteristic that distinguishes McKinsey from its competitors. Employees learned that these attributes were best acquired through the intensive counselling and mentoring relationships in the firm insiders.

*The focus on developing the skills and abilities of an exceptionally bright and highly motivated group of young recruits was reflected in the career of Warwick Bray, a young Australian systems engineer. During his first three years, he developed a real interest in the telecommunications industry and worked on several studies relating to the impact of deregulation on key companies. Besides developing this industry spike, Bray was also becoming a more effective consultant, largely as a result of an intensive coaching process that began the moment he was assigned to his first engagement team.*

*It was firm practice for the engagement manager (EM) to sit down each associate to discuss and agree on a personal development objective that the individual would work on during the study. In addition to the routine day-to day coaching Bray received at the midpoint and end of each engagement, he also received detailed feedback and advice from the EM. Through this process, over the course of several*

*studies, the young associate gradually developed his ability to recognize core issues, apply various problem-solving approaches, divide responsibilities, and integrate work.*

*Beyond this intensive on-the-job coaching, Bray received more continuous support from his assigned partner-level mentor with whom he met quarterly to review his overall career progress and offer advice on his personal and professional development. After several years he came up for election to partner, and he needed to work on developing a very different set of skills and abilities (Ghoshal and Bartlett, 1997).*

On the other hand, the skills required to lead McKinsey were different again; the role of organizational leader required an ability to balance the need to maintain a sense of dynamic disequilibrium within the organization. This delicate balance was difficult to achieve, since it required an exceptional ability to make excitement and challenge an integral part of the work environment.

In the end, McKinsey has converted a strong commitment to organizational learning into a powerful competitive tool to assert its intellectual leadership in the market and to internally reinforce its organization. This is a capability that allows everyone in the company to capitalize on its vast intellectual capacity (Ghoshal and Bartlett, 1997).

McKinsey is characterized by an extraordinary investment in personal coaching to develop the skills necessary to meet its standards for creative yet disciplined frontline consultants. McKinsey's huge pool of candidates for entry positions and its thorough recruiting process ensure that almost all new consultants have the native intelligence, motivation, and personality to succeed in their roles. Yet only one in five will become partner, and fewer than half the partners will become directors.

#### **4.2.6 Conclusions**

In McKinsey, cross-offices personnel transfers are very common, either on short-term assignments or longer-term relocations. McKinsey consultants learn very soon that their personal effectiveness and long-term survival depends on their ability to build effective personal networks. Partnership is offered only to those who develop an expertise and a network of colleagues who recognize and draw on that knowledge to help their clients.



At the heart of McKinsey's success there were several characteristics but we underline the following two:

- It invested a lot in developing the expertise of its people.
- It established the tools, processes, and the relationships necessary to support horizontal flows of information throughout its worldwide organization to link and leverage individual knowledge and embed it in a collective process of shared learning.

Finally, McKinsey had created a free flow of knowledge across organizational boundaries, and made it the primary source of its competitive advantage.

Furthermore McKinsey tried to formalize its non-hierarchical relationships, by using the industry and functional specialization groups to reinforce the informal linkages that existed among industry and functional specialists, often isolated within their individual local offices. Supported by the information-transferring infrastructure, these overlaid relationships gradually took on the same importance as the traditional geographic office connections. Partners were assigned practice leadership roles for each of the industry sectors and centres of competence; full-time practice coordinators were hired to monitor the quality of information flows and help consultants access relevant expertise wherever it existed. McKinsey formalized the development of cross-unit practice specialties that provided the framework for knowledge dissemination and learning.

At the heart of these processes there's a huge need of trust, but it cannot be quickly imposed on an organization; it must be built through the way people are selected and the relationships developed. During decades of emphasizing the "*one firm*" concept, McKinsey has built a culture in which mutual respect and shared trust characterize the partners' relationships with one another. To protect the openness, trust, and personal integrity, is an important qualifying criterion for election to the firm's management group. The result is a reinforcing environment that ensured alignment and mutual support.

## **4.3 The 3m Case**

### **4.3.1 Overview**

In 2000 (Achtmeyer, 2002), 3M reported sales revenues of \$16.7 billion madding more than 60,000 products. Nearly 35 percent of its total sales, or about \$5.6 billion, came from products that had been introduced during the prior four years, and another \$1.5 billion came from products introduced during 2000. These revenues stemmed from 3M's six business segments:

- industrial (tapes, abrasives, and adhesives);
- transportation graphics and safety;
- healthcare;
- consumer and office;
- electro and communications;
- and specialty materials.

All six business segments were profitable in 2000. Asia Pacific, Europe, and Latin America achieved double-digit volume growth. Non-U.S. business represented 53 percent of total net sales and 63 percent of total operating income.

3M had identified 21 established and new strategic brands an more than 75,000 3M employees worked to create more than 500 new products every year. In 10 years between 1985 and 2000 3M earned a top-10 ranking in Fortune magazine's annual survey of "America's Most Admired Corporations".

During 1985-2000, 3M also appeared on the Fortune top-three rankings for innovativeness more often than all other companies except Rubbermaid. Additionally, in 1995 3M was awarded the National Medal of Technology, the U.S. government's top award for innovation.

Current management has continued to embrace and expand these policies and philosophies, believing innovation to be the cornerstone of 3M's future success. (Achtmeyer, (2002).

<b>3M AT A GLANCE</b>	
<b>Worldwide sales:</b>	\$22.9 billion.
<b>International sales:</b>	\$14.1 billion (61 percent of company's total).
<b>Countries:</b>	<ul style="list-style-type: none"><li>• Companies in more than 60 countries</li><li>• products sold in nearly 200 countries.</li></ul>
<b>Employees</b>	<ul style="list-style-type: none"><li>• More than 75,000 worldwide.</li><li>• 3M employs mostly local nationals. Fewer than 300 3M employees worldwide are Foreign Service Employees not residing in their home countries.</li></ul>
<b>Plant locations:</b>	145 worldwide.
<b>Sales office locations:</b>	169 worldwide.

**Table 4.1: 3M at a Glance**

### **4.3.2 History**

Founded in 1902, the Minnesota Mining & Manufacturing Corporation (3M) can be represented through the following milestones<sup>5</sup> :

In the early 1920s the world's first waterproof sandpaper was developed and in 1925 Richard G. Drew, a young lab assistant, invented masking tape – an innovative step toward diversification.

In the decade 1930-1939, technical progress resulted in Scotch® Cellophane Tape for box sealing and soon hundreds of practical uses were discovered. The company expanded sales, employment and facilities — and paid dividends every year. As the decade ended, 3M had five diverse and businesses: abrasives, masking tape, cellophane tape, roofing granules and adhesives.

In 1940s, during the war, 3M found hundreds of industrial uses to expand its adhesives business. 3M product innovations ranged from nonwoven materials to vinyl electrical tape. 3M™ Sound Recording Tape revolutionized the entertainment industry.

In the 1950s, 3M introduced several new electro-mechanical products. 3M introduced its first stock purchase plan for employees, established the 3M Foundation to

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<sup>5</sup> ([http://solutions.3m.com/wps/portal/3M/en\\_US/our/company/](http://solutions.3m.com/wps/portal/3M/en_US/our/company/)):

expand its philanthropic programs and dedicated the first building at 3M Center in St. Paul, Minn., to house the Central Research labs.

In the 1960s Dry-silver microfilm was introduced, along with photographic products, carbonless papers, overhead projection systems, and a rapidly growing health care business of medical and dental products. Spurred by the idea that products developed to fit local needs would be most successful, 3M continued to expand international operations. The company's first research laboratory outside the United States opened in Harlow, England, in 1963.

In 1970s 3M's technology base continued to expand — and so did its businesses. 3M employees continued to find new ways to fulfill customer needs.

In 1980s 3M mainly focused on quality. A 3M scientist used an adhesive that didn't stick to create "temporarily permanent" book markers — and a whole new product category. Post-it® Notes became a worldwide best seller, which created a whole new category in the marketplace and changed people's communication and organization behaviour forever.

In the 1990s, sales reached the \$15 billion mark. 3M continued to develop an array of innovative products.

#### **4.3.3 McKnight philosophy**

A significant change was introduced in 3M when W. McKnight raised to the top of the company in 1920s, as he developed a management philosophy in perfect contrast with the leading-edge practices and principles emerging at the time and that were considered to be responsible for 3M's ability to innovate consistently. In particular William L. McKnight joined Minnesota Mining and Manufacturing Co. in 1907 as an assistant bookkeeper and he quickly rose through the company, becoming president in 1929 and chairman of the board in 1949 (Ghoshal and Bartlett, 1997).

William L. McKnight encouraged 3M management to "*delegate responsibility and encourage men and women to exercise their initiative*"; his belief in encouraging individual initiative, risk-taking and the freedom to fail, enabled 3M to manage many diverse businesses and continue to accompany 3M in the 21st century.

His basic rule of management can be summarized in his following statements:

*"As our business grows, it becomes increasingly necessary to delegate responsibility and to encourage men and women to exercise their initiative. This requires considerable tolerance. Those men and women, to whom we delegate authority and responsibility, if they are good people, are going to want to do their jobs in their own way".*

*"Mistakes will be made. But if a person is essentially right, the mistakes he or she makes are not as serious in the long run as the mistakes management will make if it undertakes to tell those in authority exactly how they must do their jobs".*

*"Management that is destructively critical when mistakes are made kills initiative. And it's essential that we have many people with initiative if we are to continue to grow."*

*"What is about a business that we can decide at the top of the company that could not be decided just as well and much faster by those running the business if they had the same information?"*

#### **4.3.4 3M versus Norton**

3M traced his history in parallel with his rival in the abrasive market, Norton Company; in particular they represent two example of different path that implied to different results. At the beginning Norton was the giant and 3M was the emerging challenger, but starting from 1950s 3M became more and more powerful, and his sales became higher than Norton's ones.

The main reason of such different paths relies on the different approach to management adopted by the two companies. As a matter of fact, Norton followed the doctrine of systems-based professional management, based on divisional structure, the adoption of financial control systems, and the development of strategic planning systems. In other words, the top management of Norton pursued a strategy of growth through acquisitions while driving for profitability by monitoring the performance of its strategic business units against their defined portfolio roles.

In contrast, 3M's approach appeared very simple, without using all the techniques introduced in that period; while Norton was developing elaborate structures

and systems to help top management plan strategic objectives, allocate scarce resources, and control activities, McKnight was introducing an “organizational climate that stimulated ordinary people to produce extraordinary performances”. It was a management philosophy that focused on recognizing the potential of each individual employee. While 3M seemed to be a disorganized experimentation, Norton developed as a more rational, logical and organized company, routinely acquiring companies to build the diversity it was never able to generate internally.

By the 1990s, the entrepreneurial initiative of generations of ordinary people in 3M had created a portfolio of over 100 core technologies, and despite its size and the maturity of many of its businesses it continues to grow through individual initiative. At the foundation of everything in 3M is a deep, genuine belief in the ability of the individual; surrounding it are a series of organizational policies and management practices that build on and leverage that basic belief.

Despite of the disorganized experimentation, 3M maintains large aggregated organizational units and it formally has a bureaucratic structure as Norton or others traditional companies; the difference lies in how such units are perceived and how they are managed. Top management believed that each project team had the responsibility to create the working environment that would stimulate and support each individual to become self-motivated. This recognition, when coupled with an underlying belief in the individual, led to a radical decentralization of resources and responsibilities.

The strong philosophy of radical decentralization of resources and delegation of responsibilities also reflected the way in which 3M has built its research and development resources and capabilities in more than one hundred laboratories spread throughout the company. Located close to the frontline project teams that drive entrepreneurial activity, these labs continue to close-to-the market innovative traditions established by pioneers Okie and Drew.

In companies like 3M, the organizational context of discipline is very different from the culture of control and compliance that permeated Norton. In an environment where people enjoy more freedom, they go beyond the need to follow directives and conform to policies.

3M provided virtual lifetime employment and encourages promotion from within. Few, if any, managers were hired from outside the company. These policies are reflective of a holistic, ecological approach to human resource management, and reflect a unified approach to community, employee and company (Zosel, 2002).

Trust was a clear element in the culture of 3M, where a strong trusting relationship between senior managers and frontline managers provided the context for individual initiative, while a shared confidence among those who worked together across organizational boundaries framed the environment for inter-unit support. 3M was able to implement a philosophy based on a belief in the individual, stimulating ordinary people to produce extraordinary performances, to continually renew themselves and the organization.

#### **4.3.5 Conclusions**

As a consequence of the mentioned philosophy, 3M has a strong commitment to developing knowledge and expertise of its employees; its model starts with the individual development objectives and assessment process that every new employee must go through. That objective is supported through internal business courses, company-sponsored participation in external educational programs, and developmental assignments that provide experience in activities such as preparing financial statements and participating in audits.

Anyway 3M recognizes the limits of formal training programs, and has built a major part of its knowledge development into the day-to day operations of the organization, encouraging knowledge transfer and application throughout the organization. At 3M training and development play a major role in building the different competency profiles required, but its approach is far from the traditional model built around standardized training programs.

### **4.4 The Abb Case**

#### **4.4.1 Overview**

ABB, formerly Asea Brown Boveri, is a multinational corporation headquartered in Zürich, Switzerland, operating mainly in the power and automation technology areas.

ABB focuses on two core businesses<sup>6</sup>: Power Technologies and Automation Technologies and the ABB Group of companies operates in around 100 countries and employs around 135,000 people. ABB Power Technologies serves electric, gas and water utilities as well as industrial and commercial customers, with a broad range of products, systems and services for power transmission, distribution and automation.

ABB Automation Technologies blends a robust product and service portfolio with end-user expertise and global presence to deliver solutions for control, motion, protection, and plant integration across the full range of process and utility industries.

