INFORMATION SYSTEMS STRATEGIC ACTIONS (ISSAs)
FOR BUSINESS FUNCTIONS

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Abstract

The relatively recent idea of obtaining competitive advantages through the creative use of Information Systems (IS) has motivated many kinds of research. For example, there have been attempts at least to 1) document and categorize the types of advantages attained via IS; 2) study how IS and IT – Information Technology – can in fact motivate the appearance of new types of organizations or relationships among them; 3) analyze how certain well-known competitive advantages have developed in the corresponding organizations, with the objective of reproducing the conditions that led to them; 4) devise methodologies to aid and structure the process of identifying opportunities for strategic uses of IS, and 5) investigate the organizational implications of trying to be strategically proactive with IS.

The present paper attempts to make a contribution in the direction of redrawing classical business functions, in order to improve business performance, through IS-based actions. It is the belief of the authors that it is possible to systematically analyze a given business function vis-à-vis the capabilities of the existing or planned IS, in order to identify 1) how a given organization can capitalize on its IS strengths to improve certain function(s), and 2) what IS developments are necessary to support the improved way in which a given business function is supposed to be performed. These two views of the process are in fact complementary: while the former appeals to general management, the latter belongs rather to the IS tradition of planning and designing IS in response to business needs. In the authors' experience, they can be effectively combined in the context of a corporate-wide effort aimed at the identification of what we call ISSAs: Information Systems Strategic Actions.

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1. Introduction

Computer Based Information Systems (CBIS or simply IS) have come a long way since their initial stages, back in the 60's, when everybody was talking about the mighty MIS. Over the years we have witnessed myriad new developments and concepts that have taken that initial vision of CBIS to more realistic grounds, both technologically (in terms of what seems to be really feasible) and organizationally (in terms of how to choose interesting, feasible things to do, and, next, how to actually do them in a given organizational context). Concepts such as *Decision Support Systems, Strategic Information Systems Planning,* and, more recently, *Information Systems-Based Competitive Advantages* have successively inspired concrete IS-based actions in organizations, and have also fueled research in the academic world.

The relatively recent idea of obtaining competitive advantages through the creative use of IS has motivated many kinds of research. For example, there have been attempts at least to 1) document and categorize the types of advantages attained via IS (see [7], [10]); 2) study how IS and IT – Information Technology – can in fact motivate the appearance of new types of organizations or relationships among them (see [3]; [9]); 3) analyze how certain well-known competitive advantages have developed in the corresponding organizations, with the objective of re-producing the conditions that led to them (see [5]); 4) devise methodologies to aid and structure the process of identifying opportunities for strategic uses of IS (see [1]), and 5) investigate the organizational implications of trying to be strategically proactive with IS (see [8]).

More recently, a few papers have appeared that can be seen as still another approach to the general idea of IS-based improved business performance, and achieving competitive advantages. The common theme is how classical business functions can be redrawn in order to improve business performance (see, for example, [2] for an account of the control function, or [13] for a view of the customer management function). Some of these authors even think that a major re-organization can be justified in order to take full advantage of new ways of performing a given business function, which highlights the potential of the subject. One interesting and relevant characteristic of these papers is that, while not all of them come from the IS community, all end up with IS requisites needed to support the new way(s) of performing

one business function or another (explicit emphasis on this point is of course made by those authors with a clear IS tradition, such as Bruns and McFarlan [2]).

The present paper attempts to make a contribution in the same direction, but from a more general perspective. It is the belief of the authors that it is possible to systematically analyze a given business function vis-à-vis the possibilities of the existing or planned IS, to identify 1) how a given organization can capitalize on its IS strengths to improve certain function(s), and 2) what IS developments are necessary to support the improved way in which a given business function is supposed to be performed. These two views of the process are in fact complementary: the former view appears to appeal to general management, while the latter belongs rather to the IS tradition of planning and designing the IS in response to business needs. Inputs from both ends are of course needed to end up with a reasonable IS support of the business function of interest. In our experience, they can also be effectively combined in the context of a corporate-wide effort aimed at the identification of what we have elsewhere called ISSAs -IS Strategic Actions (see [1]).

