Targeting intelligence gathering in a dynamic competitive environment

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Abstract

Current management approaches to resource-based strategy and core competence thinking require extensive intelligence gathering to ensure that correct assumptions are being made about the environment and competitors’ capabilities. Without such intelligence any attempts to develop, maintain and in many cases even identify the key assets and competences are flawed. Often the very people who are best placed to carry out intelligence appraisals are those contributing strongly to mainline business activities of technology development and business winning. Because of this potential conflict the intelligence process must be efficiently targeted. Existing methods of intelligence concentrate on the process of intelligence gathering, frequently using military analogies. To the extent that a competitive system model can be created these existing approaches can be made more directed in their application and therefore more efficient in their use of valuable in-company resources. Moreover, the very expression of a competitive system model can improve the appraisal process itself. The applicability of a general system modelling technique, used extensively in business process modelling and known as qualitative systems dynamics (QSD) is described and its applicability to the intelligence targeting problem is examined through the use of a case study. It is shown that the method is accessible and relevant to competitive intelligence problems. An example from practice, the competitive analysis of a major international defence company, is shown. It is seen that the level of analysis (data points, process understanding, systemic knowledge) relates closely to the elements of the system model and this concordance aids targeting. © 2000 Elsevier Science Ltd. All rights reserved.

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1. The context and importance of competitive intelligence to the firm

1.1. Resource-based strategy

One of the most integrating and almost ubiquitous threads of current management thinking emphasises the importance of a resource-based view of the company (Barney, 1997; Grant, 1998; Markides & Williamson, 1994). In this approach the development of the firm is expected to be built firmly upon its existing key assets and distinctive competences. These assets and competences are characterised and indeed identified by comparison with the assets and competences of competitors, and conventionally are required to possess three attributes (Prahalad & Hamel, 1990):

- access to a wide variety of markets,
- a significant contribution to the perceived customer benefits of the end product,
- difficult for competitors to imitate.

With this perception, then, the conventional situational appraisals of strengths, weaknesses, opportunities and threat (SWOT) analyses are informed by the need to maintain these core competences in the face of the development by competitors of their own core competences and key assets (Hax & Majluf, 1996). Such development then forms a central part not only of the relatively localised product and market development strategies of the firm, but also a central agenda item in the horizontal strategy of the company, whereby an important part of the governance of the firm is seen to consist of the engendering of an appropriate environment for the development and maintenance of these ‘crown jewels’ of key assets and core competences.

Within such a schema, then, competitive intelligence can be seen to be of vital strategic importance in a number of ways:

- If we are to assess our own key assets and core competences in comparison with those of our competitors, we are obliged to have some view of what those competitor competences are.
- The imitability of our own putative core competences can only be assessed to the extent that we know the capacity of competitors to imitate.
- We would wish to know, conversely, the vulnerability of competitors to our imitation of their core competences.
- Our ability to access new markets can only be satisfactorily addressed if we have knowledge of competitors’ intentions and capabilities in that respect.

Without such knowledge our capacity to access existing and new markets and, above all, to identify and maintain the basis of our competitive advantage will be at best flawed and, more likely, severely limited.

1.2. Other bases for requiring competitive intelligence

Resource-based strategy does not represent the sole justification for a competitive intelligence programme. Conventional views of the details of the market and structural struggles of companies demand knowledge (or at least assumptions) of the positions of competitors in negotiation (Thompson, 1998) and of their intents and tactics in market development campaigns (Rumelt, 1998). Even with the modern emphasis on network approaches to industrial strategy and the need...
for partnering approaches to managing these networks of buyers, suppliers and peer companies, it can be argued that knowing the capabilities and intents of other companies in essentially non-competitive and trusting relationships is an added contribution to the well being of the grouping in addition to being a safeguard against any future change in the nature of the relationship.

Lastly, it is important to retain a dynamic understanding of the technology trajectories of the surrounding industrial environment (Nelson, 1997). Without this perception of the changing technical capabilities of our own industry and that of adjacent industries (from whence unexpected new rivals may emerge) our attempts to generate a viable and appropriate technology strategy will be in vain. No matter how capable our company is in generating technology there is always the possibility that another company in an adjacent, previously unobserved industry will innovate in a direction which we did not expect and in such a way as to render obsolete our own industry-centred innovative process.

1.3. Need for efficient targeting

The opportunity cost of such competitive intelligence gathering is high, since the best intelligence appraisals are frequently those carried out by the very people who are engaged in developing or exploiting our own core competences. Intelligence derives always from an appraisal of data informed by some underlying model of behaviour, a hypothesis or an assumption against which the competitors’ actions and utterances can be tested. It is frequently the most knowledgeable members of our company who are in the best position to develop these hypotheses and test them against data gathered often on an opportunistic basis. It is incumbent upon us, therefore to target the competitor intelligence appraisal process efficiently since an efficient competitor intelligence process will provide the least disruption to the main-line activities of market development, sales or technology generation in pursuit of our competitive advantage and its exploitation. If, in addition, that targeting is carried out on the basis of a model which contributes to the appraisal process itself, by representing our best understanding of the dynamics of the competitive system which we are investigating, then a double benefit will accrue, since the appraisal process itself will be rendered more efficient.