The most recent outcomes can be synthesized as follows:

<b>ABB AT A GLANCE</b>		
	<b>2007</b>	<b>2006</b>
Orders received	34,348	27,048
Revenues	29,183	23,281
Earnings before interest and taxes (EBIT)	4,023	2,557
Net income	3,757	1,390
Stockholders' equity (Dec 31)	10,957	6,038
Total assets	31,001	25,142
Capital expenditure	756	536
Research and development expense (core divisions)	1,173	1,066
Earnings before interest and taxes/Revenues	13.8%	11%
Net cash from operating activities	3,054	1,939
Number of employees	112,000	108,000

**Table 4.2: ABB at a Glance**

Furthermore, all 19 teams are self-directed, making decisions within their charters without seeking management approval. There is 100% self-inspection and employees evaluated by peers, customers, and suppliers.

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<sup>6</sup> Available at <http://www.abb.com/>



#### **4.4.2 The ABB Organization**

ABB is a classic global matrix, framed by strong business and geographic managements. And despite such a structure, ABB has managed to grow from \$ 17 billion in revenues in 1988 to \$ 34 billion in 1995.

Structurally, ABB is built around a global matrix; at one level, the company can be viewed as a \$ 34 billion global behemoth. But CEO Barnevik prefers to describe ABB as a federation of 1200 small national companies spread across the globe. Each of these frontline companies is quite small; most of them in turn are divided into four or five profit centers, each employing about fifty people and generating \$ 10 and \$ 20 million of revenue. But under Barvenik's principle of radical decentralization, each company is structured and treated as a distinct business and as a free-standing legal entity. Between the frontline of these 1200 little companies ant the top management is the level of regional segment/business area managers, who form the geographic and business arms respectively of ABB's global matrix.

In contrast to the eight of nine layers of management in its predecessor companies, in ABB there is only one intermediate level between the Group Executive and the 1200 frontline company managers. And, in keeping with the principle of radical decentralization, staff support at this level of management is extremely thin.

#### **4.4.3 From Westinghouse to ABB**

Historically a part of Westinghouse's transmission and distribution business, the unit had a record of modest profitability and almost no growth. But after it had been acquired by ABB in 1989, its revenues had grown by more than 45 percent in four years, while its profitability had improved from 70 to 99 percent, cycle time had been cut by 70%, and inventories had been slashed by 40%.

Don Jans had spent 2 years in Westinghouse, the last three as the general manager of the relays business. Yet it was who had driven the radical performance improvement of the same unit. Also Joe Baker, his geographic boss in ABB's matrix organization, was a Westinghouse's veteran of thirty-nine years. How could the same people, managing the same business, achieve such radically different results with a change of corporate ownership? Baker stated:

*“In Westinghouse, we recruited first-class people and then wasted all the investment by constraining them with a highly authoritarian structure. In ABB, we spent much of our first year thrashing out how we would work together. ABB’s senior management spent a huge amount of their time in day-to-day intensive communication, taking the message to the frontline managers that they were responsible, that they need to initiate, to question, and to challenge. In the end, it was this culture of delegated responsibility and intensive communication that made this organization work.”* (Ghoshal and Bartlett, 1997).

Westinghouse’s problems had two root causes: over diversification that had spread the company’s strategic and managerial resources too thinly, and over decentralization that had insulated top management from the true direction and performance of businesses.

To overcome the first problem, Kirby divested 15 major businesses and withdrew from many of the company’s activities outside the United States.

To deal with the second problem, he implemented a comprehensive strategic-planning system at the corporate level to manage the company’s portfolio of businesses in a more coordinated manner. On the top of this, he institutionalized a system known as Vabastram (Value Based Strategic Management) to guide the company into growth businesses while restoring managerial and financial discipline in the operating divisions. Vabastram was basically a Wall Street play, but its main internal effect was to force managers to take a very short-term view in order to maximize their impact on stock value on a quarterly basis.

For several years, Kirby’s strategy of restructuring operations and recentralizing control yielded good results as inefficient plants were closed, marginal businesses sold, and management attention was focused on cost control.

In this organizational context Jans was offered his first general management job heading the company’s underground distribution transformer business. Driven by the relentless demands of the new systems, he pushed hard on costs but found that after years of cutting, most of the juice had been squeezed from the division. If he was to meet his numbers, the only alternative was to boost prices. So in 1981, in the midst of recession, he increased prices five times in a single year. In 1983, the financial performance of the business had slumped back almost to where it was when he had

begun. Danforth attacked the challenge with energy and a new, more expansionist approach that initially provided some hope for frontline managers like Jans in Westinghouse's traditional businesses. Danforth began a new phase of decentralization, he eliminated a number of layers of corporate staff and greatly simplified the headquarters' review requirements for business units' strategic and financial plans.

In 1986, at the end of Danforth's tenure as CEO, Don Jans was offered to an opportunity to return to a general management job heading the company's relays business based in Coral Springs, Florida. Vabastram was still king and Jans soon found that he had to radically revise his ideas for building the business. As a matter of fact, Westinghouse held off investing in the development of new products, choosing instead to continue manufacturing its traditional electromechanical line.

In 1989, Asea Brown Boveri (ABB), the Swedish power equipment company, made an offer to acquire 45% of Westinhouse's transmission and distribution division, of which the relays business as part. Knowing that ABB already had its own more modern relays operation in the US, Jans and his team members assumed that the old-time Westinghouse managers would be swept aside the takeover. But, on their surprise, ABB invited most of the key people to stay on.

This situation required Jans and his staff to manage in an environment like none they had ever seen at Westinghouse; they felt they'd begun completely new careers, demanding fundamental changes in their business assumptions, organizational practices, and management styles. The context was completely different: at Westinghouse, Jans had five layers of management between himself and the CEO; at ABB there were only two. At Westinghouse, decisions had been top-down and shaped by political negotiations, whereas at ABB Jans found that those on the front line were expected to initiate much more, and that issues were decided on the basis of data and analysis.

Looking beyond the difficulties the business faced in that period, Percy Barnevik, the CEO of ABB, was convinced that the decade-long sag in demand for power equipment would reverse itself as existing power plants in the industrial world became obsolete and as a large group of industrializing countries focused on building the infrastructure for their own entry into the twenty-first century. To achieve this ambition of "conquering the globe" in the power industry, he would have to build a unique organization that could resolve some fundamental paradoxes. On the one hand, the new technologies and economies of scale necessary to meet the expected demand could be developed only by companies operating on a global scale. On the other hand,

because of the high level of the government ownership and control over utilities, companies with a strong national presence and with the flexibility and agility of a small business would garner most of the new orders. The vision of Barnevik for ABB can be summarized as follows (Ghoshal and Bartlett, 1997).

*“We have to be global and local, big and small, radically decentralized with central reporting and control”.*

The small, local, and radically decentralized elements had to become the new organization's foundation, its core; and the big, global, and central reporting and control characteristics had to be the overlays. It was an organization designed to encourage individual initiative and ensure personal responsibility. What this philosophy meant for Jans was a total revolution of his role within the company. Supporting and guiding him in his decisions, Jans had access to a seven-person committee that met three or four times a year and acted as a small local board for his frontline company. With membership drawn from ABB's global relays division, the US power transmission and distribution headquarters, and colleagues running related frontline companies within ABB.

The radical decentralization of resources and responsibilities also penetrated deep into the formal structure. Like most company presidents, Jans quickly restructured his company into five profit centers, pushing responsibility and accountability down deeper into the organization. The philosophy of moving people and ideas beyond their traditional boundaries also touched staff groups. While this structure of decentralized responsibility was a key element of what Dan Jans and his fellow Westinghouse expatriates described as their “rediscovery of management” there was something else that was far less tangible in the new context, something that helped them use their abilities in ways they could only have dreamt about at Westinghouse. It was a management model personified by the new leaders that redefined the very way they thought about their jobs.

From the very first meeting with ABB managers, Jans and his colleagues were swept away by the difference in management style. The two senior ABB executives also sent a strong message that the acquisition would not follow the traditional takeover model in which the parent immediately establishes restrictive strategic and operating boundaries around the acquisition. Moreover Jans was amazed by the fact that he could

approach Barnevik and Linhal as colleagues rather than superiors. As the relationship progressed, Barnevik and other top executives seemed to become even more engaged, in ways that were both challenging and supportive.

Along with their clearly articulated vision about the future of the power industry, Barnevik and Lindahl also conveyed a strong sense of the company's core values. In doing so, they wanted to inspire people to connect with the company's broad mission in a very personal way; to see the company as the means by which they could have a personal impact on issues of major importance in the world. Barvenik and his top team spent an enormous amount of time representing a management approach and operating style that reinforced the organization's belief that individual initiative and personal responsibility were at the heart of the company's philosophy. Nowhere was the new openness of communication more clearly evident than in the contrast between the strategic management processes at Westinghouse and at ABB. Where Vabastram was a top-down, staff-managed, financially driven model that focused managers on short-term operating performance under threat of divestment, ABB relied on an interactive, bottom-up/top-down process that was designed to engage managers at all levels in an ongoing dialogue about how to build and defend long-term sustainable advantage. At the end, they created an organizational atmosphere in which employees felt involved and engaged on an individual basis and at a very personal level.

Beyond the obvious first step of eliminating dozens of underused reporting formats, organizations in reshaping themselves have undertaken a complete overhaul of their systems design to refocus on serving the needs of the frontline managers. ABB undertook such a revolutionary step with the design of its ABACUS system (ABB Accounting and Communication System); developed under the assumption that "every line manager must learn to become his or her own controller" ABACUS tracks thirty-two performance measures that can help frontline managers monitor their business operations. Reports are released simultaneously to manager at all levels within the organization; top level executives receive the same data in the same formats at the same time as those in the individual profit centres, allowing to democratize information. The objective was first to serve the needs of operating-level managers in identifying and diagnosing problems, and secondarily to provide senior management with a means of monitoring performance.

#### **4.4.4 Conclusions**

Goran Lindahl, Percy Barnevik's heir apparent as ABB's chief executive, has long conceived his role primarily as being teacher and coach to those reporting to him. By his own estimate he spends more than half of his time "developing engineers into managers and managers into leaders", a very time-consuming process that requires him to carefully define and manage what he describes as "the framework" within which each individual should be allowed to operate freely. The challenge is gradually to loosen and eventually to remove the boundaries, controls, and restrictions, at which point the individual can be described as a true leader. Lindahl argued:

*"When we have developed all our managers into leaders we will have a self-driving, self-renewing organization"*

ABB is very clear about its expectations of its middle- and senior-level managers. The company's "policy bible" defines their key role as being "to support and coach new managers". It also places a great value on those who become givers – managers who have exceptional ability in attracting and developing talented people as candidates for positions in other parts of the company.

ABB's remarkable success in transforming tired old-line companies into entrepreneurial competitors has caused the company to become an organizational benchmark that many others have tried to emulate. Some have copied the global matrix structure in the belief that it holds the secret to being able to internalize the complexities and contradictions of their operating environment; others have modelled their management systems after ABACUS, diffusing detailed but consistent information deep into organization; and more still have been impressed enough by the philosophy of radical decentralization that they too have created independent frontline operations in which they hope entrepreneurship will flourish.

ABB's statement of its values in the company's "policy bible" defines clearly the expectation that individuals and groups interact "with mutual confidence, respect and trust...and remain flexible, open and generous". These strongly ingrained corporate norms of mutual trust and support have created an environment that encourages frontline managers to reach beyond the bounds of their own formal responsibilities and rewards them for doing so. Top management recognizes and rewards those who are seen as "givers" (managers able to attract and develop talented people who become

internal candidates for other parts of the organization). And ABB's top leaders also explicitly require managers to be "effective team players" as the policy bible puts it.

However, ABB cannot rely on "spontaneous combustion" to drive the intensive knowledge sharing that is required if they are to develop organizational learning as a source of competitive advantage. While the top level context setting and the frontline personal networks can provide the enabling conditions for this vital horizontal process, it is the middle managers who are the best placed to encourage the cross-unit linkages.

#### **4.5 Other interesting cases**

In the previous paragraphs of the present chapter three examples of successful companies have been presented, but there are many other organizations that demonstrated the ability to survive and succeed in the complex actual scenario.

ISS – Integrated Service Solutions is one of the world's largest Facility Service Groups and was founded as a Danish security company; it was founded in 1901 and today operates in 50 countries has more than 440,000 employees and more than 100,000 business-to-business customers. ISS is the consolidator of its industry and has expanded substantially through organic growth and acquisitions. Since 1998, ISS has acquired more than 350 companies and added more than 200,000 new employees<sup>7</sup>. At the heart of ISS's success is an organization composed of small independent units to which employees feel an intense loyalty and where entrepreneurial initiative is allowed to flourish. Beginning in the 1970s, the CEO broke the company's structure, allowing his frontline managers to expand in new areas. To communicate his vision, he created a new service-driven philosophy called the Magic Formula and focused on some small companies per country, focusing each on creating a distinct business built around a specific market segment. If at a glance it seems that ISS has a large aggregated organizational units, the focal point is how the different units are perceived and managed; in ISS, the top management has the responsibility to create the working environment that would stimulate and support each individual to become *self-motivated*.

Skandia is one of the world's leading providers of quality long-term savings solutions. Skandia is active in over 20 countries on four continents. The Skandia Group is owned by Old Mutual plc an international savings and wealth management company

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<sup>7</sup> Available at [http://www.issworld.com/about\\_iss/history/Pages/history.aspx](http://www.issworld.com/about_iss/history/Pages/history.aspx)

based in the UK. Originating in South Africa in 1845, the group has a balanced portfolio of businesses offering asset management, life assurance, banking and general insurance services in over 40 countries, primarily South Africa, Europe and the United States. Old Mutual is listed on the London, Johannesburg and Stockholm stock exchanges, among others<sup>8</sup>. Skandia managed the transition to an Organizational Learning focus by recognizing that it had to compete on its organizational capability to adapt and learn from the emerging companies. Furthermore Skandia tried to attract and retain the best people, as it recognized that competitiveness depends on the value of its knowledge assets. At the heart of Skandia's success was the adoption of a federative organization that emphasized a delegated responsibility and individual initiative; vital to this effort was the ability to create a distributed organization in which information, knowledge and expertise flowed easily.