2. The Relevance of Business Function Micro-Value-Chains

We thus adopt the perspective of wanting to improve business performance by improving the way in which certain business function(s) are performed (be they support functions, such as control, or line functions, such as manufacturing or marketing); we do this at the *Strategic Business Unit – SBU* - level (as opposed to the *corporate* level). An implication is that we assume business strategic planning parameters such as *strategic thrusts* and *the vision of the firm* (see [6], for example) are already defined and available.

A reasonable way of characterizing what is meant by "improving business performance" is to see the impact of different business functions on the value chain of the business ([11]). In fact, in order to identify candidate business functions to be improved, the analysis of the value chain is one of the approaches that can be used. In a pioneering work, Scott Morton and Rockart – see [12] – already suggested using the value chain framework, although they used it more to categorize the competitive advantages attained than to actually support a search process aimed at identifying ways of achieving them. In our experience, taking the value chain analysis a bit further turns out to be very useful in order to identify how the IS can be exploited to improve a given business function.

The idea is centered on a rather detailed description of the value chain of the business function(s) in need of improvement. Of course, the appropriate level of detail depends strongly upon the nature of the function being considered. The final description typically ends up being the result of a process taking several iterations, in which the participation of functional managers is vital. Equally important is the participation of the senior functional person, responsible for aligning the description of the value chain with the strategic thrusts set forth at the corporate level and with the business strategic plans in effect at that moment. As an example, however, the detailed value chain steps used in [7] for the sales function, which are reproduced below, will suffice to illustrate what we mean. Ives and Learmonth suggest describing that function in terms of the following steps (what they called the "Customer Resource Life Cycle"):

- Establish requirements
- Specify

- Select a product
- Order
- Authorize and pay for
- Acquire
- Test and accept
- Integrate into and manage inventory
- Monitor use and behavior
- Upgrade if needed
- Maintain
- Transfer or dispose
- Account for

Even in the context of such general steps, it is obvious that some of them can greatly benefit from a clever usage of CBIS. For example, the step "order" can clearly be improved through a network which facilitates communication between customer and supplier, not only by making it more efficient (in terms of time needed for the order to reach the supplier, for example), but often also by creating higher switching costs for the customer that ultimately result in the strengthening of the supplier's position.

Additionally, it is usually very important not to overlook the IS-based support that can also be given to "inter-step activities:" since these require information aimed at the coordination of adjacent value chain steps, they are often particularly well-suited to be IS-supported. For example, it is obvious that, between the steps "order" and "authorize and pay for," the transaction information about the order itself must be transferred. Making this process more efficient may result in improved customer service and, eventually, in gaining competitive advantage. In the detailed analysis of concrete businesses' value chains, less obvious coordination information transfers can be identified which often result in the basis for solid ideas on how to achieve competitive advantages.

The answer to the question "what steps (or inter-steps) of the value chain are worth supporting via CBIS?" is, obviously, very dependent on the concrete business under analysis. The present paper attempts to set the basis for a *methodology* to aid in the development of such answers, through the identification of *how* the IS-based support can be achieved. Thus, the point of view taken is somewhat in contrast with that adopted in some recent publications (see for example [5]), which tend to advocate a "less rationalistic" (and more "incremental", less systematic) approach for the process leading to the identification of IS-based strategic advantages. Although it is of course true that successful incremental developments in this field have been achieved by motivated innovators in the middle management ranks to whom the organizational environment gives enough freedom of action, we feel that it is also true that these innovators can greatly benefit from some support aimed at organizing the innovation process.

