How Do Enterprises Choose Their Technology?

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The primary reasons behind Spanish managers’ decisions to change their information systems are cost and the standardization of technologies.

Cost and standardization are the key criteria for Spanish managers when it comes to choosing their information systems (IS). This is what is gleaned from a recent report by the e-business Center PwC&IESE. Under the title “Criterios de adopción de las tecnologías de la información y la comunicación” or “Adoption criteria for information and communications technologies” it analyzes the reasons behind the Information Technology (IT) decisions made by Spanish managers.

According to this report, 38% of Spanish managers rank cost as the main criteria in their choice of IS, while 32% think that the standardization of the technology is the one to beat. Another 28% believe that the most important feature is that the solution can be reversed.

The results of this report reveal that, although entrepreneurs put forward cost as one of the primary arguments in IT adoption, there are other major factors that have a significant bearing on the decision. The fact is that the use of information and communications technologies has gone from being a not so widespread option to a basic necessity to gain competitive advantage.

Deciding on one or other technology does not merely depend on cost saving criteria, but has become a question of strategy that is essential for all Information Systems managers.

Factors
The factors affecting technology adoption decisions can be grouped under three headings: cost rationality, the spread of innovation and the psychology of the decision maker.

Cost rationality refers to those factors that are quantifiable and that provide clear market signs about profits/costs inherent in adopting a certain technology. The decisions based on this type of criterion are directed at minimizing costs, assessing the technological advantages and reducing the dependence of the company on a technology or a supplier, in other words, reducing the so-called lock-in costs.

The Risk of Change
However, the more radical the technological change is, the greater the uncertainty about the success or failure of that technology. This leads companies to analyze beyond the
merely economic/technological criteria, which gives special relevance to factors dealing with the diffusion of the innovation.

Certain characteristics related with the presence of net externalities and the capacity of the organization to adopt ICT efficiently are grouped under this category. In this sense, decision-makers assess factors such as the capacity of employees to effectively use new technologies, budget flexibility, business culture and the availability of time to experiment with a certain innovation. In this way, companies adopt a dynamic perception of the technology adoption process: the innovation diffusion process moves forward slowly during the first stages of adoption and it speeds up as the number of users grows.

Lastly, the individual belief of the decision-maker and his own psychology also has an influence on the adoption of ICT. Thus, the decisions are affected by subjective rules, colleagues’ opinions, related groups and the reputation of a trademark or a supplier. Those responsible for the decision usually go for a solution that involves less risk, guided by the reputation of the supplier and the behaviour of the other companies within the sector.

This explains why the ICT market is characterized by the dominating presence of a small nucleus of suppliers high on market power. In fact, many technology adoption decisions are a direct response to the behaviour of the leader and his followers. That is, companies imitate the steps already taken by a rival in the belief that other companies will do likewise.

The Herd Effect
Therefore, the technical criteria and economic efficiency of a solution are often watered down by the opinion of those in or around the IT head’s environment. This flow of communications is known as information cascades and they influence the manager to the point of forcing him to follow the herd and adopt the solution of the majority. In short, the decisions of the IT heads envisage a wide range of characteristics apart from the monetary assessment of the profits and the cost involved in ICT adoption. In other words, for the overall adoption of technology, certain circumstances must coincide that go beyond the superiority in technology and economic efficiency in an IT strategy.

How can you be sure that your ICT decisions take into account all relevant aspects for your business?

Reasons for Change
Luis Gómez, Director of IT Strategy at PwC
Historically the amount spent on ICT has been one of the least understood in enterprises in spite of being one of the largest items in expenses. Nowadays, companies impose obligations on the systems department such as: 1) improve the value of ICT throughout its investment cycle; 2) demonstrate that the investments in ICT permanently contribute to the improvement in productivity, competitiveness and business growth; 3) make decisions about what technology to use (effectiveness), how to do it (efficiency) and when to introduce it into the company (innovation); 4) achieve a balance between the protection of information assets and the guarantee for assigned users to access them.
To get the most value from ICT, companies must align existing or foreseen technologies with their business strategies; the security of information must help and support the requirements of the business: confidentiality, integrity and availability; management of ICT departments must act from a business outlook; technology users must be turned into catalysts in achieving value from ICT; the different systems must be efficiently managed; and new mature technologies must be introduced into the company, so that they contribute value from the onset.

**Follower Decisions**

*Sandra Sieber, IESE professor*

As we have shown in our recent study “Criterios de adopción de las tecnologías de información y comunicación” (Sieber, S. y J. Valor, 2005) or “Adoption criteria for information and communications technologies”, Spanish companies take their decisions on investment in information and communications technologies on quite conservative and follower lines. That means that the directors go for technologies that are well known and widely used, far beyond what would possibly be justifiable by criteria of effectiveness and efficiency. There is therefore a lack of innovative spirit and a strong dislike for risk that is seen in the coherent decisions of their choices in their sector. This over-cautiousness stems from the possible professional consequences for the ICT decision maker and not so much from the possible real problems of other alternative technologies.

For instance, the decision to choose a SAP package to implement Enterprise Resource Planning (ERP) is usually seen as safe, with positive consequences for the career of the ICT director, even if there are problems in its implementation.

Top management must be conscious of this type of behaviour by their ICT heads. So on some occasions it may be necessary to give them more confidence so that they can take decisions that might be considered subjectively risky.