Intel Corporation is the world's largest semiconductor company and the inventor of the x86 series of microprocessors, the processors found in most personal computers. Founded on July 18th, 1968 as Integrated Electronics Corporation and based in Santa Clara, California, USA, Intel also makes motherboard chipsets, network cards and ICs, flash memory, graphic chips, embedded processors, and other devices related to communications and computing. Originally known primarily to engineers and technologists, Intel's successful "Intel Inside" advertising campaign of the 1990s made it and its Pentium processor household names<sup>9</sup>. The only way Intel had to survive in its business was to recruit the best brains and to invest a lot in training to let them manage the rapidly evolving technologies. With this aim, Intel promotes its own university, offers to its employees a lot of courses and the possibility to have sabbatical periods in order to stimulate them to get more and more knowledge.

Andersen Consulting is a global management consulting, technology services, and outsourcing company; by 2000, Andersen Consulting had achieved net revenues exceeding US\$9.5 billion and had more than 75,000 employees in 47 countries, whereas Arthur Andersen had revenues of US\$9.3 billion with over 85,000 employees worldwide in 2001. Andersen understood that a company can maintain its competitiveness only through the knowledge, skills, and motivation of its employees.

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<sup>8</sup> Available at <http://www.skandia.com/about/index.asp>

<sup>9</sup> Available at <http://www.intel.com/intel/index.htm>



#### **4.6 Common patterns emerging from the cases**

Companies like McKinsey, 3M and ABB created organizational structures drawn on integrated networks, to facilitate the distribution of capabilities and expertise, gathering them through horizontal flows of information, knowledge and other resources.

For example, in McKinsey, cross-offices personnel transfers are very common, either on short-term assignments or longer-term relocations. McKinsey consultants learn very soon that their personal effectiveness and long-term survival depends on their ability to build effective personal networks. Furthermore McKinsey tried to formalize its non-hierarchical relationships, by using the industry and functional specialization groups to reinforce the informal linkages that existed among industry and functional specialists, often isolated within their individual local offices.

3M recognizes the limits of formal training programs, and has built a major part of its knowledge development into the day-to day operations of the organization, encouraging knowledge transfer and application throughout the organization. At 3M training and development play a major role in building the different competency profiles required, but its approach is far from the traditional model built around standardized training programs.

ABB's "policy bible" defines their key role as being "to support and coach new managers". It also places a great value on those who become givers – managers who have exceptional ability in attracting and developing talented people as candidates for positions in other parts of the company.

The main characteristics shared by McKinsey, 3M, and ABB and which guaranteed the survival and success of these firms can be highlighted as follows.

Each of the considered companies has a strong commitment in the diffusion of knowledge and a main focus on *Organizational Learning*. They are characterized by the ability to innovate consistently and rapidly through the ability to be global and local at the same time; these organizations are characterized by a radical decentralization and a strong exploitation of individual initiative.

Management of these companies stimulates people's self-organization rather than rigid control by the board of direction, encouraging bottom-up processes, rather than top-down ones.

The companies adopt an holistic, ecological approach to human resources development and there's a constant balance between generalist perspective and

functional expertise; traditional training is always guaranteed but day-to day operations are considered both important, finding its theoretical relevance in problem solving approach.

The considered organizations invested a lot in developing the expertise of the employee in order to continuously enhance and upgrade their capabilities and to support horizontal flow of information and collective processes of shared learning. A first step in focusing on human resource refers to the recruitment of people who are more skilled, motivated, intelligent, in other words first-class people.

It appears clear that, accordingly to the theoretical propositions mentioned at the beginning of this chapter, knowledge and learning are fundamental key in order to survive and succeed in the complex environment. Knowledge is replacing Capital as the critical scarce resource and companies as McKinsey, 3M and ABB moved from the old doctrine of strategy, structure and systems to embrace a broader philosophy focused on people. In other words the secret of success of the considered companies relies on their ability to self-organize and to promptly gather external or internal knowledge to handle a new and unpredictable configuration of their business environment; in this view, human component and Intellectual Capital cover a strategic role and management has to facilitate the conditions for adaptation and exploration.

<b><i>THEORETICAL PROPOSITIONS</i></b>	<b><i>EVIDENCE FROM THE CASES</i></b>
<i>Knowledge can be considered the new strategic organizational asset to continuously adapt to change and to survive in complex environment (Ghoshal and Bartlett, 1997)</i>	Each of the considered companies has a strong commitment in the diffusion of knowledge and a main focus on <i>Organizational Learning</i> . They are characterized by the ability to innovate consistently and rapidly through the ability to be global and local at the same time; these organizations are characterized by a radical decentralization and a strong exploitation of individual initiative.
<i>Knowledge is generated in the context of application (Gibbson et al., 1994)</i>	There's a constant balance between generalist perspective and functional expertise; traditional training is always guaranteed but day-to day operations are considered both important, finding its theoretical relevance in problem solving approach.
<i>Firms interact with external sources of knowledge, as suggested in the complexity approach (Allen, 2001; Arthur et al., 2001).</i>	The companies adopt an holistic, ecological approach to human resources development. the secret of success of the considered companies relies on their ability to self-organize and to promptly gather external or internal knowledge to handle a new and unpredictable configuration of their business environment; in this view, human component and Intellectual Capital cover a strategic role and management has to facilitate the conditions for adaptation and exploration.

**Table 4.3: Coherence among theoretical propositions and evidence from the cases**

With the attempt to reply to the first research sub-question “*How can we identify the managers’ educational needs in the actual complex scenario*” we can say that the primary educational need for managers is to reduce the lead-time to learning, because of the high rate of change. Furthermore, the current need is to develop:

- creative problem solvers,
- self-organized learners,
- managers of complexity,
- cross-cultural leaders,

encouraging self-motivation and introducing self-organized learning methodologies.

## **5. DEVELOPMENTS IN BUSINESS AND MANAGEMENT EDUCATION**

### **5.1 Introduction**

The aim of this chapter is to answer the second research sub-question of the present work, that is: *How can managers' educational needs be satisfied?*

As globalization enhanced the connection and the communication among people, society and business changed too, generating new and important opportunities and risks for individuals and organisations.

In such a context, management education have a crucial role to play in optimizing the way organizations are managed, with the aim of ensuring the best possible level of growth and success. Cornuel (2005) argues that management education should not stay “out of the societal game”, as in a free economy system continuous growth may allow the system to continue to develop and share a higher amount of wealth. According to the same author, management education has two major roles to play:

- a) the techniques and methods being taught and research should lead to a general improvement in managerial modes, and therefore to optimized economic growth;
- b) the soft elements integrated into the curricula should raise awareness of the role of managers in society as regards the objective of creating more social cohesion inside and outside organisations.

Management education may be oriented by one or more of the following purposes:

- practical purpose, related to the organization's way of functioning and the rules to be adopted;
- cultural purpose, related to the understanding of what is at stake in organisational theory and to its critical application;

- scientific purpose, related to organisational phenomena, concepts, strategic research, etc.;
- professional purpose, related to techniques and models to be used in order to manage a business.

At the end, the particular global environment described before, provides a great opportunity for institutions as business schools, but it also raises a number of challenging issues, particularly for those located in mature countries.

In order to give a real idea of the real offer of Management Education, the following paragraphs refer to the role of Business Schools and the Masters of Business Administration, with a particular focus on their organizations, contents and critical aspects. The chapter will be closed with some considerations that rely on the mismatch between the design of the major MBA programs and the real managers' educational needs.

## **5.2 The Role of Business Schools and MBA Education**

Cornuel (2005) argues that in the 1950s, as much in the USA as in Europe, Business Schools were seen as insignificant by historical faculties such as philosophy, literature, medicine, physics, chemistry, and biology faculties, and their practical aspect was looked down upon. Several years were necessary to give to Business Schools the real legitimacy in the field of education; anyway the legitimacy of business schools should invite reflection on the weaknesses of the institutions in question. An analysis of the functions of business schools and management faculties in universities leads us to observe first of all that they appear above all to be places busy "reproducing" or "miming" reality. Where science faculties describe, management teaching institutions imitate. Business schools have been charged with doing a bad job of meeting the needs of their students and industry for effective education and relevant knowledge (Pfeffer and Fong, 2004).

Business schools have been accused of doing a poor job of educating and preparing their students (e.g., Mintzberg and Gosling, 2002) and a poor job of

producing research relevant to the practice of management (e.g., Davenport, Prusak, and Wilson, 2003).

The most basic and fundamental issue related to Business Schools is to identify the roles that they cover, or should cover, in society; in this sense, many roles can be considered.

One possible function of business schools might be developing relevant knowledge and encouraging critical thought and inquiry about organizations and management. In this role, business schools would provide a critical consideration of business, not only for the business world but also for broader social interests and concerns (Pfeffer and Fong, 2004). Unfortunately, business schools are not currently fulfilling this role in an efficient way; as Trank and Rynes argued (2003), business schools and their faculties “have abdicated the role of scientific, objective observers of business who are willing to engage in public discourse from the perspective of society as a whole”.

In order to satisfy a second role, Business Schools might take the lead in making management a *profession*; this would entail articulating a set of professional values and responsibilities and developing standards of professional conduct organizational or business management. The importance of this kind of normative role can be justified by the definition of a profession which relies on the idea that an expert applies his or her knowledge for the benefit of the clients and, accordingly to a set of professional ethics and standards that justify public trust (Friedson, 2001). Unfortunately, there is little evidence that business schools are enforcers of professional standards and norms of conduct.

Another role for business schools might be the development of students’ *critical thinking* and analytical abilities; the pedagogical approach of *integrative thinking* (Martin, 2002) is based on the idea that problems do not come compartmentalized by subject area and have to be solved through an integrated decision-making process. Again, few schools take an integrative approach to business and business organizations, as a matter of fact, the emphasis is more on discipline-based courses rather than on a process of inquiry and question asking (Mintzberg and Gosling, 2002).

The real problem is that education, including higher education and business education, is increasingly seen as an industry, not as a mechanism for socializing and educating (Pfeffer and Fong, 2004).

With a particular focus on Business Schools, Porter and McKibben (1988) argued that these educational institutions do not prepare for the characteristics of business environments.

### **5.2.1 History of MBA programs**

The Master of Business Administration (MBA) is considered the requirement for managerial position in many corporations and professional services firms.

In the spring of 1908, a meeting between two professors and a famous engineer would change the course of university system history. Frederic Winslow Taylor received a visit from Wallace C. Sabine, the dean of Harvard Graduate School and the Economics Professor Edwin F. Gay (Déry et al., 2006). The meeting concerned the pertinence of implementing a university Management program based on Taylor's works, according to which management could only be learned in concrete work settings. The results of the meeting was the establishment of a school dedicated specifically to Management Education. The Harvard Business School came into being and the MBA (Master of Business Administration) progressively took shape. Stanford introduced the second MBA in 1921; anyway Harvard and Stanford had to face some problems; they had to contend with unenthusiastic sponsors from the business community, skeptical students and cynical university colleagues. Thirty-three students enrolled in the Harvard MBA program in 1908, only eight returned for the second year and four MBA degrees were granted in 1919 (Mintzberg, 2004).

Business Schools then became well established alongside universities and countries (Déry et al., 2006). From about 40 in 1915, the next ten years business school became about 180 (Cheit, 1975); 110 masters degrees were granted in 1920, 1017 in 1932, and 3357 in 1948 (Gordon and Howell, 1959). But the academic quality did not follow the same trend; by the end of 1940s, there was an inability of elite institutions as Harvard, Stanford, Columbia, and Chicago to respond to the call for a new type of manager: business was changing rapidly and the knowledge available not yet.

In the late 1950s, two major studies were commissioned by the Ford Foundation (Gordon and Howell, 1959) and by the Carnegie Corporation (Pierson, 1959) in order to consider the strengths of the American Business Schools; Pierson argued for analytical and rational decision making as the key to management education, on the other hand, Gordon and Howell search for academic respectability. The proposed solution was a



command of analytical and research tools from fundamental disciplines as well as the training in physical and social sciences, mathematics and statistics, combined with the ability to apply these tools to real business problems. The insights coming from these two reports were widely adopted by business schools of that period.

The *lecture method* (Mintzberg, 2004) was introduced in the Harvard MBA and the use of examples became widespread, giving rise to the case study method. Cases had the aim to invite students to analyze a real problem presented by a real businessman, and to write a report embodying a solution. The use of cases increased and gained its success under a new dean of Harvard, Wallace Donham who assumed that cases would be used to introduce theoretical issues; he also believed that the writing of the cases would encourage the generation of theory and the interest of the student.

Management education bifurcated into two directions by the 1960s: some of the existing prestigious schools, such as Wharton, Chicago, and Stanford adopted Carnegie's academic approach, while others relied on Harvard's case orientation that seemed to be more pragmatic (Mintzberg, 2004). In other words, Carnegie's philosophy considered management as a *science*, while Harvard's philosophy viewed management as a *profession*. Since the 1960s a certain standardization has taken place, highlighting a similar composition of courses from school to school and from country to country (Wind, 1999).

In the early 1990s, business schools were said to be out of touch with the real world of business. Again, schools responded by overhauling their curricula — this time by adding more practical skills to their MBA programs.

### **5.2.2 MBA Contents**

The analysis of the major MBA programs reveals that towards the end of the 20th century, business management came to consist of Six Separate Branches (Human Resource management, Operations management or production management, Strategic management, Marketing management, Financial management, Information Technology management).

The biggest debate of the MBA history referred to the contraposition between *generalistic* and *specialized* knowledge, as one school of thought encouraged general knowledge about business conduct, and the other referred on knowledge about issues of

specific industries. The typical business school today is about *specialization*, not integration, of the business functions.

Even if Business Schools was born with the aim to integrate social science disciplines around concerns of “administration”, something goes wrong and they were absorbed into the business functions as finance, entrepreneurship, insurance and business management, marketing, and so on. Soon these functions came to dominate the business schools, around which all the activities were organized, and they became increasingly disconnected from each other (Mintzberg, 2004). The main consequence of this kind of content organization is that students are left with the passive reception of disconnected ideas. Business managers certainly have to understand the business functions, but the practice of business is not the same as the practice of management. Management is about these things but is more than the sum of the understanding of them.

As stated in the previous paragraph, Harvard and Stanford approaches are considered opposite in terms of perspective of management; actually these two business schools have a common point: they converge toward a “business” orientation rather than a “management” orientation. Their students have no management experience and the management they learn takes the form of decision making by analysis, relying on the business functions (Mintzberg, 2004).