Instrumenting such an aid for the systematic IS-based support seeking process has at least two virtues: on the one hand, it makes explicit the fact that we are actively seeking IS-based improvements; on the other, if properly done, it can encourage the explicit consideration of relevant factors that can otherwise be overlooked by the innovators. In our opinion, however, it is still more important to realize that explicit support is needed if breakthroughs are to be identified. Saying that support is not needed because there is no empirical evidence to show that it has been used in the past assures only that we won't have such evidence in the future, either.

The proposed methodology explicitly takes into account 1) the experience gained so far in the use of CBIS support, whether in the organization under analysis itself, in other businesses of the same industry or in other industries; 2) the strengths of the CBIS at hand, and 3) the unfulfilled needs sensed either in the environment (in the market, for example, or in the supplier community, etc.) or, internally, in the organization under analysis itself. Whether the emphasis is internal or external in this sense depends a great deal on the business function being analyzed.

3. Generic Types of IS Support and Their Potential for the Business Functions of Interest

In order to systematically analyze how the detailed steps of the value chain corresponding to one particular business function (and also their inter-relationships) can be improved via IS, we find it useful to confront each one of those with what can be called *generic types of IS support.* By this we mean something like "known and successful ways in which IS support has been implemented in the past." Knowledge of those will, of course, depend a great deal on previous experience, and consequently it is impossible to develop a general-purpose list. However, it is possible to give some examples that will clarify their nature and their role in the process of analysis proposed in this section. For instance, in the context of the value chain steps corresponding to the sales function described above, the following *types of IS support* can be taken into consideration:

- Increase the efficiency of the activities needed to perform each particular step.

- Perform, with the aid of the IS, some potentially useful work (administrative or control work, for example) for your customer, while the activities of a particular step are being done.

- Take advantage of the IS to have your customers do some work for you.

- Use the IS to customize the activities of a given step (thus building up an image of personalized, specially designed service).

- Perform some kind of "product bundling" through the IS; that is, try to combine the selling efforts of more than one product into the same step.

- Do "step bundling," in the sense of combining adjacent steps via IS in order to obtain a more compact and efficient set of activities for them.

As said before, these types of possible IS support depend a lot on the business function being analyzed. In the above list, for example, the emphasis on products and customer relationships is obvious, as was to be expected given that the function under analysis was the sales function. Other functions can benefit from considering other kinds of potential IS support; for example, the relationships with suppliers would become central in the analysis of the purchasing function.

The effects achieved through these generic types of IS support can be very significant. Consider, for instance, the "product bundling" idea, sometimes put to work by joining the selling

processes corresponding to different products, for example, in the financial sector, a mortgage and life insurance. This can even result in a new line of business, built around packages of this sort, or it might even result in the possibility of entering a new sector, taking advantage of common IS-based support to sell activities of different products. The ATM cards issued by banks, coupled with the ATM network availability could, for example, lead a bank to enter the travel and insurance selling business, by selling tickets and insurance at airports.

The "performing some work for your customer" idea turns out to have a great deal of potential in certain sectors. For instance, new or almost-new products can be designed, often by increasing their information content. Also, IT-based processes can be designed specifically to help customers optimize their buying decisions – but only if they result in buying your products, of course. Still another result of the implementation of that idea has to do with performing administrative work for the customer, the kind of work that (s)he has to do but which represents a chore for him or her: if your IS can relieve him or her of it but your competitors' can't, you end up with an advantage.

The complementary idea, "have the customer do some work for you," can also be a far-reaching one in certain contexts. For example, ATMs force the customer to key in the details of the transactions, something never done before. Similarly, putting terminals in your customers' premises, so that they can enter the orders themselves, is something that not only liberates you from having to do so, but also often creates a strong customer dependency on your system.

The potential of these types of IS support is thus clear. As the initial phase of the methodology described in the following sections, we propose a systematic search of the IS support type's applicability to the steps of a given business function.

IS Support of Value Chain Steps

The confrontation of value chain steps with the different types of CBIS support can be done with the aid of a template such as the one depicted in Figure 1.

