TALENTS AND TECHNOLOGY: A MODEL FOR POLICY MAKERS

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Abstract

The paper presents a model representing the possible interaction between two critical variables of a competitive strategy: talents management and technology innovation. These two research fields generally are dealt with separately because the two culture and experiences are very far, so a lot of books are dealing with talents management policies and tools and other interesting books talk about technology innovation processes.

The aim of this research is to develop a simple conceptual framework (model) that could help policy makers in the firms or in the government of a country to deep understand and manage different situations combining abundance or scarcity in talents and in applied technologies, in order to plan adequate interventions to improve a successful strategy for present high level of world competition among firms and among countries.

The research is based mainly on the author's experience of 45 years of working and teaching in firms and Universities, and characterises just as offering a platform from which many young people could fly to explore with humility and curiosity the complex problems of economic growth at micro and macro level.

***Keywords*:** talents, technology, innovation processes, strategy, talents management, technology management.

1. Introduction

More and more, after three years of the world financial and economic crisis, competitive strategies at a firm's level or at countries' level are focused on human capital and technology innovation management. Traditional components of top management culture during growth years have been marketing and financial, being not sufficient to develop long-term policies to compete and survive. Of course they remain very important, but policy makers have not been sufficiently educated to manage technology revolution and motivated talents scarcity, growing also in very populated countries like China and USA. Consulting to firms or to local and central public administrations, you find a diffused paralysis in decisional processes, when talking about technology and a boring attitude, when talking about human resources, whose management tools are well-known, but very rarely applied correctly. These two management areas are then looked at separately, not approached in an integrated way: change management techniques and culture, booming in the 90ties, are very often forgotten to save costs in innovation processes, which are so clearly not functioning because of people's resistance to change.

These experiences were so frequent in my managerial teaching and projects consulting, which encouraged me to formulate some ideas for a cross fertilisation of the two managerial fields, in order to give simple tools to policy makers to understand these problems better and for formulating correct competitive strategy. These considerations and reflections can be very useful not only at a firm's level, but also at countries' level, because competition is present among firms in the international marketplace and among national systems in the world arena. Notwithstanding the long-term development policies should be proper for good political governance; more and more political people become short-term oriented from the electoral cycle and forget capabilities to think about future growth.

To present my findings and ideas I confronted myself with most recent literature in the two fields, also trying to come out with a mixed approach, as can be seen from the list of references. But the model I offer, especially to young professionals and researchers, has come out of experiences and discussions on the issue. It is conceptually synthetic and simple to teach and understand, however, it needs a lot of measurements/indicators for positioning correctly firms or countries in it. Following positioning of cases, the model prescribes more adequate strategies to move towards a better competitive positioning in the future.

Obviously I will be very happy, if from now on a lot of brilliant researchers can develop more systematic and integrated approach to these two variables, reducing the emphasis on psychological approach in talent management in favour of more solid scientific knowledge to be diffused at every management level, not leaving technology management only to specialised technicians, indifferent to people's problems in change processes. I come from a country with a very conservative university humanistic culture, where scientific

culture is considered not as open and universal as historical or philosophical ones. But my experience shows that this dualism remains also in other context, even in more empirical Anglo-Saxon cultures.

The aim of this research is to develop a simple conceptual framework (model) that could help policy makers in firms or in countries' governments to deeply understand and manage different situations combining abundance or scarcity in talents and in applied technologies, in order to plan adequate interventions to improve a successful strategy to meet the high level of competition at present among firms and countries.

The research is based mainly on the author's 45-year experience of working and teaching in firms and universities, and suggests the platform, using which many young people could explore complex problems of economic growth at micro- and macro-levels with humility and curiosity.

2. Two competitive weapons

Talents and Technology are the 2T weapons for competition in the globalised world, particularly after financial crisis of 2007/2008. Both variables are critical in the firms and countries.

Talents management is a very difficult task for policy makers. To identify, recruit, keep motivated, retain, plan careers, compensate, exploit potential aligning with business strategy are the main steps for a Human Resource manager in a firm. On the country level, to plan talents needed for the future, to align quantity and quality of talents with economic strategy and international positioning, to develop adequate educational policies, to assure quality employment and work regulations and incentives, to plan the flows of immigrations according to talent gaps are among the most critical factors of savvy governance.