Actually, there is a kind of knife-edge in MBA education: on the one hand there is *B*: specialization in the *business* functions, specially for people with little experience; on the other hand there is *A*, for *administration*, meaning management, with programs designed to educate practicing managers in context (Mintzberg, 2004).

### **5.2.3 The Crisis of MBA**

For some the MBA was only a program of study which having gained credibility as a discipline through recommendations aimed at providing knowledge, while for others by definition the MBA could only be at best an imitation of university studies and at the worse a perverse approbation of the excesses of an unbridled economic liberalism (Déry et al., 2006).

In the new millennium the situation has become more complicated since more and more Business School academics are criticizing teaching, especially those of the MBA programs. For some of them the MBA programs condense teaching and this

leaves the door open to instrumental rationality and in the name of efficiency encourages unethical behaviours (Gaujelac, 2005). Others think that the MBA is not really useful (Pfeffer and Fong, 2004) and that it could even be harmful to the performance of businesses which are careless enough to rely on the analytical capabilities of holders of MBA diplomas (Mintzberg, 2004).

Watts (1997) stated that MBA “is the only global qualification, the only license to trade internationally, but Mintzberg (2004) argued that this sentence is nonsense, as management cannot be considered neither a science nor a profession; it remains an integrated part of the practices of everyday living. Out of any doubt managers have to rely on a huge base of knowledge, but according to Mintzberg (2004) MBA programs fail to develop managers and give a false impression of managing, as they can be considered only business education. The author also argued that MBA programs offer “specialized training in the functions of business, not general educating in the practice of managing”.

Porter and McKibbin (1988) considered the curriculum as a useful and logical starting point that provides the structure for the educational delivery system; the point is that conventional management education has too much structure.

It made no sense to continue to adopt the conventional framework that has dominated MBA and the major management development programs (Mintzberg, 2004), that can be viewed as a simple composition of modules about separated functions, as marketing, finance, accounting, and so forth.

In April 2002, the Management Education Task Force of the Association to Advance Collegiate Schools of Business (AACSB) issued a report questioning the relevance of business school courses. One of the main recommendation was to focus more attention on “basic management skills, such as communication, leadership development, and change management and prepare managers for global adaptability.”

Richard E. Boyatzis, Scott S. Cowen, and David A. Kolb (1994), criticized the MBAs orientation, defining it as too analytical, not practical and action oriented; lacked interpersonal skills, communication skills in particular.

### **5.3 The Debate about Business Schools and Corporate Universities**

The challenge of globalization emphasizes the building of societal frameworks which focus on new forms of inter-organizational cooperation and alliances between enterprises and knowledge producers. In this view, the neo-liberal solution must give way to the promotion of learning by people, firms and regions and to creating appropriate learning environments. The main actors of this kind of cooperation are Corporate Universities and Business Schools.

Corporate Universities represent a growing trend in companies and in learning scenario. They originated from the arising of training department into a degree granting branch of major companies. In 1993, corporate universities existed in only 400 companies. In 2001, this number jumped to 2,000 (Hearn, 2002). Corporate Universities are set up for a variety of reasons, that are:

- Organize training;
- Start and support change in the organization;
- Get the most out of the investment in education;
- Bring a common culture, loyalty, and belonging to a company;
- Remain competitive in today's economy;
- Retain employees.

Even if the partnership between Corporate Universities and Business Schools can be successful, it has often generated some conflicts, as these two actors actually are characterized by different perspectives. On the one hand, Business Schools capabilities in terms of contents, know-how, relational network seem not disputable but they are extremely rigid, not changing oriented, with too long term of planning and so not able to satisfy the requests coming from organizations. On the other hand, there are very few Corporate Universities with a significant know-how and necessary infrastructure to operate efficiently.

Business Schools have to be the centre of a network that has enlarged its traditional boundaries through ICTs, to become “meta-planners”, to support flexible teams coming together to develop and diffuse value in the different firms’ network. (Lorange, P., 2002). On the other side, Corporate Universities might be open to the external environment, with flexible infrastructures, and really technology oriented.

In order to answer at the growing demands of learning coming from the economic and social scenario, the basis of the collaboration between Business School and Corporate Universities should be to:

- create *value*;
- develop *new opportunities of learning*;
- *optimize costs* and resources;
- recognize the different *set of competences* developed;

The main challenge in this scenario has represented by the need of realizing a major integration between Business Schools' know-how and the new and interesting request of the Corporate Universities. According to Lorange (2002), the creation of this partnership between Corporate Universities and Business Schools depends on their capability to create partnership, to offer a service of mentoring, and to allow the learning path in a neutral environment.

In a more enlarged view of firm's value chain, the development of new learning process is not only an employee perspective but is always more a need diffused between all the organizations' *stakeholders*.

Partnerships with external actors is a challenge and a necessity of the function of the universities in contemporary society. The partnerships may refer to three major categories:

- a) partnerships with other academic institutions inside and outside each country;
- b) partnerships with the public sector and non government and voluntary bodies;
- c) partnerships with the private sector, namely corporations, companies, banks etc.

In this view the vision should be a Stakeholder University, more flexible than the traditional Business School but more specialized than Corporate Universities, better equipped to face diverse and wide challenges coming from the global environment.

## 5.4 Conclusions

The changing scenario of 21<sup>st</sup> century suggests a wholly different approach to developing managers and it seems necessary to change our concept of the world of management education. In order to think about a better approach to management education, we have to get back to fundamental notions of learning.

Recently, the expansion in business education was achieved by sacrificing part of the educational quality and academic standards as numerous schools sought to sell their reputation and the MBA credential to gain enrolments and revenues (Pfeffer and Fong, 2004).

Management education institutions should adopt a very in-depth change, in order to redefine research, educational content of programs, and the roles of teacher-researchers (Cornuel, 2005). The societal role of business schools has to be reinforced: they cannot remain only “technical units”. The role of managers becomes crucial, and as a consequence, management institutions have to adapt themselves and to be able to make a positive contribution, re-thinking their structures and education processes.

It seems necessary to shift from business education to *management education*, as Mintzerg (2004) strongly argued, managers need to understand and be confident with the business functions that represent the language of business, but it is not enough to gain experience about the practice of management.

Furthermore, Business school needs to create managers with global business capabilities succeed in the global economy (Andrews and Tyson, 2004). It is necessary to rethink teaching and learning to provide future managers and leaders with the perspectives, knowledge and skills that enable organisations to realize the potential value from the workforce and their knowledge.

There are a number of pressing issues facing management education institutions (Hawawini, 2005). First of all, there is the increasing need to introduce soft skills. Business education programs in general are designed considering a large contribution about quantitative management skills and techniques, but managers are increasingly demanding so-called “*soft skills*” that can include the ability to communicate effectively, to collaborate, and to demonstrate some entrepreneurial and leadership qualities. From a wider point of view, soft skills may refer to “societal skills”, as the ability to make ethical business decisions, taking into account corporate social responsibility and sustainable development. Obviously, this second challenge is more

acute, and the effort should be not to create stand-alone courses in ethics and corporate social responsibility, but to incorporate these issues into the standard curriculum.

Another important issue refers to the effects of information and communication technologies on teaching and learning methods. From the side of management education, the characteristics of the new technologies now allow virtual environment that can replace or complete the traditional classroom-based model of education.

At the end, Business schools and the other management education institutions need to activate radical innovation in the human capital creation process for changing not only the *what* of management education, but also the *how* of the process.

The *what* refers to the content of management education, that should be cross-disciplinary. Business schools need to be better integrated with their physical and social science and engineering counterparts (Kochan et al, 2003) and to break the isolation of disciplines within its programs and the integration of functional knowledge.

The *how* refers to the learning approach to be used; it should go beyond the passive transfer of theoretical knowledge and it should encourage the application of practical knowledge. It is necessary to rethink learning to provide future managers and leaders with the perspectives and mental models that enable organizations to be successful in the environment in which they compete. Business schools have traditionally provided a reflective learning space, a place to absorb information and knowledge, but a new learning approach must be problem-based and action oriented.

	<b><i>TREND</i></b>	<b><i>CHALLENGE</i></b>
<b><i>WHAT: Contents</i></b>	<i>Management Education must be multi-disciplinary in contents</i>	<p>The general inclination of the major Business Schools has always been focused on the compartmentalization of education. Focus on specific business function limited the interdisciplinary fertilization (Khalil, 2000).</p> <p>Business schools need to be better integrated with their physical and social science (Kochan et al, 2003) and to break the isolation of disciplines within its programs and the integration of functional knowledge.</p>
<b><i>HOW: Learning Approach</i></b>	<i>Management education now as to go beyond the passive transfer of theoretical knowledge to the application of practical knowledge.</i>	<p>It is necessary to rethink teaching and learning to provide future managers and leaders with the perspectives, knowledge and skills that enable organizations to realize the potential value from the workforce and their knowledge. Business schools have traditionally provided a reflective learning space, a place to absorb information and knowledge, but the new agenda must be practical and action oriented. To enable people to move from the functional business organization to the business leadership, business schools must develop a new approach to teaching and learning.</p>

**Table 5.1: Trends and challenges for management education (Source: adapted from Secundo and Passiante, 2007)**

It appears quite clear that the criticism to the classical approach to Management Education and the definition of the *what* and *how* are perfectly coherent with the claimed need to maximize knowledge productivity and learning productivity in building competencies. Actually, the emergence of competence obsolescence calls for new forms of knowledge architectures and organization, on the one hand, and for learning strategies and approaches that enable lead time reduction, on the other hand.



## **6. TOWARD A COMPLEXITY APPROACH TO MANAGEMENT EDUCATION**

### **6.1 New perspectives on Management Education: hints from Complexity Metaphor**

The rapid changes and increased complexity of today's world put new demands on the whole education system, as there has been generally a growing awareness of the necessity to change and improve the preparation of people for productive functioning in the continually changing and highly demanding environment. Indeed, any strategy for change must contend with the diverse factors affecting the education system, the interactions of its parts, and the intricate interdependencies within it and with its environment. Bar-Yam et al. (2002) considered these problems, and claimed the possibility of using concepts and methods of the study of complex systems for providing direction and strategies to facilitate the introduction of viable and successful changes.

Actually, there are important theoretical and methodological issues for the learning sciences that are raised by what might be called the complex systems framework that provides conceptual perspectives and principles, new methods and insights (Jacobson and Wilensky, 2006).

With the attempt to introduce complexity metaphor's insights, the present work highlights three basic aspects to be adopted in Management Education: *holistic perspective*, *trans-disciplinarity* and *self-organization*, as it is shown in the following figure:

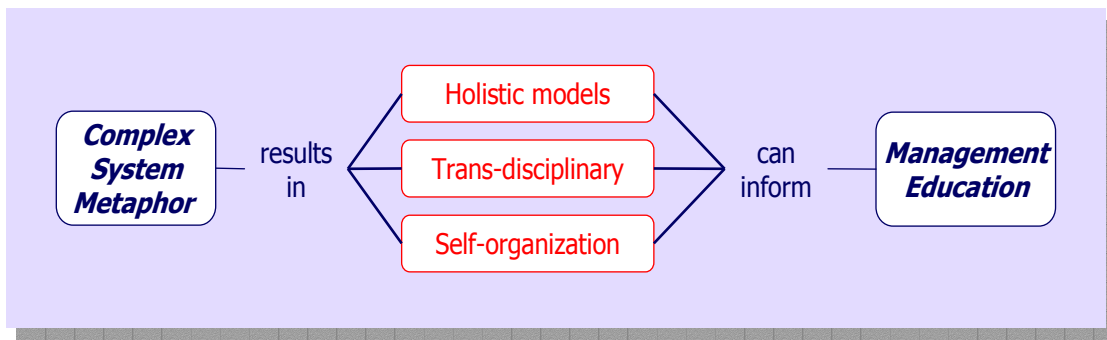


Figure 6.1: Hints from Complexity Metaphor to enhance Management Education

In Complex Theory the *holistic perspective* refers to the *systemic* view of any type of organization, physical, social, biological and so on. The whole system is more than the sum of the parts and only the analysis of the interactions among them allows the knowledge of the phenomenon as a whole. Complex systems cannot be understood by studying parts in isolation: the very essence of the system lies in the interaction between parts and the overall behaviour that emerges from the interactions. The system must be analyzed as a whole.

The field of complexity is considered *Trans-disciplinary*, as it cuts across all traditional disciplines of science, as well as those of engineering, management, and medicine. It focuses on certain questions about parts, wholes and relationships (Sommerer and Mignonneau, 2002) that maintain their relevance for all traditional fields.

Finally, *self-organization* refers to the *adaptive* nature of complex systems: system interacts with the environment: the system reacts to external stimuli by changing and adapting through self-organization.

In the following paragraphs these three characteristics of Complexity Metaphor will be adopted as guidelines to be adopted in Management Education.

