The creation of IT sustainable competitive advantage

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Abstract  During the last decades, IT has become a fundamental business tool, which the competition among firms has more and more focused on. Although the literature has undoubtedly explored the contribution of IT to the creation of a competitive advantage, much work has to be done in order to investigate its sustainability. This article aims to provide some concepts and analytical tools which could turn out useful for future researches on this topic. This work emphasizes the fundamental role of IT in creating and maintaining a competitive advantage in some types of business, but at the same time it underlines how information technology per se is not sufficient, requiring an integrated strategies and supporting structures to exploit its potential advantages.

Key words: IT, competitive advantage and sustainability.

1. Introduction

Nowadays, in the Information age, technology transforms industry after industry. In such a dynamic environment, can firms achieve and sustain a strategic IT advantage? How can they do it? These issues become very interesting in a competitive environment where the role of IT is so controversial: many firms still look at it as a simple tool to survive in the market, while few others have already understood its power as a strategic weapon to be market leaders.

In the first part of the work, we provide a framework to illustrate how a company can create value through IT; we describe then what is a sustainable competitive advantage (SCA) and what conditions have to occur for its existence. The following section describes the relationship between IT and the SCA, exploring the problems as well as the methods and theories that can be useful to analyze this aspect. We base our discussion on J. Cecil and M. Goldstein researches. We move, then, to the presentation of two of the most explanatory strategies about the way to achieve a sustainable competitive advantage through IT.
2. The process of value creation through IT

It can be useful to start our analysis by considering how an IT investment can provide the organization an improved performance. The first necessary condition that has to occur is the efficient conversion of the IT expenditure in IT assets; this process is called “IT management”. It consists in several phases, which go from the formulation of the IT strategy to the management of projects.

IT assets, moreover, have to be “quality IT assets”. As many authors have pointed out, this concept is strongly related to the “appropriate IT use”. Once again, we talk about a necessary but not sufficient condition, which actually has not been widely explored. Most treatments of the topic have assumed variance theory formulations of the “greater IT use leads to greater IT impacts”; nevertheless, beyond a certain level, it is not necessarily true that more use leads to better impacts; in particular, the uses have to be meaningful and proper to the IT objective.

Lastly, thanks also to the previous conditions, IT investments have to perform an “IT impact”, which means that IT has to cause significant consequences in the internal organization that are reflected in the external environment. But even when this condition is achieved, the improved performance will still depend on another variable as well, external to the organization: the competitive environment. That is why our work will proceed in analyzing what is and how a firm can achieve a competitive advantage through IT and how it will manage to maintain it over time.

Fig.1: the process of value creation through IT

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3. Competitive advantage and sustainable competitive advantage: some concepts and definitions

The concept of “competitive advantage” has been widely explored over the last years, by authors coming from different analysis fields. A general but meaningful definition can state that the competitive advantage is the ability to earn return on investments persistently above the average of the industry.

This topic is of particular interest since it is the most attractive for companies; nevertheless, still many organizations fail to define and clearly identify it. Perhaps this happens because the meaning of the expression is self-evident, and it might appear that no more effort has been made to define it explicitly. We think, instead, that a definition should be reached, in order to evaluate all the characteristics of the concept and, then, to be able to apply it when necessary.

3.1. Sustainable competitive advantage

A general definition of what strongly contributes to the creation of a “sustainable competitive advantage” can consist in a strategy not simultaneously implemented by many other competitors, which they have significant difficulties to realize in the same way. On the contrary, the advantage is only temporary if the competitors do not face particular difficulties in implementing the same strategy. The focus to determine the sustainability relies then on the existing gap between the resources or characteristics of the company that enjoys the advantage and its competitors.

3.1.1. Conditions for sustainable competitive advantage

More important than the definition, it is the analysis of the conditions under which a competitive advantage is meaningful for the company and can be defined “sustainable”\(^2\). We divide them into two categories.

1. Attributes perceived

The first condition consists in the presence (in the service or good) of particular attributes that are perceived in the marketplace and that differentiate the product from the competitors’ one.

Let’s focus first on the former element, which is crucial and often underrated and misunderstood. When we talk about competitive advantage, we have to take

\(^2\) For this analysis, we widely refer to Coyne, KP (1986) Sustainable competitive advantage – What it is, what it isn’t. Business Horizons 29: 54-61, pag. 55
our attention to the market place. The advantage that a company has internally, which can be a more efficient SCM, or a better access to raw materials, has to be translated into an attribute that affects the customer’s experience of the good or service. The differences among producers that do not fall in the market perception are useless in terms of competitive advantage.

Having lower production costs, for example, can lead to the obvious consequence of having higher margins; but this business advantage will be transformed in a competitive advantage only if the producer uses the additional profits to change one or more attributes of its service/product, for instance lowering the price or increasing the quality.