Obviously, a set of indicators is necessary to measure and benchmark the status of talents in a company or in with other cases. At the firm level:

- accurate skill inventories should be built and updated,
- job design and performance measurement system implemented,
- career and compensation planning benchmarked with HR market available.

Aggregate data should be available from various sources at the country level regarding:

- workforce breakdown by educational curricula,
- unemployment structure,
- in- and outflows of talented people,
- work contracts incentives criteria.

Technology innovation is also a very critical variable: at a firm's level it is the source of surviving and developing of any business in a high competitive environment. At the country level it is the only strategic way to keep and improve the economic and social positioning obtained through history. Technological innovation processes should be carefully studied and implemented throughout any organisation to assure a continual flow of new ideas, experimentations, industrialisation and new products marketing. On the country level, R&D policies and investments should be monitored and facilitated trough adequate fiscal interventions and public/private initiatives of coordination, to assure the right positioning in the international technological competition.

Again, a set of indicators should be implemented to monitor and benchmark the technology status in a firm or country. At the firm level, the following indicators should be available:

- annual ratio of new products from the total number of products,
- investments in new processes from total investments, number of international patents, R&D costs on sales,
- number of researchers from total number of personnel,
- contracting out of research,
- all other technical data comparable with other companies of the same industry.

At the country level, the following measures should be monitored:

- R&D investments in GDP,
- number of researchers in public and private structures per inhabitant,
- university spin-off number,
- start-ups per year from total number of firms,
- breakdown of firms by technology level,
- breakdown of export and import by technology level.

The two variables are mutually correlated, because technology innovation is created and sustained by talented resources, and talents are attracted from an innovative environment. First of all, is necessary to determine the starting position of an organisation or country, regarding the talents and technology aspects.

Then to build policies to keep on and possibly improve that position. In order to help policy makers, a simple model can be built, drawing the two variables along two axes as shown on Figure 1.

Talents/Availability

High Talents - Low Technology WOLVES	High Talents - High Technology LIONS
Low Talents - Low Technology TURTLES	Low Talents - High Technology CHICKENS

Technology/Level

Figure 1. Positioning Model
Source: worked out by the author

3. Introducing the model

Starting from the left of the matrix, first of all we find an area, which we can consider a starting point of our analysis: in this quadrant a firm or a country is poor in terms of talents and utilising traditional, not advanced, technologies. This area has been named TURTLES, stressing the slow movements of these animals, which are intelligent and living long lives, but in protected environments not as competitive s the modern world requires. Nowadays firms or countries remaining in this quadrant have no possibilities of surviving in the long-term. Generally the most traditional industries are present in this area, e.g furniture, shoes, textiles, simple mechanics, and countries yet having short history of economic development. The only possible strategy to compete at this stage for light and traditional businesses is to choose niches in luxury segments of the market and to build exclusive brands, like in fashion industry, for Italian or French companies. In these famous cases technology is also improving in new materials utilised and specific talents are necessary.

Moving along the left side towards highest talents availability, we find an area where a firm or a country is richer in talents, but not in advanced technologies. This area has been named WOLVES, very clever animals, team-working, which tries to survive successfully, notwithstanding its size and structure less comparable as compared to other predators. Innovative firms can be positioned here, where abundant talents try to move to new technologies to improve products and processes. It is not generally the first step from the previous basic quadrant, because the dominant myth is to introduce new technologies first and only then talents. The diffused technology fails due to the lack of talents that could not ensure a better change management approach to technologies applications in firms. Thus, any kind of industries can be positioned here, if focused on talent management to diversify product/market strategy. At the country level, it is the positioning of the new industrialised countries, particularly the Asian ones, which have always had important cultural and meritocratic values heritage that gave them a capability to absorb new technologies through Internet at high speed. Yesterday it was the case of Korea; today it can be Vietnam.