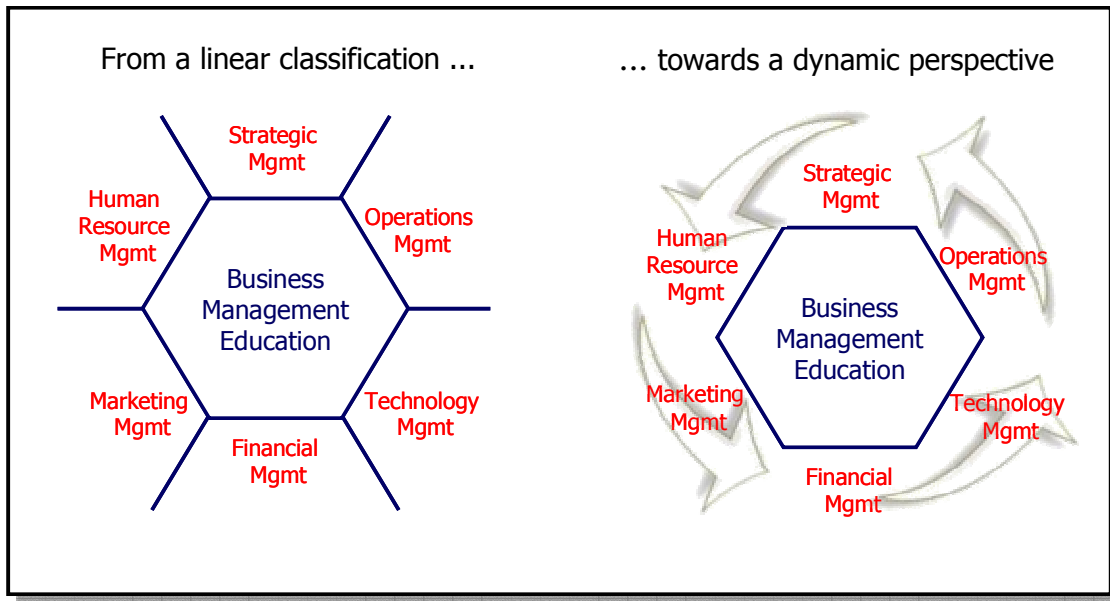
## 6.2 Focus on Holistic representation of knowledge

The adoption of holistic perspective is not new in Management and Organizational Science, because of the well known debate about Mechanistic versus

Organic View (Robbins, 2005). When the organization was conceived as a *machine*, the approach was clearly Mechanistic as management took a micro approach, and the basic challenge was the search for rational, scientific principles for handling men, materials, capital and machines in order to guarantee the precise and efficient scheduling of work. Mechanistic approach was strongly connected with the predictability of the business environment variables, as the trend in demand or the price of materials and products. Anyway, in an environment characterized by increasing organisational complexity, Mechanistic approach appeared quite inadequate and a “General Systems Model” (Bertalanffy, 1972) seemed to be more suitable. In particular, von Bertalanffy highlighted that each organizational systems can be studied as a whole or organism that is affected by its environment and in turn affected its environment. Actually the introduction of *System Thinking* moved the focus on macro issues.

Coming back to the attempt to adopt an holistic perspective in Management Education, the challenge is to consider an holistic view of knowledge, according to which any subject can be considered as a composition of all other subjects. In other words, all disciplines are taken to be parts of one integrated knowledge base and this represents an important premise in order to re-organize the fragmented knowledge about the domain of Management Education.

The traditional approach to Business Management Education is characterized by a discipline-based orientation and it relies on a *linear* classification of knowledge related to the different disciplines of BM: Human Resource, Operations, Strategic, Marketing, Financial, and Technology Management. This reductionist viewpoint is based on the misleading consideration that if one understands the elementary building blocks or subparts, it become possible to formulate problems and infer consequences marching upward in scales. Actually, a dynamic perspective of Business Management domain should break down the rigid and linear classification coming from the disciplines mentioned above and should be focused on a holistic representation of knowledge.



**Figure 6.2: From a linear classification to a dynamic perspective of Business Management Education**

In the 21st century it becomes increasingly difficult to subdivide management into functional categories in this way: more and more processes simultaneously involve several categories and there is a common tendency to rethink it in terms of the processes, tasks, and objects subject to management.

In order to adopt the dynamic perspective shown in the figure above, it is necessary to identify a key concept that concerns all the classical disciplines of Business Management Education and that can be adopted as the basis of an integrative framework of Business Management able to promote a natural way to manage business. As *Business Model* (Rappa, 2001) is largely considered useful to create concepts and tools that help manager to capture, understand, communicate, design, analyze, and change the business logic of their firm, it is suitable to be adopted as a lens through which reorganize Business Management Domain.

### **6.2.1 Business Model as the unifying theme for Business Management Domain**

The term *business model* is a recent addition to the management literature and largely a product of the *dot com* era. It is entirely absent from all the most influential books on organizational design, business strategy, business economics and business

theory through to the mid- to late 1990s. “Logic” and “value” are core words in the literature on business models.

Basically, the emerging consensus is that a business model is an hypothesis of how to generate value in a customer-driven marketplace. The most parsimonious definition of business model is by Rappa (2001): it “spells out how the company makes money”; and Betz (2002) similarly states that it is “an abstraction of a business identifying how it profitably makes money” .

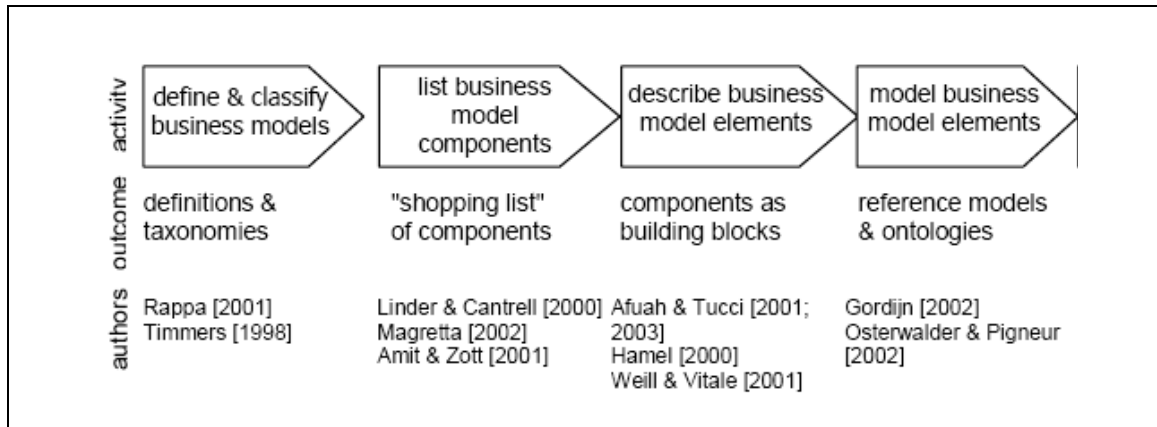
Even if terms as *business model* and *strategy* are often used interchangeably, they are conceptually separated. The business model establishes the principles and axioms on which strategy is built. Strategy follows on from the business model and is targeted to achieve competitive differentiation. To some degree, the business model is the “what” of business innovation and strategy the “how.”

Even today, most work on business models is taxonomic and descriptive, classifying types of business model in lists, heavily derived from multiple case examples. We see an emerging consensus in the most recent scholarly discussions that sharpens the concept and that also brings to the forefront general issues that have largely been peripheral, implicit or assumed without exploration in the management literature, particularly the nature of “value” in a customer-driven world and the implication of the customer-provider-partner dynamic for evolving the principles for designing organizations whose core operations rely on inter-organizational links and partnerships.

In the literature there are very few guidelines for designing a business model. Amit and Zott identify theoretical work on value creation that provides some inputs to business model thinking (Amit and Zott, 2001), that are the same approaches mentioned before.

Williams and Keen (2005) argue that in the growing number of industries that are being commoditized by the forces of deregulation and trade liberalization, global sourcing of capital, capacity and talent, modularity of standardization of component and process interfaces, and coordination technology, there is a rapid shrinkage in the total pool of value to be shared out among competitors through traditional competitive differentiation. In that context, growth leaders look to create new value through a calculus that balances value for the company, the customer and third-party and partner relationships. Here, the business model redefines the axioms and targets of value generation.

Based on an extensive literature review, Osterwalder et al. (2005) proposed five phases in the evolution of business model literature. To track these phases they accounted only for literature that focuses on the business model concept and not on literature merely mentioning business models.



**Figure 6.3: The evolution of "business model"**

Source: Adapted from Communications of AIS, Volume 15, Article 11, "Clarifying Business Models: Origins, Present, and Future of the Concept" by A. Osterwalder, Y. Pigneur, and C.L. Tucci

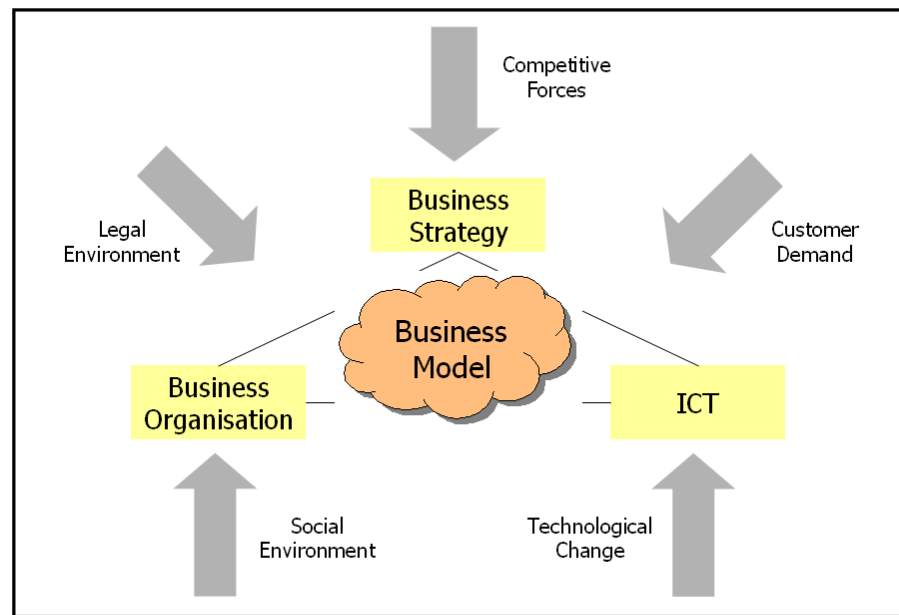
During the first phase, when the term business model started to become prominent, a number of authors suggested business model definitions and classifications (Timmers 1998; Rappa 2001).

In the second phase, authors started to complete the definitions by proposing what elements belong into a business models (Chesbrough and Rosenbloom 2002; Linder and Cantrell 2000; Petrovic et al. 2001; Magretta 2002).

In the third phase detailed descriptions of these components become available (Hamel 2000; Afuah and Tucci 2003).

In a fourth phase researchers started to model the components conceptually. This work led to the proposition of business model meta-models in the form of reference models and ontologies (Gordijn 2002; Osterwalder 2004).

Osterwalder et al.(2005) understand the business model as a building plan that allows designing and realizing the business structure and systems that constitute the operational and physical form the company will take. They call this relation between strategy, organization, and systems the business triangle that is constantly subject to external pressures, like competitive forces, social change, technological change, customer opinion and legal environment.



**Figure 6.4: The linkage among business model, strategy, organization and ICT**

Source: Adapted from Communications of AIS, Volume 15, Article 11, Clarifying Business Models: Origins, Present, and Future of the Concept by A. Ostenwalder, Y. Pigneur, and C.L. Tucci

The Business Model is useful to create concepts and tools that help manager to capture, understand, communicate, design, analyze, and change the business logic of their firm. The main roles that the literature proposes for the business model concept (i.e. for the use of formally described business models) can be divided in four categories of functions, which are:

***Understanding and Sharing.*** Business models help to capture, visualize, understand, communicate and share the business logic. Although a company's business model is a simplified representation of its business concept, it is rarely described explicitly in a conceptual way. Experience shows that in many cases people are not always capable of communicating their business model in a clear way (Linder and Cantrell 2000).

Modern business models are increasingly complex, particularly those with strong ICT and e-business components. The relationship between the different elements of a business model and the decisive success factors are not always immediately observable. Therefore the process of modelling social systems and, in this case, business models help identify and understand the relevant elements in a specific domain and the

relationships among them (Morecroft 1994). In addition, the visual representation of a business model usually enhances understanding. Formalizing business models and expressing them in a more tangible way clearly help managers to communicate and share their understanding of a business among other stakeholders. This capability is particularly important for the dialogue between people with different backgrounds, such as managers and systems architects and engineers.

**Analyzing.** The business model concept can contribute in analyzing the business logic of a company. The business model becomes a new unit of analysis (Stähler 2002). Business models can improve measuring, observing, and comparing the business logic of a company.

**Managing.** Business models improve the management of the business logic of the firm. The business model concept helps ameliorate the design, planning, changing and implementation of business models. In addition, with a business model approach companies can react faster to changes in the business environment. Finally, the business model concept improves the alignment of strategy, business organization and technology. Because business models are quite complex, their success is often based on the interaction of a number of apparently minor elements. This is even more the case since technology increases the range of imaginable business models (Lechner and Hummel 2002).

Having a business model conceptualization at hand that describes the essential building blocks and their relationships makes it easier for managers to design a sustainable business model.

Capturing, mapping and understanding create the foundation for improving speed and appropriateness of reaction to external pressures. A conceptualized business model helps business model designers to modify certain elements of an existing business model (Petrovic, Kittl et al. 2001). This is without doubt essential in an uncertain and rapidly changing competitive landscape. We argued before that the business model concept can serve as a federator among the triangle of business strategy, business organization and technology. In other words, the business model forms a sort of conceptual bridge that makes it easier to align these three. Chesbrough and Rosenbloom (2002), for example, see business models as a mediating construct between technology and economic value.

The business model concept could become an important tool to further develop and improve existing methods of business and IT alignment (Osterwalder and Pigneur



2003).

**Prospects.** Business models describe possible futures for a company. The business model concept can help foster innovation and increase readiness for the future through business model portfolios and simulation. Similar to the argument about improving change and increasing reaction capacities in the firm, we believe that a formal and modular business model approach can foster innovation.

Specifying a set of business model elements and building blocks, as well as their relationships to one another, is like giving a business model designer a box of Lego blocks (Burgi et al. 2004. Amit and Zott (2001) explicitly perceive the business model as a locus of innovation.

Simulating and testing business models is a manager's dream. Though simulation will never be able to predict the future, it is a way of doing low-risk experiments, without endangering an organization (Sterman, 2000). By simulating and testing possible business models, managers will be better prepared for the future. Similarly, in the domain of e-business, Richards and Morrison (2001) compare this kind of simulation tool to a sort of flight simulator that allows building better e-business strategies.

### **6.2.2 The Afuah's Business Model**

The review of the literature about the business models<sup>10</sup> has shown as the Afuah's framework (Afuah, 2004) is the most comprehensive one, exploring how to formulate and execute profitable business; the author provides such a framework for firms that pursue new strategies. In his work, he explores questions such as: What is a new business model? What type of new business model is likely to give a firm a competitive advantage? Are there any "model" of business out there? What is the difference between a new strategy and a new business model? Why do some new business models fail?