Figure 1

Assessment of IS support potential for specified value chain steps corresponding to the business function of interest

Value Chain Steps → / Types of IS Support ↓	Account for	Transfer or dispose	Maintain	Upgrade if needed	Monitor use and behavior	Integrate into and manage inventory	Test and accept	Acquire	Authorize and pay for	Order	Select a product	Specify	Establish requirements
Increase step efficiency	X									X			
Perform some work for your customers					X	X				X	X		X
Have the customer do some work for you					X					X			
Personalize step or product			X	X	X			X	X	X	X	X	X
Perform product bundling													
Perform step bundling										(X)	(X)		

In Figure 1, we have confronted some possible types of IS-based support with the value chain steps previously presented. The template permits an orderly and systematic check aimed at answering questions such as "is there a way in which we could use such and such a type of support so as to improve this value chain step in order to distinguish ourselves from (and gain advantage over) our competitors?"

In the process of answering these questions suggested by the template, two things should be done in order to document the answers properly: 1) indicate, in the template itself, the degree of appropriateness of a given type of IS support to each value chain step, and 2) explain in detail, probably in a separate form, how the IS could support each particular value chain step. The former can be done easily and directly in the template of Figure 1, by means of marking one of the three cells provided for each <Type of support – Value chain step> combination: it is assumed that, from left to right, those cells represent a three point scale, say from *low to moderate* to *high* degree of appropriateness (cells left blank indicate that there is no apparent way of improving the associated value chain step through the utilization of the corresponding type of IS support). The detailed explanation is simply supposed to be a written exposition of the particular way(s) in which each type of support can contribute to improving the different value chain steps. Figure 1 shows some of these checks already made; how can they actually be made is discussed below.

Answering the questions suggested by the use of the template just described is sometimes easy, because the types of IS support being considered can be seen as almost "natural" solutions to the operational needs implied by some of the value chain steps. For example, in the above example of Figure 1, it may be obvious that the customer can be asked to do some work for us during the "order" step. Note, however, that in order to be able to answer the suggested questions in this way, it is necessary to have a deep knowledge of the business and its environment (e.g., knowing that our customers wouldn't mind doing that, or that the staff responsible for placing orders is able to actually do it, etc.), but this is only logical. Of course, after answering these questions an important one still remains unresolved, namely, whether the capabilities of the IS currently in operation are judged sufficient to put the ideas to work. We will deal with this issue in section 4.

However, the answers to the questions suggested by the template are not always as obvious as in the example above. In such cases we have found it very useful to think about them in the context of unfulfilled needs detected in the environment. For example, detecting a need in the market for supporting the process of establishing the requirements of the product about to be bought (something not uncommon in the insurance or financial services sectors, for instance) gives a clear hint that we should be thinking about performing work for our customers precisely in this value chain step. From the seller's standpoint, this permits us to take the lead in the process, making it possible to actually suggest requirements to the buyer-to-be, thus helping him or her, but also making sure that we sellers do this in the ways that most interest us.

In order to follow this kind of reasoning while filling out a template like that in Figure 1, however, the needs of the environment must obviously be known by the person(s) performing the analysis. Consequently, some way of identifying them is needed. Some authors (i.e., [5]) would probably argue here that if you let the middle managers do the analysis "on the fly", they will automatically take care of this problem, because they are the ones who *know* about unfulfilled needs. Although we agree with this to a degree, we also feel that devoting some effort to actually *developing a list of needs sensed in the environment* is very useful, for at least two reasons: 1) it forces management to explicitly think about their needs, and 2) it makes all these needs known to all managers. Thus, we advocate making the effort.

In a number of situations we have found that a convenient way of organizing this effort is as follows:

1. Have the middle management of the business function under analysis, plus managers involved in closely related business functions, prepare, individually, a list of unfulfilled needs that they may have detected in their daily activities (sometimes it is better to talk about "opportunities for problem solving" than about "unfulfilled needs"). This should be clearly perceived as a senior management request, which implies the active involvement of the latter.