Moreover, this change has to pertain to attributes that belong to the category of “key buying criterion”. If the attribute is marginal, it will not cause a significant advantage, but only an additional characteristic which, in the best case scenario, will attract few customers. Lowering the price of a luxury good, for instance, will not affect the customers’ behavior as much as adding an additional feature in the core characteristic of the product would do.

2. The competitive advantage has to be expected to endure over time; this is the “sustainability”. In the second part of the paper we will deeply analyze this topic.

For the moment, we provide some general considerations. It can be interesting, in this phase, to underline and briefly discuss the observation that only in some cases competitors are not able to fill the gap; in some others, they simply do not want to.

It can happen, for example, that competitors realize that the costs of filling the gap would exceed the benefits of doing it. Some companies in the U.S. were able to create the low-price segment of the long-distance telephone largely because AT&T did not choose to respond directly for some time. Probably, it considered that cutting prices for all the customers in order to retain the 1 or 2 percent in the low-price segment was a too high cost, and that only when the segment grew to sufficient size an action would become worthwhile.

In other cases, competitors may believe that closing the gap could open gaps elsewhere, whose disadvantage would be most valuable that the advantages. Or, competitors can be inhibited in closing the gap for fear of retaliatory action by the producer; for instance, Japanese steel makers voluntarily refrain from increasing their U.S market share for fear that American producers will persuade the U.S. government to take harsh protectionist measures.

The cases shown before are all situations in which the company has a sustainable competitive advantage. Of course, its duration depends on the ratio “cost-to-benefits”, which is indeed usually changeable due to the fast changes in the market. Nevertheless, in nowadays competition, actors have an incredibly powerful weapon: information technology. Through it, they can achieve and maintain over

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Coyne, KP (1986), op. cit., pag. 56
time their competitive advantage; we will explain how in the following part of the work.

4. Sustainable competitive advantage and IT

The relationship between sustainable competitive advantage and IT is a recent discussion and much work still has to be done in this direction. Consequently, usually companies are not able to fully understand this relationship and the enormous potential it can have.

Moreover, taking a sustainable advantage from IT has become crucial, because if it does not happen, IT investments are doomed to create an overall damage to the company\(^4\). As a matter of fact, nowadays IT is often both the lowest-cost and highest-quality way to perform an action; this means that not only all the companies are attracted by implementing an IT solution, but also that IT tends to destroy the conventional forms of differentiation and forces companies to compete hand-on. Consequently, organizations cannot hold the benefits of their investments because they must use them to lower prices for customers. Only by succeeding in the creation of a sustainable competitive advantage, companies will be able to exploit and benefit from their IT investments.

4.1. The problems of getting a sustainable competitive advantage through IT

Despite the increasing attention and investments on IT over the last decades, getting a sustainable advantage from IT has become more and more difficult. This is predictable, actually. The technological development has lowered the price of IT, then the IT solutions are cheaper than before and it is easier to get them. Therefore, as more companies invest in IT, it becomes harder to carve out a unique and defensible position. These are some of the reasons:

- The IT software’s and solutions are available for all the companies within an industry, through IT consulting companies and vendors.
- Differences in IT development capabilities among competitors can usually be evened out by vendors. Some companies believe that the optimal choice is to implement an IT solution is working with the vendors, in order to realize a customized and unique solution. If this can happen for a limited period of time,

\(^4\) These general considerations can be found in Cecil J, Goldstein M (1990) Sustaining competitive advantage from IT. McKinsey Quarterly 4: 74-89, pag. 77
vendors and particularly consulting companies will have no restriction in benefiting from the experience by selling it to other competitors.

Larger company scale rarely translates into a cost advantage, because they usually require more complex and customized solutions, which are, of course, more expensive.

### 4.2. How to get a sustainable competitive advantage through IT

The logical consequence of the analysis is clear: IT alone cannot provide a sustainable competitive advantage. Competitors can easily copy the technology, in almost all the cases.

Instead, what makes a competitive advantage sustainable is the combination of the technology with other capabilities and factors.

In order to continue in this analysis, we divide the discussion into two parts: the so-called “old game” strategies, and the “new game” strategies.

#### 4.2.1. The “extend” strategy

We start our analysis from the “old game” strategy, that can be resumed, more formally, in the “extend” strategy. This situation differs from the other one because, in this case, the company uses IT to exploit and reinforce a structural advantage that it already has. In this context, IT is a necessary tool to make an already existing advantage meaningful and sustainable.

A short example can easily show this kind of strategy.

A good extend strategy for a multinational company could be to implement an information system in order to centralize the purchasing process, and then to lower the costs. In this case, even if some other competitors will imitate the technology, it will be likely to be useless, especially for national or regional producers. It is not the technology alone that gives the advantage, but its combination with the characteristics and the capabilities that a company has to implement it efficiently. In this sense, heterogeneity of features/resources is a potential source of competitive advantage, and companies should seek to base their strategies around such distinctive capabilities.