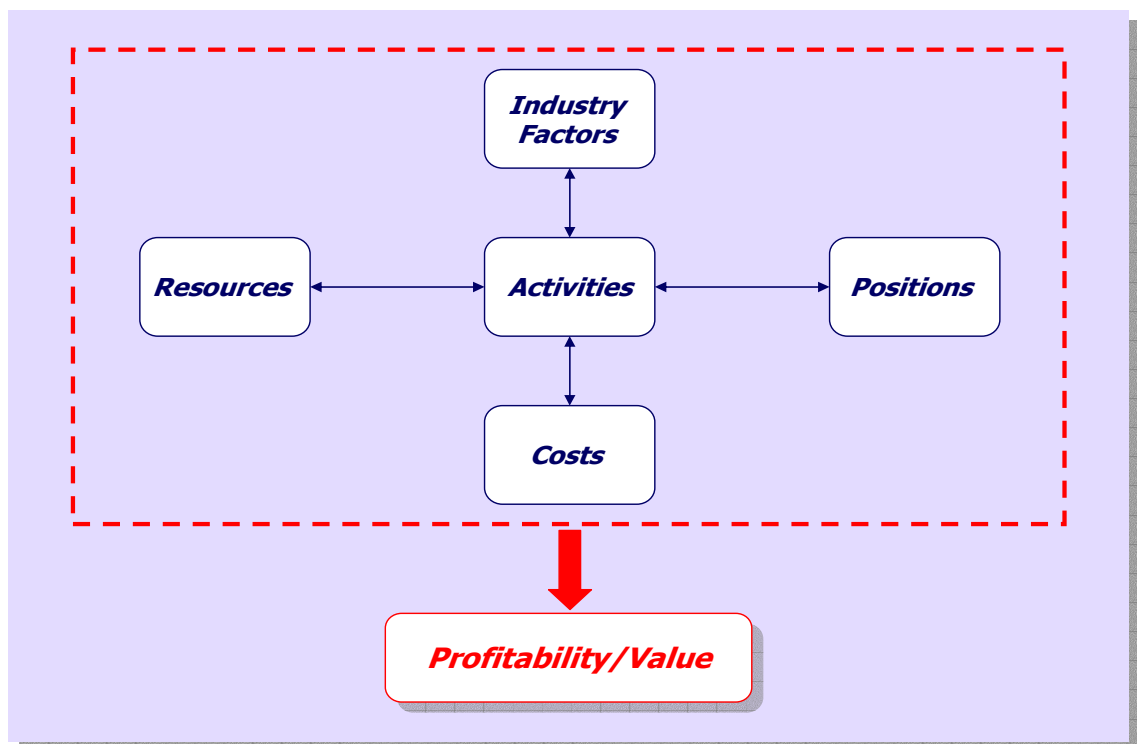
The Afuah's conceptual framework is relatively simple and clear. It refers to the business models pursued by firms that undertake new strategies. Since a business model is a framework for making money, a new business model is a money-making framework for a firm which pursues a new strategy to make money. A firm pursues a

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<sup>10</sup> The literature review about Business Models and the comparison about Business Model's building blocks is fully discussed in Appendix A.

new strategy when it attacks an existing industry (market) by performing some or all of the activities of the industry's value chain differently and effectively or efficiently and is therefore in a better position to offer customers lower cost or better differentiated products than industry incumbents. The activities can result in more than low cost and differentiation. They can also result in the expansion of an existing market or improvement in the positioning of a firm vis-à-vis customers, rivals, potential new entry and complementors. A new business model includes the money making aspects of a new strategy and their translation into profits.

The Figure that follows shows the five major components of a business model (positions, activities, resources, industry factors and costs) together with some of the sources of opportunities and threats.



**Figure 6.5: Afuah's Business Model.** Source: Adapted from Afuah A., *Business Models. A Strategic Management Approach*, McGraw-Hill-Irwin, 2004

**Position.** A firm can keep making money only when customers keep buying its products rather competitor's products. Customers will keep buying products from a firm only if the firm offers them something that its competitors cannot offer, that is if the

firm offers superior customer value. Offering superior customer value is a necessary but often not a sufficient condition to make money. A firm must also be positioned well vis-à-vis its suppliers, customers, rivals, potential new entrants, and complementors. The market segments that a firm decides to pursue, the value that the firm decides to offer to each market segment and how much the firm can price the products are also critical.

**Connected activities.** To offer superior value and put itself in a position to appropriate the value, a firm must perform the activities of its value configuration well. More importantly the activities must be consistent with the type of customer value that it offers, the sources of revenues pursued, the market segments targeted and the pricing strategy. The activities must take advantage of industry value drivers and reinforce each other.

**Resources.** Performing activities requires resources. Where such resources are core to the firm's activities and difficult to imitate or substitute, they can give the firm in question a competitive advantage.

**Industry factors.** The positions that a firm can attain and maintain, the activities that it can perform, the resources that it can acquire and exploit and the costs that it can incur in offering superior value are all a function of the industry and macro environment in which the firm operates. They are a function of the competitive and macro environmental forces that act on industry firms and of the value drivers in the industry.

**Costs.** Irrespective of whether a firm pursues a low-cost or differentiation strategy, the firm must keep an eye on its costs so as to increase the gap between its costs and prices, in other words on profits. Thus, in pursuing the activities that can give it a competitive advantage, it is important to keep an eye on cost drivers such as agency costs.

Actually, the activities that a firm performs, when it performs them and how it performs them are the cornerstones of its business model and play a critical role in positioning it to offer superior customer value and appropriate it. He intends to explore the relationships between these activities and a firm's positions, industry factors, resources and costs.

The author also offers practical techniques for analyzing separately and together all the elements, such as positioning, customers, financing, market targeting, competition, that must mesh in a successful model.

### **6.3 Trans-disciplinary Curriculum**

The field of complexity is considered *Trans-disciplinary*, as it cuts across all traditional disciplines of science, as well as those of engineering, management, and medicine. It focuses on certain questions about parts, wholes and relationships (Sommerer and Mignonneau, 2002).

Applying trans-disciplinarity in management education refers to the introduction of trans-disciplinary curricula, that should break down the “linear” organizations of knowledge and contents that characterize the classical MBA programs, that highlight the tendency to teach bits and pieces of information related to separate disciplines.

The concept of teaching segmented disciplines versus integrated or interdisciplinary curricula is in the centre of the debate on what and how to improve instruction. Segmented disciplines divide knowledge into useful, organized hierarchies of facts and theories that direct research and bring order to our understanding (Tchudi & Lafer, 1996). The disciplines are the long established status quo; however, one of their major weaknesses is that they sometimes limit vision such that a learner becomes an expert in his or her unique corner of the universe, but is unable to speak to others.

According to Meier et al. (1996), students taught within the lecture-based disciplinary system typically have not been able to solve problems that require them to make connections and use relationships between concepts and content. In contrast, cross-disciplinary teaching starts with a topic or problem that requires knowledge of several disciplines in order to find a solution.

Historically, the field of the learning sciences has not been reductively fragmented, but rather has been grounded in multidisciplinary perspectives, enabling learners to acquire knowledge from different disciplines through a unifying theme.

As stated by Gibbons et al. (1994) if curricula are increasingly influenced by needs of occupational groups and employers, they are likely to become *domain* rather than *discipline*-based and structured round externally defined problems rather than the concepts and epistemic criteria of disciplinary communities.

In view of the cross-disciplinary trends, the curriculum can be integrated around topics that reflect the patterns, interactions, and interdependencies of the different fields, providing learners with ways to study and comprehend the world around them through concepts and ideas that are less disparate or disconnected (Bar-Yam et al., 2002). The

focus on connecting and synthesizing information around topics of interest to the learners provides favourable conditions for the acquisition of knowledge from different disciplines through congruous concepts and ideas. Integrated curriculum units could be chosen by the learners with the teacher and could involve teams working cooperatively toward common goals. According to Bar-Yam et al. (2002), the opportunity given to each student to capitalize on his/her strengths can become a strong motivating factor in pursuing further learning and further giving to others.

In the trans-disciplinary perspective *problems* have a central role, as the ability an individual demonstrates to resolve problems determines his level of expertise. During the learning process, learners can use problems to acquire the key elements of the skills and know-how required in their occupation, but also to develop more general competences, namely *problem-solving* and *meta-cognitive* competences.

### **6.3.1 A Problem-based perspective in Management Education**

Problem-based Learning (PBL) is a user-centric learning methodology focused on learner's ability to self-learn and it relies on the premise that students can learn better by attempting to solve realistic problems. PBL has two distinct goals: to learn a required set of competencies or objectives and to develop problem-solving skills that are necessary for lifelong learning (Engel, 1991). Adopting PBL, learners are more motivated to search all the information he needs to solve a certain problem, acquiring a proactive role in his own learning experience.

The application of trans-disciplinarity on Business Management Education need an overall redesign of the traditional business curricula and to reorganize the knowledge architectures supporting problem solving approach and inquiring learning. The main challenge is to highlight that properly chosen *problems* are transversal to the classical branches.

Starting from the choice of Afuah's Business Model as the unifying theme of Business Management Education, it is possible to reorganize the knowledge architecture around problems, breaking down the linear organization coming from the traditional MBA disciplines.

In particular, the main building blocks of Afuah's framework (Resources, Position, Cost and Finance, Activities) can be considered as *problem areas* related to

the central concept of *profitability* (or *value*, in a more extended view); around each problem area different *sub-problems* can be identified, as showed in the following figure:

- *Managing Customer Value and Relative Positioning;*
- *Pricing to optimize Revenue;*
- *Analyzing sources of Revenue;*
- *Managing Resources and Capabilities;*
- *Organizing and implementing Activities for a profitable Business Model;*
- *Executing a Business Model;*
- *Managing Innovation, Sustainability and Change;*
- *Analyzing the cost of a Business Model;*
- *Analyzing the sources of profitability and competitive advantage;*
- *Financing and Valuing a Business Model;*
- *Supporting Social Responsibility;*
- *Planning Business Model.*

Special issues of the elected framework are the *Business Model Planning* and the Corporate Social Responsibility, that can be considered on a higher level than the four building blocks of the framework.

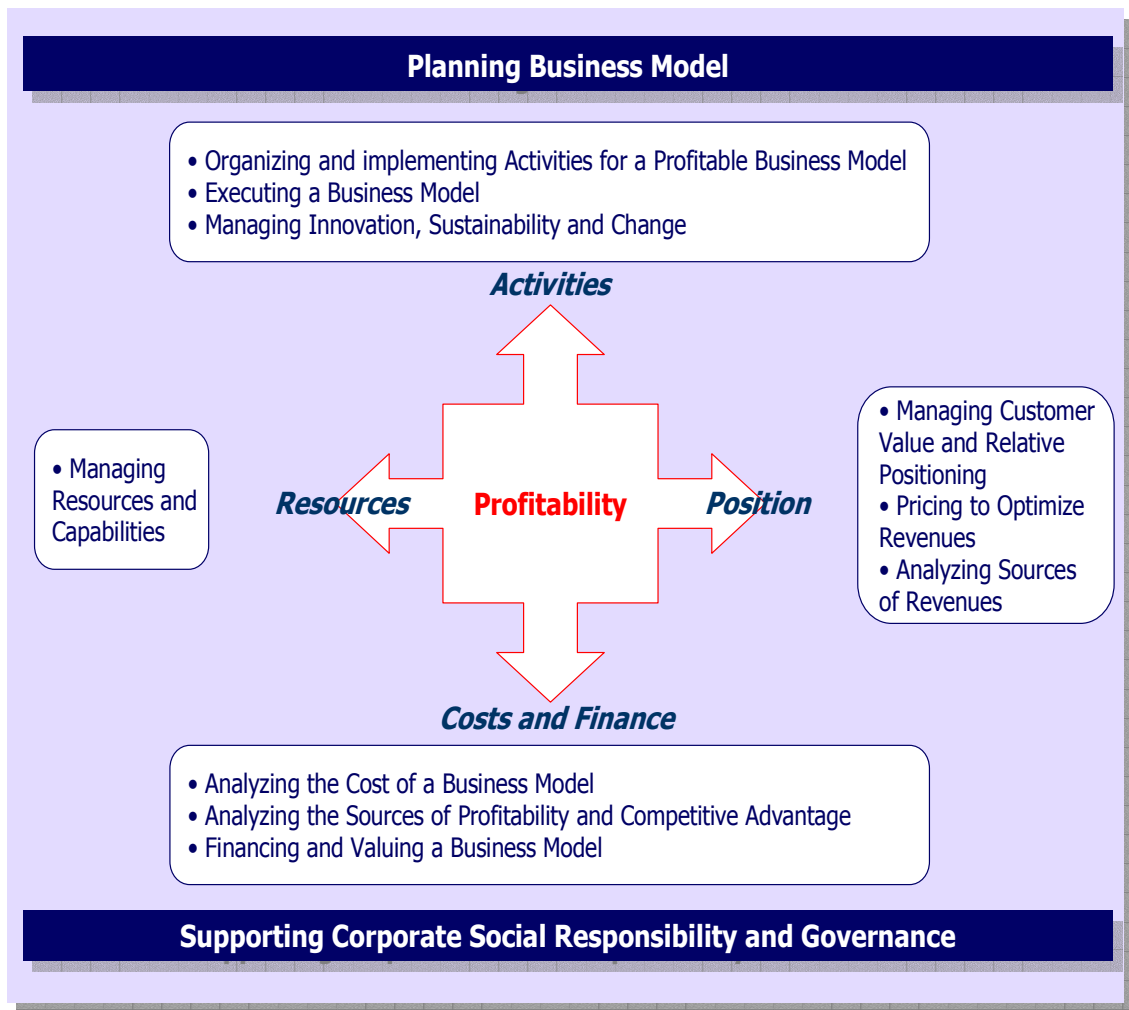


Figure 6.6: A problem-based perspective of the proposed framework

Applying a *Socratic* method, based on inquiring, it is possible to define several key questions around each *problem* defined before. For example, the “*Managing Resources and Capabilities*” area is characterized the following questions that lead to specific contents coming from the classical disciplines:

1. *How to identify firm’s Resources?*
  - tangible assets
  - intangible assets
  - competence and capabilities.
2. *How to evaluate competitive consequences?*
  - Competitive Value
  - VRISA Analysis

- Sustainability
  - R&C and competitive adv.
3. *How to evaluate resources' extendibility?*
- Attractiveness of new industries
  - Complementary Resources
  - Cost of Entry
  - Better-off test
4. *How to evaluate resources' exploitability?*
- Familiarity- Matrix Framework
  - Dynamic Capabilities
5. *How to measure resources?*
- Economic-Financial Value
  - Quantifying Intangible Resources
  - Metrics

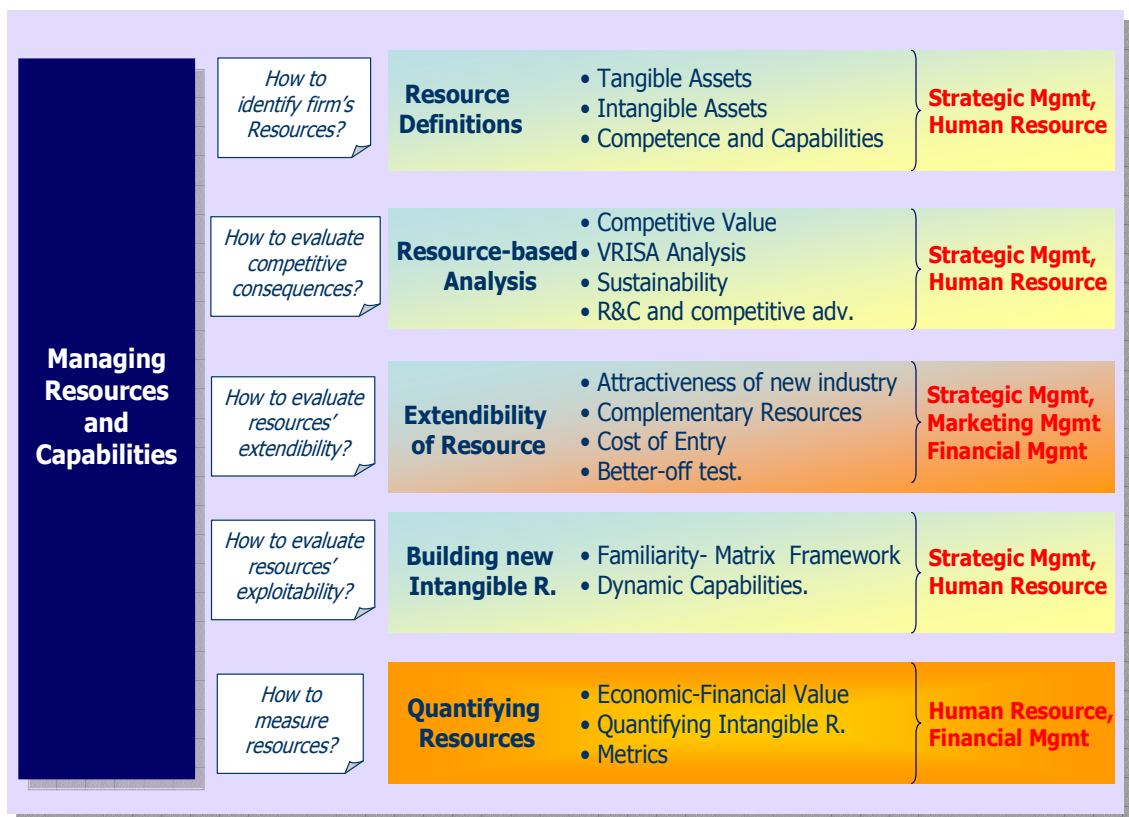


Figure 6.7: Problem-based and Inter-disciplinary view of the issue “Managing Resources and Capabilities”



As shown in the previous figure, “Managing Resource and Capabilities” issue relies on contents and concepts coming from Human Resource Management, Strategic Management, Marketing Management, Financial Management.

In the same way, the other issue or problem areas can be analyzed through an inquiring approach, defining key questions and relative contents coming from the traditional branches of Business Management Domain.

At the end, the chosen *problems* can be considered transversal to the classical branches:

- *Human Resource Management,*
- *Operations Management,*
- *Strategic Management,*
- *Marketing Management,*
- *Financial Management,*
- *Technology Management,*

A particular attention should be given to Technology Management that is a constant in all the problem areas; this is justified by the premise that Technology informs all the main aspects of Business Management. Furthermore, as stated by Kalakota and Robinson (1999), ICTs are used to rethink the upstream and the downstream transactions of the firm with suppliers and distributors/clients, and to create a new concept of value.

The following table shows that all the identified problems break down the traditional branches of Business Management, as a consequence they can be considered trans-disciplinary.

<b>INTER-DISCIPLINARY APPROACH</b>	<b>Human Resource Mgmt</b>	<b>Operations Mgmt</b>	<b>Strategic Mgmt</b>	<b>Marketing Mgmt</b>	<b>Financial Mgmt</b>	<b>Technology Mgmt</b>
<b>Managing Customer Value and Relative Positioning</b>			<b>X</b>	<b>X</b>		<b>X</b>
<b>Pricing to optimize Revenue</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Analyzing sources of Revenue</b>			<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Managing Resources and Capabilities</b>	<b>X</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Organizing and implementing Activities</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Executing a Business Model</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Managing Innovation, Sustainability and Change</b>			<b>X</b>	<b>X</b>		<b>X</b>
<b>Analyzing the cost of a Business Model</b>			<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Analyzing the sources of profitability and competitive advantage</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Financing and Valuing a Business Model</b>			<b>X</b>		<b>X</b>	<b>X</b>
<b>Supporting Social Responsibility</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Planning Business Model</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>

**Table 6.1: Inter-disciplinary view and problem-based approach to Business Management Domain**

## **6.4 Promoting Self-organized Learning**

As mentioned in chapter 2, self-organizing nature of CAS offer new insights for the analysis and consideration of the organizational life and we may assume that *Lifelong learning* and *competence building* should be considered the self-organized process that enables organizations to compete at the edge of chaos. Business education programs should satisfy the current need to develop creative problem solvers, self-organized learners, managers of complexity, and cross-cultural leaders, encouraging self-motivation and introducing self-organized learning methodologies.

If the previous paragraphs proposed the design of a new knowledge architecture in order to enhance the knowledge productivity of Management Education, the present one deals with the enhancement of *learning productivity*, that refers to learning strategies and approaches that enable lead time reduction of learning. Actually, the theoretical approach to a relatively new way of learning, is a *learner-centred* approach, facilitating *self-organized learning processes*.

Self-organized and self-directed learning are only a two of the most prominent terms that have emerged in the literature over the past decades to refer to an approach to learning that characterize the way adult learners conduct their personal learning and promote the development of educational environments that allow the learner to control important variables of his or her learning.

Recently, there has been a significant increase in the understanding cognitive, and social dimensions of learning. Traditional "instructivist" perspectives on learning considers knowledge as context independent, and considers learning as an individual activity based on the gradual accumulation of pieces of information. In contrast, recent socio-cognitive or "constructivist" perspectives regard knowledge as an emerging characteristic of activities taking place among individuals in specific contexts, to view learning as a developmental process occurring first in an interpersonal domain (i.e., socio-cognitive or between people) and later in an intrapersonal domain (i.e., cognitively or within an individual), and to recognize that learning is a constructive activity that often requires active and substantial reorganization of existing conceptual structures (Brown, Collins, & Duguid, 1989).

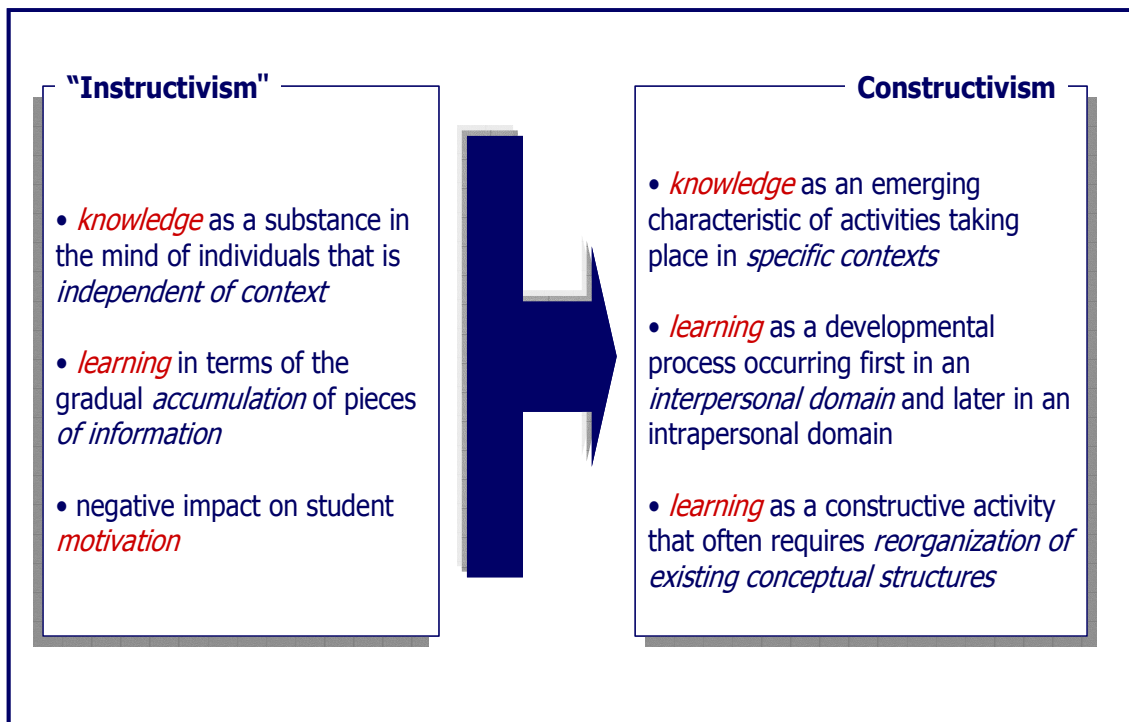


Figure 6.8: Instructivism versus Constructivism approach

The theoretical approach of constructivism can come to interesting conclusions when it is used to understand active self-organized learning.

#### 6.4.1 Constructivism and Self-organized Learning in Business Management Domain

Constructivism refers to a category of learning theories in which emphasis is placed on the agency and prior knowledge of the learner, and often on the social and cultural determinants of the learning process. The main ideas underpinning constructivism learning theories are not new. They began with the insights of Socrates who claimed that there are basic conditions for learning that are in the cognition of the individual (Kanuka & Anderson, 1998).

Cognitive constructivism is based on the work of Jean Piaget (1896 – 1980), according to which humans cannot “receive” information, which they immediately

understand and use. Instead, humans must "construct" their own knowledge. They build their knowledge through *experience*.

Actually, Piaget first emphasized the processes of conceptual change as interactions between existing cognitive structures and new experience. Experiential Learning relies on *application* and it relies on the work of Kolb et al. (1975) according to which learning is “a process whereby knowledge is created through the transformation of experience”. People learn through experience and active involvement, by activating the personal prior knowledge in order to create new one.

The importance of experience is also justified by the consideration that a general competence can be viewed as the integration of *knowledge* and *experience*.

Coming back to the proposed integrative framework of Business Management Education, a self-organized approach reflects the possibility to facilitate the equilibrium between *generalist* and *specialist* education. Each learner has to assimilate the systemic view underpinning the domain and should have the possibility to choose to go into more depth about several aspects of the global architecture, in order to gain specialization according to his/her needs and on the basis of his/her prior knowledge.

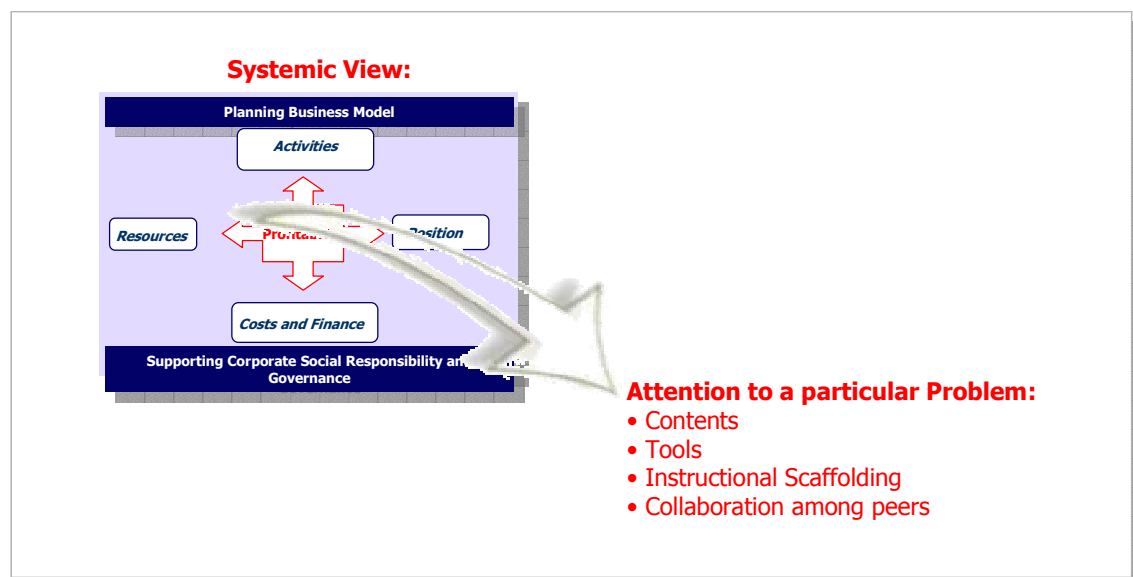


Figure 6.9: Balance between generalist and specialist education

Starting from the systemic view of the Business Model, the problem-based approach presented in the previous paragraph simplifies the experiential orientation and

the role of the teacher is just to present the problem and to provide the tools and useful suggestion to let the learners find by themselves one or more solution to the problem. Furthermore, the teacher has to indicate which is the knowledge base related to that problem, but the student is free to chose the level of depth of the related arguments, on the basis of his/her prior knowledge about that matter. Such a change in the teacher's role implies that the teacher is not the "expert" dispensing knowledge, but is the expert that provides direction for learner activity. The teacher behaves as a mentor or facilitator, and the learner is the main actor of the process.