2. Collect the lists and organize them by general themes. Prepare a short document containing a unique list of needs so organized.

3. Set a working session where every manager involved in the process studies the global list individually, and then in the context of a small group. ("Studies," here means something to the effect of "makes sure understands and assesses the importance of").

4. Have a general discussion, with participation of all managers involved and headed ("officially," at least) by senior management, with the same objectives as in the previous point.

5. Produce a consensus list of the unfulfilled needs perceived as most important, i.e., those that, when fulfilled, will – management believes – result in clear advantages.

The whole process can be done in a week, with the last three steps taking place in a single day or even in a single morning or afternoon, if properly coordinated.

Just as an illustration, the list in Figure 2 shows the kind of needs that can be identified through such a process (although they don't necessarily belong to the same business).

Figure 2
Example list of unfulfilled needs detected in the market

1. Orders Cake a long time to reach our CBIS.

2. As a result of the wide range of products offerred, choosing the most appropriate product for a given situation turns out to be difficult not only for our customers, but also for our sales people.

3. Most of our custumers don't seem to have clear requirements in mind when placing an order, nor do they seem to have appropriate means to monitor how our products perform, so that convincing them of good performance is often difficult.

4. The low level of sophistication found in our typical customer often implies that they don't have a stock control function as such. This often translates into last minute orders to us, with the consequent hassle.

5. There have been complaints of customers unsatisfied with what they call a "too standardized" line of products.

With Figure 2 at hand, the assessment called for by the template in Figure 1 can be performed as suggested above; that is, thinking about whether a particular type of IS support seems potentially appropriate to improve a given chain step "because it will contribute to fulfill such and such need(s)." This assessment process can even be represented in the same template, by indicating in the corresponding cells what unfulfilled need(s) justify a given assessment. See Figure 3.

Figure 3

Assessments with indication of unfulfilled market needs (Figure 2)

	Account for	Transfer or dispose	Maintain	Upgrade if needed	Monitor use and behavior	Integrate into and manage inventory	Test and accept	Acquire	Authorize and pay for	Order	Select a product	Specify	Establish requirements	Types of IS Support
	X									1				Increase step efficiency
					3	4				1	2		3	Perform some work for your customers
					3					1				Have the customer do some work for you
			5	5	5			5	5	5	5	5	5	Personalize step or product
														Perform product bundling
										X	X			Perform step bundling

Value Chain Steps (column header group); *Types of IS Support* (row header group)

IS Support in Value Chain Inter-Step Activities

As said before, the inter-steps activities can sometimes also greatly benefit from IS-based support. In order to systematically analyze which activities can be effectively supported and how, an approach similar to the one described in the previous section can be used. Through a template like that in Figure 1, where rows would now correspond to the inter-step activities, one can assess, as before, how the different types of IS support could be used to improve them,

either by making them more efficient or by re-organizing them in order to increase their effectiveness.

The idea of re-organizing business functions in order to make them more effective (more consistent with the strategic objectives or thrusts, for example) through the usage of IS is far-reaching. It can result, for instance, in the decision to centralize the control function in an environment where, due to data-processing constraints, it had been previously decentralized (or the other way around, for that matter).

After completing the assessment processes just described, the templates used (see again Figure 1) can be viewed as a useful summary of them: In fact, they clearly point out which part(s) – be they value chain steps or inter-step activities – of the business function being analyzed can be effectively "attacked" or supported via IS. This results in a set of useful patterns that permit the comparison of different business functions in a rather concise manner.

4. The Implementation of IS-Based Support. The Role of the Existing IS's Strengths and Weaknesses

In the preceding sections we have argued about the high potential, even from a strategic standpoint, of giving IS-based support to business functions, and have suggested an organized way of identifying how a given business function can be given IS support. In so doing, however, we have adopted a non-IS perspective, in the sense that the advocated assessment process is centered on unsatisfied needs detected in the environment and generic types of IS support, with no specific reference to the actual IS capabilities of the business under analysis. Of course, in order to materialize the IS-based support(s) assessed as potentially interesting, it is necessary to embark upon an implementation process aimed at actually achieving them through the IS, while, at the same time, assessing the priority that the implementation of each support ought to have, relative to all others.