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5. We follow the research framework offered in Cecil J, Goldstein M (1990), op. cit., pag. 82
IT is a tool able to leverage certain characteristics, making them a sustainable competitive advantage. Let’s look at the cases and the features that can be leveraged:

Competitive scope, which can be defined as the range of markets, locations, products, channels within which the firm chooses to compete. Four type of scope can be identified: “geographical scope” refers to the place that a firm chooses to locate particular types of work or to compete in; “segment scope” refers to the buyers served and the breadth of products sold; “vertical scope” refers to the strategies of the firm to pursue backward or forward integration; “industry scope” refers to the set of industries in which the firm competes with a coordinated strategy.

Organizational base, which involves organizational structure, assets base, and culture.

Proprietary information, which can be of any form, but the most important is usually customers’ information. A company could implement an information system in order to manage this set of information efficiently: the best customers could be rewarded by special prices or benefits, as it happens in the airlines companies. If company B implements the same IT solution that company A has, it will not achieve the same competitive advantage because the system will not work with less information.

Skills and experience, impossible to copy. The implementation of an IT solution can easily collect and store the knowledge and practices acquired in a company, spreading their benefits all over the organization. Also in this case, the competitor will not meet difficulties in getting the same IT solution, but it will not help it to fill the gap with the “leader”.

Economies of scope, enjoyed by sharing costs across two more distinct product/market segments such as in banking, where leading banks have been developing integrated systems to shift from a product to a customer focus. In the credit card business, for instance, a bank selling credit cards to its mortgage customers enjoys roughly 50 percent higher profitability than banks selling credit cards to general markets, because the first bank saves all the marketing costs, for example.

4.2.2. The “first mover” strategy

The previous strategy aims to exploit an existing advantage or characteristic by making it a competitive advantage, but it does not consider the possibility to inno-

vate and create a new business or activity: in other words, to pursue a “first mover” strategy.

We can immediately state that, as well for the previous theory, also in the “first mover” strategy IT alone is not sufficient, because of the assumption that we made at the beginning of this work: in nowadays market, technology is more and more available to all the companies. Nevertheless, in many contexts it is impossible to achieve a sustainable competitive advantage without IT: once again, IT is necessary but not sufficient. We try to give a basic scheme of this strategy, by illustrating the main three necessary steps:

- Figure out a vision about how to innovate the business, in order to provide one or more improved attributes to customers;
- Be the first actor to pursue the strategy, achieving one or more “first mover advantages”;
- Exploit these first mover advantages in order to make them “sustainable advantages”.

The first two steps deal mainly with technology and its planning; the third one concerns, instead, the ability of the company to create the conditions to maintain the advantages over time, and it is actually the most complex one.

Let’s think, for example, at the case of eBay Inc., and how it succeeded in managing these three phases.

eBay was the first company to implement a solution to buy and sell goods through Internet. The IT solution could be copied by anyone, and actually was, but the sustainable competitive advantage of the company did not rely on this. Instead, it was provided by other components, possible thanks to the IT solution, but which went further and beyond it. eBay was able to put in practice the so-called theory of “increasing returns”. In industries like eBay’s one, where the IT component is predominant, after the achievement of a certain amount of users, called “critical mass”, the “positive feedback process” starts performing: the more users there are, the more users enter in the market, because the value for one users depend on the number of the other users (i.e. “network effect”). This mechanism is crucial, in this type of business, to gain customers’ loyalty, and then to achieve a competitive advantage that is sustainable.

Although the first mover strategy can be very powerful, few examples of successful cases have arisen recently. Many problems occur against the success: as we already said, technology is now much more developed and spread than in the 1970s, and it can easily happen that when a company works for a new solution, the competitor is doing the same. Even the time is usually a problem, since the complexity of the solutions and companies slow down the roll-out of a new system; competitors usually manage to get information in the meanwhile. Moreover, if the leader must go through the preliminary stages before the application can be built (planning process, customer request, emerging vision), the follower, instead, find sometimes this job done and can skip these phases. Maintaining the other
variables equal, that could shorten the time for the follower to imitate the implementation.

5. Conclusions

This work suggests that IT can be a mean to achieve a sustainable competitive advantage, even if, with the larger diffusion of IT over the last decades, it has become more difficult. IT can be an excellent tool to amplify the peculiar characteristics of a firm. In fact, the benefits resulting from an innovative application of information technology can be more easily defended if the system exploits unique resources of the innovating firm so that competitors do not fully benefit from imitation.

Both the extend strategy and the first mover strategy pursue the SCA; they differ in the context and in the way in which IT deals with the organization. Extend strategy provides a new tool for focusing on how IT can help in exploiting the existing positive characteristics. First mover strategy, instead, may offer the highest potential reward for companies where the increased value can be realized quickly.
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