In this sense, the learning environment (physical or virtual) has to provide *instructional scaffolding*; in other words, the social or information environment should offer supports for learning through the graduated intervention of the teacher. The original notion of scaffolding assumed that a single, more knowledgeable person, such as a teacher or a tutor, helped an individual learner by providing him or her with exactly the help he or she needed to move forward (Bruner, 1975; Wood et al., 1976). In a more extended view, scaffolding may also refers to all the resources that can help the learners to face the learning activity.

On the basis of the notion of Social Constructivism (Vygotsky, 1978) the learning activity should be reinforced by collaboration among peers, in order to facilitate the development of the soft skills mentioned in Chapter 5.

## 7. CONCLUSIONS

### 7.1 Main contributions of the work

This Chapter reviews briefly the research outcomes, linking them to the methodological premises of the work and to its conceptual framework. From a theoretical point of view, the work informed three main areas: the changing scenario and the evolution of management thinking in the last century, the debate about the adoption of complexity as a metaphor for managerial mindset, and the role of learning and knowledge in the actual complex scenario, with a particular focus on competence obsolescence as the main threat of the knowledge society.

The practical contribution of the work is represented by the design of an Inter-disciplinary and Integrative approach to Business Management Education, focused on the enhancement of the knowledge and learning productivity related to the same matter, that should be suitable to the complexity that management has to deal with.

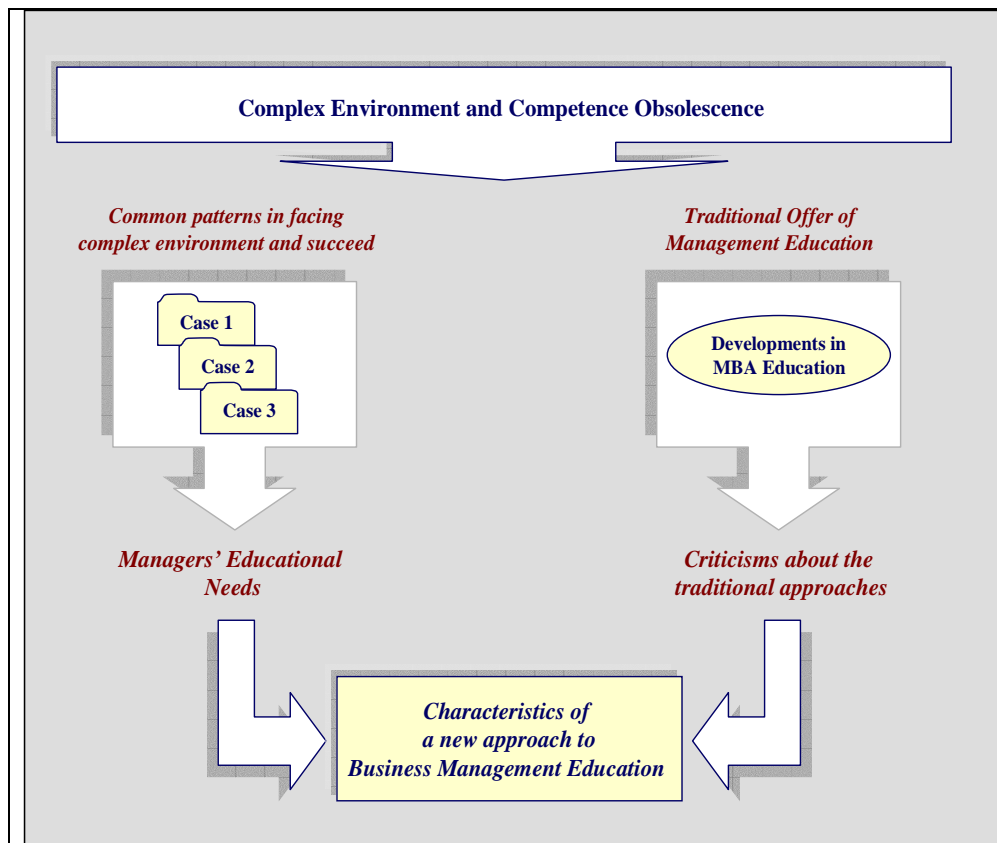


Figure 7.1: Research Conceptual Model

The educational needs of a business manager has been identified through the common patterns followed by some firms that was able to succeed in the actual complex scenario. The descriptive case study based on histories conducted on ABB, McKinsey and 3M highlighted that each of the considered companies has a strong commitment in the diffusion of knowledge and a main focus on *Organizational Learning*. They are characterized by the ability to innovate consistently and rapidly through the ability to be global and local at the same time; these organizations are characterized by a radical decentralization and a strong exploitation of individual initiative. The companies adopt an holistic, ecological approach to human resources development and there's a constant balance between generalist perspective and functional expertise. The secret of success of the considered companies relies on their ability to self-organize and to promptly gather external or internal knowledge to handle a new and unpredictable configuration of their business environment. At the end, the primary educational need for managers is to reduce the lead-time to learning, because of the high rate of change. Furthermore, the current need is to develop creative problem solvers, self-organized learners, managers of complexity, and cross-cultural leaders.

With the aim to highlight the actual offer of Management Education, a literature searching about the recent developments of Educational Institutions and MBA programs has been carried out. The main outcomes of this step of the work referred to the need for Management Education institutions to activate radical innovation in the human capital creation process for changing not only the *what* of management education, but also the *how* of the process. The *what* refers to the content of management education, that should be cross-disciplinary and should break the isolation of disciplines within its programs and the integration of functional knowledge. The *how* refers to the learning approach to be used; it should go beyond the passive transfer of theoretical knowledge and it should encourage the application of practical knowledge. This implies the rethinking of the learning processes, in order to provide future managers and leaders with the perspectives and mental models that enable organizations to be successful in the environment in which they compete.

With the attempt to provide direction and strategies to facilitate the concrete design of a new framework for Business Management Education, three basic aspects coming from complexity approach have been adopted: *holistic perspective*, *trans-disciplinarity* and *self-organization*.



The holistic perspective of Management Education domain required that all the involved disciplines have to be parts of one integrated knowledge base; it also required the adoption of an unifying theme for Business Management Domain. *Business Model* theme was adopted as a lens through which reorganize Business Management Domain; in particular it is intended as the framework of value creation in organizations and guides the choices of strategies made by firms in the attempt to compete and succeed.

The application of trans-disciplinarity in Management Education referred to the adoption of trans-disciplinary curricula, able to break down the “linear” organizations of knowledge and contents that characterize the classical MBA programs; the identification of key problem areas and some hints coming from Problem-based Learning strategy enhanced this step of the study.

Finally, the *self-organization* approach in Management Education deals with the enhancement of learning productivity, that refers to learning strategies and approaches that enable lead time reduction of learning. In particular, *self-organized* approach is corroborated by Constructivism Theory and reflects the possibility to facilitate the equilibrium between *generalist* and *specialist* education. Each learner has to assimilate the systemic view underpinning the domain and should have the possibility to choose to depth several aspects of the global architecture in order to gain specialization according to his/her needs and on the basis of his/her prior knowledge.

## 7.2 Results validation and Future Research

At the end, the proposed framework is based on the adoption of Business Model as the unifying theme of Business Management Domain, that allowed to break down the traditional and linear organization of contents used in the main Management Education programs. The identification of several problem areas allowed to demonstrate that each problem may refer to concepts and knowledge coming from different disciplines.

Applying a *Socratic* method, based on inquiring, it was possible to define several key questions around each *problem* and to link relative contents coming from the traditional branches of Business Management Domain.

The main advantage of such an organization is the possibility to adopt it with different degree of depth, enabling the needed balance between generalist and specialist education. In other words, this type of organization can be adopted to provide a general

and holistic presentation of the Business Management Domain on the one hand, and to go through in particular problem areas according to the learners' needs or interests.

With the aim to obtain a first validation of the results of this study, the described framework has been adopted and tested in the 2008 edition of the International Master in "e-Business Management" at the e-Business Management Section of Isufi (University of Salento).

The framework was adopted to organize a basic course on Business Management; the module, designed following an inquiry logic to present practical solutions to Business Management matters, addressed two learning instances, providing:

- an integrative and effective overview of all the Business Management issues for starters and newcomers to the related learning area;
- a holistic framework of management related concepts to those who are already confident with the matter.

The course covered a period of 3 weeks and was articulated into eight Interdisciplinary Learning Units centred on the topics mentioned in Chapter 6. The applicative activities were conceived to let learners apply Business Management concepts and theoretical frameworks to real world, to understand the effectiveness of the "holistic approach" to interpret business phenomena, and to develop critical thinking about Business Management issues.

The future steps of the present work may refer to the adoption of the framework in the design of a Self-organized Learning Environment for Business Leaders. A Learning Portal could be the more appropriate solution in order to integrate formal learning with knowledge assets and collaboration tools, providing learners with the ability to share and communicate information both synchronously and asynchronously.

In such a context the defined framework could be adopted as a compass to organize concepts, tools, instructional scaffolding and it could allow learners to "browse" the Business Management domain according to their educational need or interests.

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## APPENDIX A: Comparing Business Models' Building Blocks

In order to identify the most common building blocks among business models in the literature, Osterwalder et al.(2005) compared the models mentioned most often and studied their components. From this synthesis, nine building blocks emerge that cover all the business model components mentioned by at least two authors.

The nine blocks, discussed in more depth in Osterwalder and Pigneur (2004), are:

- Value Proposition;
- Target Customer;
- Distribution Channel;
- Relationship;
- Value Configuration;
- Core Competency;
- Partner Network;
- Cost Structure;
- Revenue Model.

Pillar	Business Model Building Block	Description
Product	Value Proposition	Gives an overall view of a company's bundle of products and services.
Customer Interface	Target Customer	Describes the segments of customers a company wants to offer value to.
	Distribution Channel	Describes the various means of the company to get in touch with its customers.
	Relationship	Explains the kind of links a company establishes between itself and its different customer segments.
Infrastructure Management	Value Configuration	Describes the arrangement of activities and resources.
	Core Competency	Outlines the competencies necessary to execute the company's business model.
	Partner Network	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value.
Financial Aspects	Cost Structure	Sums up the monetary consequences of the means employed in the business model.
	Revenue Model	Describes the way a company makes money through a variety of revenue flows.

Adapted from Communications of AIS, Volume 15, Article 11, Clarifying Business Models: Origins, Present, and Future of the Concept by A. Osterwalder, Y. Pigneur, and C.L. Tucci



They named the components proposed by the different authors and showed how they relate to the nine building blocks.

Business Model Ontology	Value Proposition	Target Customer	Distribution Channel	Customer Relationship	Value Configuration	Capability	Partnership	Cost Structure	Revenue Model
Stähler, 2001	Value Proposition				Architecture		Architecture		Revenue Model
Weil and Vitale, 2001	Value Proposition Strategic Objective	Customer Segments	Channels			Core Competences	eBusiness Schematics		Source of Revenue
Petrovic, Kittletal, 2001	Value Model		Customer Relations Model	Customer Relations Model	Production Mode	Resource Model			Revenue Model
Gordijn, 2002	Value Offering	Market Segment			e3-Value Configuration		Actors	Value Exchange	Value Exchange
Afuah and Tucci, 2003	Customer Value	Scope			Connected Activities, Value Configuration	Capabilities	Sustainability	Cost Structure	Pricing, Revenue Source
Tapscott, Ticolletal., 2000					b-Webs		b-Webs		
Linder and Cantrell, 2000	Value Proposition		Channel Model	Commerce Relationship	Commerce Process Model				Pricing Model, Revenue Model
Hamel, 2000	Product/Market Scope	Market Scope	Fulfillment & Support, Info & Insight	Relationship Dynamics	Core Processes	Core Competences, Strategic Assets	Suppliers, Partners, Coalitions		Pricing Structure
Mahadevan, 2000	Value Stream				Logistical stream				Revenue Stream
Chesbrough and Rosenbloom, 2000	Value Proposition	Market Segment			Structure of the Value Chain		Positions in the Value Chain	Cost Structure	
Magretta, 2002	What does the Customer Value?	Who is the Customer?	How can we deliver value at an appropriate cost?					What is the underlying economic value?	How do we make money in this business?
Amit and Zott, 2001	Transaction Component				Architectural Configuration		Transaction component		
Applegate and Collura, 2001	Product and service offered	Market Opportunity	Marketing/Sales Model	Brand Reputation	Operating Model	Organization and culture, Management Model	Partners		Benefits to firm and Stakeholders
Maitland and VandeKar, 2002	Value Proposition, assumed value	Market Segment					Companies involved in creating value		Revenue Model
Afuah, 2004	Value Creation	Opportunity for customer segments	Connected Activities	Cooperate to create value	Connected Activities	Resource and capabilities	Competitive and Cooperative forces	Costs	Revenue Model and Pricing Structure

Source: Adapted from Communications of AIS, Volume 15, Article 11, Clarifying Business Models: Origins, Present, and Future of the Concept by A. Osterwalder, Y. Pigneur, and C.L. Tucci

As it is shown in the Figure above, the Afuah's framework is the most comprehensive one, exploring how to formulate and execute profitable business models.

The Afuah's Business Model draws on the latest research on to explore which activities a firm performs, how it performs them, and when it performs them to make a profit . He offers an integrated framework for understanding the relationship between the set of activities that a firm chooses to perform, its revenue model, its cost structure, its resources and capabilities, the competitive forces in the firm's industry, and its ability to sustain a competitive advantage even in the face of change. It provides the link between resources, product-market positions and profits, how resources and product-market positions are translated into profits. Existing strategy texts demonstrate correlation between resources or product-market positions and profits, not their translation into profits.

Additionally, it explores the relationship between business models and corporate social responsibility as well as the international component to business models. It offers a definition of business models that is deeply rooted in the resource-based and product-market theories of strategy.