When facing such implementation-related issues, two extreme cases may occur (in addition to all the intermediate ones): 1) The IS already in place can be made, with almost no effort, to provide the support sought, or 2) it is necessary to perform a major overhaul of the existing IS (which may include a partial or total re-design, etc.) in order to obtain the support in question. For the purpose of assessing how near to one extreme or the other we are, we have found it useful to think about what can be called "IS strong points," or strengths, and see how they can or cannot be used in the implementation of the IS support ideas identified. Putting emphasis on what distinguishes your IS has the advantage of capitalizing on IS-based support that will be both "genuinely yours" and more difficult to imitate, as we discuss below.

There are several ways in which IS strong points can be identified, some of them similar to the approaches used in the SBU strategy formulation process, where an internal scrutiny is performed in order to identify SBU's strengths and weaknesses (for example, see [11] for an adaptation of this process to the IS field). Normally, this implies the explicit consideration of competitors and the assessment of the relative position of the SEU under analysis, regarding what can be termed potentially critical success factors, i.e., those characteristics which may distinguish your CBIS from your competitors' CBIS's. Several families of such factors can be identified, for example technological, organizational, personnel-based, application-based, etc. A few instances of CBIS strong points that can result from such a process are the following:

High accessibility of certain company databases (say higher than or as high as the equivalent databases of the strongest competitor). It could refer to the accounts database of a bank, for example.

Strong technical background of personnel specialized in a given information technology (e.g., telecommunications).

- High degree of experience in the actual use of state-of-the-art technologies, tools or methodologies (e.g., fourth generation languages or expert systems).

- High quality of certain applications' designs (e.g., better degree of flexibility than those of the competitors).

- The actual contents of certain databases not available to competitors (e.g., buying patterns of customers, etc.).

- Availability of CBIS processes of potential interest to third parties (customers, suppliers or even competitors).

- Availability of already-installed computer processing power or storage capacity, or ownership of communication networks.

With a set of IS strengths such as this, the potential IS-based supports identified in Figure 3 can be judged, and their feasibility assessed. For example, the support given to the "establish requirements" step can be based on the existence of a buying patterns database: its analysis can actually suggest requirements, already expressed in terms of some products that a given customer may have never bought from the company under analysis. In our experience, this kind of assessment greatly enriches the whole process, since it clearly identifies the opportunities that can be exploited precisely by relying on what we are good at. The result is high priority projects, with high potential for yielding sizable advantages.

The other side of the coin is of course also possible. If the result of the previous assessment is that there is no IS strong point on which to base the implementation of one potentially very good idea for IS support, then we have identified a weak spot in our IS operation: In effect, we have identified an unsatisfied need in the market, say, that could be given support through the IS, only our IS isn't good enough for doing it. Thus, if the IS of some competitor is good enough, we may be at disadvantage instead of being at advantage. This should then lead to the definition of concrete requirements for our IS.

These two sides of the same coin clearly show the interleaving between business strategy and IS strategy. Certain strategic actions that in fact redefine business strategy are possible because of the IS strengths, while certain IS developments are needed in order to implement the business strategy.

5. But… Is It Worth It? Function Value and IS Support

Throughout the previous sections we have taken the view of wanting to improve business functions through an appropriate CBIS-based support, whether by capitalizing on the strengths of the already-existing IS or by identifying new IS developments that would actively contribute to the improvement of the analyzed functions.

Implicitly, we assumed that the importance of the analyzed functions justified the search for ways to improve them, and in particular for ways based on the use of IS. However, it is clear that the impact of the improvements on overall business performance will depend on the importance of the functions studied. If this importance is measured in terms of value creation, then the matrix in Figure 4 can be a reasonable summary, helpful in the global consideration of the issues discussed in this paper.

