Current scenarios and emerging competencies: italian businesses and I&CT

State of the art and the management of complexity

The aim of the survey conducted by the e-Business Area as part of the project 'e-Dapt, e-Business and the Adaptation Processes of Businesses and Workers' has been to reconstruct the current scenario of the diffusion and use of I&CT in Italian businesses.

The research started from tha anlysis of the level of complexity reached in the management of information systems, such complexity being largely the result of the co-presence of solutions and procedures developed in different periods and based on different information management methods.

Today, the main source of complexity is the coexistence of solutions developed in diverse environments: Mainframe (founded on the principle of hierarchical control and the centralized management of information); Client-Server (based on the model of the stand-alone computer endowed with data-processing capabilities), and Web (the principal strength of which is its distributed management of information).

The survey explored ways in which businesses cope with this complexity. Two main attitudes emerged: the first (most widespread) centred on an attempt to develop various layers of middleware designed to 'hold together' diverse solutions and platforms so that data and information can be shared; the second consisting in the radical replacement of firms' existing information systems with new integrated platforms representing the future market standards.

Considerable misgivings were expressed with regard to the latter approach, however. At present, none of the various systems available on the market has been able to impose itself as the reference standard. Consequently, the option of replacing the information systems already used by businesses is widely viewed as risky and therefore to be avoided.

A second mainstream of the reaearch was to understand which is the role played by I&CT in organizations today, issue that is closely connected with the theme of complexity. Whilst in the course of time I&CT has assumed increasing weight in orienting the strategic decisions of businesses, today its strategic role is frequently called into question.

In the opinion of some commentators, the pervasiveness of technologies and their consequent standardization has given rise to a situation in which I&CT is indeed essential for business management but is no longer a factor able to ensure a solid and enduring competitive advantage. I&CT has become a commodity, above all because of the marked fall in the prices of such technologies, which has enabled a growing number of organizations to acquire resources that were once the exclusive preserve of a few leaders. The debate is particularly animated. The survey highlighted a wide variety of opinions on the matter: although it is true that all organizations possess technologies that perform a commodity role, it is equally true that these technologies are flanked by other, more innovative ones which fulfil a more central role in supporting businesses in the pursuit of their strategic goals.

The feature that apparently discriminates between the two types of technology is the level of maturity that they have reached. Nobody would dispute that electronic mail is now a mature technology and as such represents a commodity; yet there are other, even more recent, technologies which 'make the difference', not only between organizations able to acquire those technologies and

those that are not, but also between organizations better able to exploit the potential of such tools and those which make less productive use of them.

The evolution of corporate needs

The survey then examined the evolution of corporate technological needs and ways in which the suppliers of I&CT solutions and services answer to those needs.

The growing perception that technologies have proliferated through all levels of organization requires careful analysis of the repercussions of every technological choice. Each and every solution chosen contains part of future corporate strategies within itself, to the extent that besides offering new opportunities it also imposes constraints. Every solution, in fact, *allows* certain activities to be performed in a given way and *prevents* them from being performed in any other. Only careful assessment of both these aspects can enable the choice of the most suitable solutions. This assessment must necessarily involve both the company's I&CT specialists, who are able to analyse problems concerning implementation of the solution within the company and its integration with the other systems already being used, and the managers, who are able to evaluate the impact of the new solution on their respective managerial activities and more generally on the organization as a whole.

These two areas of expertise – the I&CT specialists and the management – must therefore communicate with each other: they must share the same language and the same strategic goals. Brought about as a consequence are greater technological awareness on the part of organizations and their better ability to define their needs in terms of the acquisition of new technologies. Specifically, companies require solutions customized to meet their specific needs; solutions which ensure closer alignment between the company's information systems and its business objectives. The growing interest of businesses in the Linux operating system, and more generally in open source softwares, seemingly stems from exactly this requirement.

The correct choice of an I&CT solution necessarily requires detailed analysis of all its strengths and weaknesses. This entails knowledge and prediction of the concrete changes in operations and strategies that will stam from introduction of the new software in the organization.

The evolution of corporate I&CT needs is also reflected in the way that vendors formulate their offers, in that their products must be increasingly tailored to the customer's specific requirements. This development has given rise to a radical reversal of strategies *vis-à-vis* the market and customers. An approach based on the offer of standardized solutions applicable to a large number of different organizational contexts has given way to one based on made-to-measure solutions at prices still affordable by companies.

This is not only a change in the approach taken to the development and sale of solutions; it is also a change of culture which is at odds with models deeply rooted in organizations. As a consequence, it encounters considerable reluctance and the difficulty of companies to adjust to the new exigencies of the market.

The vendors, in fact, are often accused of adopting excessively aggressive – often arrogant – sales methods which exploit the ingenuousness of certain customers, but which reveal all their shortcomings as soon as potential purchasers improve their level of technological maturity.

At the moment, only a limited number of operators have made the changes necessary for their I&CT solutions and services to match the specific characteristics of customers. However, the

process is likely to accelerate in the next few years, especially as regards the establishment of solid partnership relations between the vendors and the purchasers of I&CT solutions.

Professional figures and emerging competencies

The need to intensify the synergies between the supply and demand for I&CT solutions and services responds to three main objectives:

- improve the quality of product and service supply by vendors;
- maintain the quality and level of customer services;
- improve the monitoring of I&CT trends and of emerging market needs in order to undertake effective actions to develop/update in-house skills.