Moving clockwise to the right, we find an area, where excellent mix of advanced talents and technologies can be obtained at a firm's or country's level. This quadrant has been named LIONS, in honour of the king of animals, very talented and with suitable constitution to hunt. Evidently, all high-tech, high performing companies, innovative products and services industries can be positioned here. At the country level, not only the big USA, Germany and Japan are within the quadrant, but also many small and start-type nations, like Israel, Finland, and Korea. From the viewpoint of others areas, this one should be the objective to move towards, by implementing different strategies that will be discussed further.

The last area in the lower right quadrant is for positioning firms or countries rich with new technologies, but with a lack of talented people. The area has been named CHICKEN for obvious reasons, referring to the common stereotype regarding these animals. It is a very crowded quadrant, because the marketing of technologies, particularly ICT, has been stronger than capabilities to absorb and manage new ideas and products. Hence, it is a normal evolution from the basic positioning of a firm and also for countries. Almost all of them are fond of buying technologies from USA and Japan, but very often with no capabilities of deep exploitation and improvement, low investments in educational systems and adequate incentives policies for young graduates produced by local universities.

4. Strategies according to positioning

Starting from the basic quadrant – TURTLES – it is clear that a lot of work must be done concerning both people and technologies. Underestimation of technology competences is a very common situation in a firm, which also makes it difficult to buy technologies, classical receipt of marketing/finance-oriented strategist. At the same time, buying technologies in order to move to the right in the matrix does not bring results without talents to adjust them to the internal cultural context and to exploit them better. It is not only the problem of size: many big bureaucratic companies move to this quadrant, having achieved nice results in the past. Certainly, for SMEs it is more difficult to diversify and innovate, but sometimes there are more brilliant talents to look for new ideas and solutions. At the country level, this is a positioning with high risk of a further economic and social decline. At micro- and macro-level, this positioning derives from complacency with previous good results, from conservative attitude and unbalanced demographics between old and young people. These situations push politicians to allocate more resources for current welfare than for R&D investments in future. A firm positioned here should adopt a niche strategy on luxury segments in all the countries, and export its old product to underdeveloped markets, get resources to find new talented people and new product/market mix through technologies. A country needs to plan more stressing educational system, benchmarked with the best practices of more advanced countries, and to give incentives to public/private investments on new technology.

WOLVES are very hungry and aggressive, with a lot of talented people hunting for new technology to attack LIONS. This situation corresponds to SMEs having recruited young graduates from universities, which try to penetrate new markets and push new products. Many mature firms are restructuring and renovating traditional products, using new materials from bio- and nanotechnologies, both in textile and in mechanics. And SMEs are also updating their production processes at high speed. The success strategy here is based on transferring know-how from young talents and universities, research centres; on cooperation with suppliers having new technologies and clients to improve both quality and functionality of products. This positioning has been the engine for rapid growth of Asian nations, traditionally having high scholarship in young generations and very competitive values. They adopted strategies of imitating products manufactured at low costs of their salaries in the first phase, now becoming excellent also in advanced technologies. The European countries, such as France, Italy, and Spain followed these patterns in sixties and seventies, now being less competitive in manpower and educational systems. Russian Federation is now in this area, as well as Brazil, but quality of its Human Resources is not comparable with Asian countries. Web technology has been particularly useful for leveraging and accelerating growth through low-cost technology transfer.

LIONS are the best, in line with the name of this quadrant. There is a high-performing balance of excellent talents and advanced technologies, as in more successful multinationals in pharmacy, ICT, social networking. Biotechnologies, nanotechnologies, ICT revitalise mature businesses, if people are able to find them and to exploit them at the best level. Business models are light, cooperative, networking with research centres and universities. Talents are recruited, motivated with adequate incentives, organisational culture, friendly and open to innovation; team-working diffused, horizontal structure facilitates integration of different competences and cultures. However, similar to other cases, LIONS do not mean stability and permanent success: it is very difficult to keep on this leadership position. Technologies change continuously, talents become less devoted to companies in the long-term, being tempted by others companies or personal entrepreneurial spirit. It is very easy to be attacked from WOLVES or to descend into the CHICKEN area.