Figure 4

Archetypical situations regarding the importance of the business functions (or value chain steps) and their potential support via IS
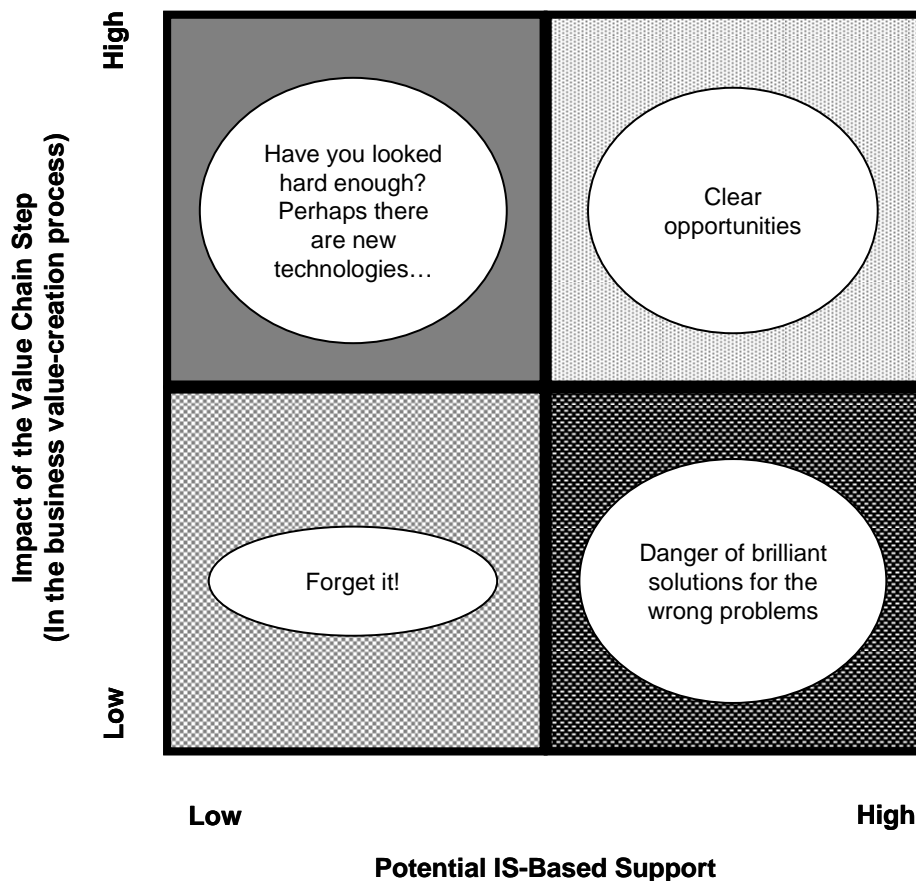
So far, we have implicitly assumed being in the northeast (high-high) quadrant of the matrix: given that the function or step under consideration greatly contributes to the value creation process of the firm under analysis, any IS opportunity related to it is warranted to have some strategic impact, and so it should be undertaken. There are, however, other possible situations depicted in Figure 4 that, although somewhat trivial, are worth discussing because they relate to situations not uncommon in real life.

The situation corresponding to the low-low quadrant is as clear as the previous one: if we are talking about a business function or step of the value chain whose importance in the value creation process is low, and so is the potential improvement attainable through IS that the analysis has been able to identify, then there is no point in continuing the search or in trying to implement an *a priori* low-performance action.

The other two quadrants in the matrix of Figure 4 are more interesting. Take, for example, the south-east quadrant. It corresponds to the case where it has been identified that the IS can give substantial support to a not very important function or value chain step. There is a clear danger, in this situation, of being misled by the bright IS perspective, and to forget about the low importance of the function or step. More importantly, these are the typical situations where a technical person will make the wrong decision, and will undertake the development of costly (and maybe even brilliant) solutions for the wrong problems. If nothing else, this clearly points out the necessity of adopting a business perspective when judging the appropriateness of the IS support activities that can be suggested. Of course, this is not new, and, to some extent, it has also been recently emphasized, albeit from a slightly different perspective (see [4]).