These objectives require the contribution of professional practitioners with diverse skills and able to foster a change of approach by I&CT operators. They must in particular be able to govern external corporate processes and handle relations with customers, while also supporting the adjustment of internal competencies to market demands and expectations.

The above objectives broadly correspond to four professional figures, who consequently perform key roles in companies operating on the supply side of I&CT services and solutions:

1. the **Project Manager**: responsible for the management of a new project, his/her task is to ensure not only alignment between the final output and the customer's expectations and needs, but also compliance with time and cost schedules;
2. the **Operation Supervisor**: responsible for the management and maintenance of one or more already-existing procedures, his/her task is to ensure that the level of service agreed with the customer is maintained;
3. the **Internal Consultant**: an expert in I&CT trends and developments, his/her task is to ensure that in-house skills are updated to keep abreast with the evolution of the technological market;
4. the **Business Analyst**: responsible for the relation between the service supplied and a given business area, his/her task is to ensure the correct interpretation of market demands and to identify the new opportunities that they offer.

These are not new or emerging professional figures; rather, they are often already present in companies, but they are required to interpret their roles from a new perspective, and with renewed responsibilities.

The boundaries among these four professional figures are not always clear. Whilst the project manager is a figure already widespread in businesses, and to which a relatively well-defined role corresponds, the other three roles are less formalized and with frequently overlapping tasks.

These overlaps and the absence of clear boundaries among roles should not come as a surprise, however: they are situations typical of an evolving scenario in which roles at present ill-defined gradually acquire clear-cut features with the passage of time.

Conclusions

The results of the survey raise numerous issues concerning the state of the art of I&CT in Italian businesses and its prospects for future development.

From various points of view, firms are passing through an extremely contradictory phase. After a period – the 1990s – characterized by constant technological innovation and huge I&CT investments, one now witnesses what might be called the 'moment of disappointment'.

Indeed, whilst in the past investments were guided principally by a vision of I&CT as a powerful business enabler, and by the hope (too often unfulfilled) that the technological solution to all management problems had been found, today the greater awareness acquired from past experience counsels more prudent behaviour.

There appear to be three main factors responsible for this change of attitude:
1. the failed (or partial) achievement of the economic or efficiency objectives assigned to I&CT projects in the past;
2. the difficulties of evaluating or predicting the economic return on past and future technological investments;
3. the erosion of budgets for new investments due to the increased costs of managing and maintaining the technologies and procedures already used by companies.

The reduced availability of investments impacts drastically on the way in which I&CT is perceived by businesses. Rather than being a potential profit enabler, technology is now widely viewed as a cost centre. Consequently, today more than ever before, information systems heads must possess solid skills in costs management and in the administration of the budgetary resources available to them.

This is a prudent approach which is also justified by the painful experiences of businesses in the recent past. Nevertheless, it is a model of behaviour that may prove just as risky as the recklessness of the 1990s. The risk is that businesses will excessively restrict their technological investments, and that they will not adequately plan their future investments in the updating of I&CT infrastructures which, by their very nature, are prone to rapid obsolescence.

The central issue concerning the role of I&CT in businesses therefore seems to be the greater or lesser willingness of firms to invest in innovation. The excessively prudent or conservative approach described above has given rise to the view that I&CT is more a commodity than a strategic leverage tool.

However, the data collected show that this attitude is mainly due to the transitional nature of the current I&CT scenario. It amounts substantially to a wait-and-see posture: before deciding on new investments, firms and decision-makers seem intent on observing the future evolution of the I&CT market.

Evident in particular is the crucial role of developments in open source solutions. The current interest in free code software is due not only to a specific philosophy of software development but also, and especially, to the hope that it will reduce the costs of managing I&CT infrastructures. The possibility of accessing the source codes of the solutions acquired should allow more agile management of softwares, in terms of both customization and maintenance/updating.

Although the interest of businesses in open source systems has not yet led to their large-scale adoption, the constant monitoring of developments in the open source sector is of crucial importance for vendors, given that market dynamics in the next few years will pivot on the opposition between free and proprietary softwares.

However, the conversion of company information systems to open source platforms is not a straightforward undertaking. Above all, it is not a decision that can be taken by a company's I&CT specialists alone, for it concerns a change with considerable impact on management models and corporate culture as well. Whether the decision is taken to undertake such change, or whether it is decided to persist with proprietary solutions, again of importance is the technological awareness diffused among all levels of the organization.

Training can make a valuable contribution to this end. Just as an I&CT manager must possess the management skills necessary to integrate his/her activities with company strategies, so all managers must acquire adequate mastery of the implications of IT choices for strategies and for their sphere of activity. However, the survey has disclosed an evident contradiction between the declared need for businesses to acquire a higher level of technological knowledge and the practices adopted in pursuit of this objective. Managerial training in I&CT and e-business is still restricted to certain categories (junior professional and new intake). But middle/senior managers are neglected, even though they have greater need of I&CT skills because of their decision-making role in organizations.

It is up to the business schools – by virtue of their greater awareness deriving from constant analysis of corporate training needs – to direct the attention of companies to this problem, doing so by supplementing their general management programmes with specific courses on I&CT and e-business. Business schools must also ensure that the language and content of their training courses is clearly understandable, so that managers are able to approach technological themes without the sense of suspicion and distance that these subjects – still too often viewed as 'alien' or as 'extraneous to one's work' - may engender.