At the country level, it is much more difficult to keep on this positioning, because of the technological spillover effect created through Internet and inclined towards China and India, and the need of small countries to sell know-how, licensing patents very actively to newcomers from the other areas. Transference of know-how is a process that required over twenty years in the last century, but now it is quite instantaneous owing to the World Wide Web, talented countries, mostly Asian, USA and Europe. The right strategy is to keep control of the waves of knowledge, better plan the releasing process in order to maintain leadership in products innovation, using the globalisation model mainly for production flexibility, not for R&D investments.

The last quadrant, CHICKEN, includes firms or countries driven more and more by the diffusion of new technologies, but which are not able to exploit potential at their best, because of the lack of talented human resources. Large amount of small family businesses and countries of underdeveloped parts of the world, such as South America and Africa, are in this area. Traditionally SME's survived by importing talents from big enterprises, i.e. buying people, not only technology. But now the lack of talents is a serious problem in most countries, also in Asia, and of course the most competent people want to have better possibilities of career planning, like it is more frequent in big firms. So the most feasible development strategy is to improve

cooperation with universities (spinoffs) and Technology Transfer Centres, which will be more and more available to disseminate technologies and new talents produced inside schools and sometimes motivated by friendly and not hierarchical environment of SMEs.

At the country level, exit strategies from the CHICKEN area are very difficult, as the history of underdeveloped countries demonstrates. Concentration of international aid on serious and long-term objectives is very far from the culture of leading classes in these countries, which have normally very short-sighted views and style of living imitating large rich countries in consumption patterns. Severe policies of long-term investments in schools and high-level of educational infrastructures are necessary. Meritocracy-based selection of new talents is also fundamental to avoid economic decline toward the TURTLES area.

The evolution process of firms, starting from a TURTLE type positioning can go towards CHICKEN or towards WOLVES quadrants, depending on history and culture of entrepreneurs and managers. LIONS remain an objective very difficult to reach.

At the country level, normal evolutionary process is from TURTLES to CHICKEN, moving towards LIONS leaders. Sometimes, like in the small countries we referred to, a jump to WOLVES has been possible, due to long-term oriented managerial class and excellent tradition in educational process based on meritocracy values.

5. Conclusions

A general framework of possible mutual influences between technology knowledge and talents availability has been presented, in order to try to understand better the innovation process in a firm or in a country. These two are the main variables of a strategy to survive in today's highly competitive globalised world. The present managerial literature is not cross-fertilising the two fields of investigation. A lot of books deal with talents management problems, some deal with technology innovation problems. In my opinion we need more multidisciplinary approaches to these managerial areas, but of course the two cultures are very far and different and each of them has fear to enter in the other competence arena.

We enclose references to outstanding works in both fields, but the ambition here is to propose a new more mixed area of research. Technology does not progress without talents in R&D and in diffusion and application processes. Managerial talents may lack the technology competence, thus creating resistance to change and losing growth opportunities for the firms, in present and future science-driven businesses. Starting from traditional positioning as TURTLES, firms can go in any direction according to the talents capabilities they have inside and alliances they can establish in the market.

Much more difficult is the evolution at country level: economic development theories are insufficient to forecast convergence processes for the various countries, because a lot of soft variables in the history are implied. But the extraordinary success of BRIC's in the last ten years demonstrate how much the acceleration of technology transfer processes can contribute to improve the strategic positions of countries considered underdeveloped only twenty years ago. African nations have also been participating in the development during the last five years. Evidently, at this level growth movements become more difficult and slow for a firm, while investments require substantial resources and time to be effective in changing the initial positioning. But the model presented in this article can be useful for rethinking and combining the two variables together, also allowing to consider strategic options existing in the different positioning of communities.

The model is prescriptive in terms of possible exit strategies from the initial positioning of businesses or socio-economic cases: key indicators for positioning in the matrix can also be used to monitor the development dynamics from starting points and success of strategy implementation, alongside with more classical financial performances.

I hope that the paper will be a stimulus to study and research interdisciplinary approaches in more detail and to implement them in the field systems of measurement and control of innovation processes from the viewpoint of human resources and technologies.

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