The northwest quadrant is also interesting, but for other reasons. Here an important function or step doesn't seem to be especially well suited to receive IS support. The immediate reaction could be to feel sorry and discontinue the search, but maybe a greater searching effort is justified, precisely because of the function or step importance. This may imply many different actions. From an organizational perspective, for example, some firms have responded to this situation by setting up a new post. Such a post is given the responsibility of actively searching for new information technologies, potentially appropriate for supporting function(s) or step(s) considered important. An interesting problem is, of course, to find the appropriate person to fill such a post. From the viewpoint of organizing the IS department, maybe what should be done is to explicitly awaken the sensibility of the department concerning the functions or value chain steps perceived as important, in order to increase the probability of identifying high potential IS-based support actions "from the inside."

In summary, the impact of the function or value chain step in the value creation process may be the "hidden dimension" of the process aimed at the identification of IS support. It is obvious, and for this reason it shouldn't be forgotten: doing so would then be ridiculous.

6. And Finally: Just IS Support or a Major Re-Drawing of Business Functions?

Before closing, we think that there is still a final issue worth considering. Some readers may by now be asking questions like: After all, what is so important about IS support to business functions? Hasn't this been the message of the IS community for years? What is different now?

All these questions are relevant and to the point. In the context of what we have discussed in this paper, we would like to point out that there is an important aspect which shouldn't be overlooked, because it is at the root of the really significant advantages attainable through IS. And this aspect has to do with the fact that, often, IS-based support permits not only doing the same function in the same way in which it was done before – just a bit more efficiently – but *doing it in a different, more effective, way.*

By "more effective," here, we basically mean "more in line with the objectives of the firm." And, in addition, we mean it from an "active" perspective, in the sense of being prepared to accept the possibility of even changing these objectives in response to opportunities revealed by IS-based actions. It is in this sense that we think the so called "IS-based strategic opportunities" should be understood.

There are many examples of what we mean. A few well-known ones follow:

- IberCharter, a vacation wholesaler or tour-operator (see [14]) significantly accelerated the process of billing its customers through a clever design of its IS. This allowed the company to offer early payment discounts to its customers (travel agents), a practice new in the Spanish tour-operator sector. This, in turn, allowed a financial strategy very uncommon in the travel business. This financial strategy permitted a firm the size of IberCharter to survive in an environment where it had to rely heavily on competitors, even to buy the transport part of its products.

- Gallina Blanca Purina provided each one of their salesmen with a linear programming model and a PC in order to support and optimize the buying decision of its dairy customers. The result: An important step in the value chain of the client, being supported by resources from the supplier. Or, if you prefer, adding one step to the value chain of the latter: this is a far-reaching way of redefining your selling function!

- Most ATMs act only as cash dispensers, but even in this case they are taking an expensive step in the value chain away from the bank and giving it to the customer. The step is done so *differently* that someone else does it for you!

- Johnson & Johnson couldn't react to the offensive of American Hospital Supply (see [15] and [16]) because it was too decentralized. Reacting thus would have meant re-designing a lot of business functions, including, of course, that of control and that of IS itself!

- *USA Today* is a different kind of newspaper. It is the first one that "went national." How? By completely redesigning the distribution and production functions, which could be done in radically different ways with the aid of Information Technology.

- The inventory control function of supermarkets with scanners at the check-out counters is another story. Again, the availability of data early in the process permits to re-define the function in significant ways.

It is our hope that this somewhat new perspective of a by-now classic subject will help managers to identify their IS opportunities better. Watch out for substantial redrawing of your business functions through IS – your competitive advantage may be at stake.

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