2. Existing approaches

2.1. Intelligence cycles

Kahaner (1996) supports the view that a number of benefits derive from engagement in competitive intelligence activity. In processual terms Kahaner proposes the use of a military style intelligence cycle to facilitate the planning, collection, analysis and dissemination of intelligence within the organisation. The cycle referred to consists of a highly interactive process of data gathering, and conjecture about the enemy’s order of battle, capacity and intent, which in turn targets further data gathering activities. The justification for this is the usage of this cycle by governmental agencies such as the United States Central Intelligence Agency.

As discussed above, it is highly desirable to seek examples of best practice in order to improve the competitive advantage of the corporation vis-à-vis its competitors and this applies no less to the
process of competitive intelligence acquisition as to other business processes. For those concerned with the methods and process of intelligence operations possibly the most obvious starting point for comparison is the intelligence apparatus maintained by the modern nation-state. In the UK, for example, intelligence is estimated to cost in the region of $1.5 billion per annum, equivalent to approximately 5% of that devoted to defence. In personnel terms Herman (1997) identifies the requirement to be equivalent to 25% of that engaged in Shell (UK)'s operations.

2.2. Military intelligence methods

The use of individuals to gather intelligence for the benefit of a society has a long history going back to biblical times. The modern intelligence organisation has its origins in the early twentieth century with the establishment in Britain of MI-6 which had as its mandate responsibility for intelligence gathering overseas (Christopher, 1985). The American CIA emerged as a result of the Second World War in order to consolidate the fragmented intelligence efforts which were blamed in part for lapses such as the infamous Japanese attack on the naval base at Pearl Harbour (Darling, 1990).

Having become a formal part of the machinery of government how does the state-sponsored intelligence business function? The use of the intelligence cycle as recommended by Kahaner is actually derived from the military. The rationale is noted by Herman that, ‘Contrary to critics’ beliefs, peacetime intelligence sets considerable store by behaving ‘properly’ with ‘proper’ procedures. Hence the attraction of the military metaphors of requirements and the cycle’ (Herman, 1996).

This last quotation suggests an explanation for the failures of intelligence to cope with extraordinary situations. Intelligence services world wide have been held responsible for failures which have had consequences for their governments. The United States intelligence community were blamed for failing to predict the end of the Soviet Union and more recently an enquiry was started as a result of the failure to advise as to the likelihood of Indian nuclear testing.

In Israel the reputation of its intelligence machinery was badly damaged by the failure to give appropriate warning as to the 1973 attack by the Arab states. Black & Morris suggested that this over-sight was in large caused by, ‘a concept … that the Arabs had no intention and were incapable … of renewing the war against Israel’ (Black & Morris, 1991).

Likewise, in the UK the intelligence function was held accountable for errors in detecting the invasion of the Falkland Islands by Argentina. An enquiry after the end of hostilities considered as evidence a paper prepared for the Joint Intelligence Committee, a senior co-ordination body for the British intelligence community, on the possible risk from Argentina (Franks, 1983). A later analysis described the report as, ‘a very routine item, containing nothing to start ringing alarm bells’ (West, 1997).

2.3. Shortcomings

In all these cases it could be suggested that the organisation in following the cycle has established standard operating and monitoring procedures which have led to a certain myopia in divining from the information available knowledge about the changing environment. Furthermore the cycle, whilst a useful tool for visualising a static situation, appears inappropriate when considering an environment such as a subversive organisation or market competitor over time in a changing environment.
Indeed in the cases highlighted previously the quality of intelligence regarding the opponent, be they the Soviet Union, Arab states, or Argentinians was often good. The problem seemed to revolve around its situation within an environment which was itself dynamic. For example in the Israeli intelligence services the victories over the Arab states in previous years helped to form a mind-set which degraded intelligence about the Arab armed forces on the basis that they had lost previous engagements with the Israelis and were of poor quality.

Allied to this is the problem of maintaining the subjectivity of the analyst. A classic problem for the government intelligence agencies has been to select and maintain analysts who can view the world as their opponents or competitors might. This is in contrast to the assumption that, ‘all foreign persons are educated at Oxford or Harvard’ for example. The implication of this statement is the risk of viewing information and assuming that competitors strategic culture is the same as the analyst’s. Furthermore, the intelligence analyst in government often joins their organisation and stays with it for the duration of their career. This means that the intelligence collectors and analysts do not get to spend time in posts where their customers operate, and therefore quite understandably they lack sensitivity to the customers needs. Allied to this situation intra-organisational mobility means that desks devoted to particular specialities have a turn over of staff every 2–4 years, the implication being that it is hard to build up a knowledge bank within the organisation and too easy to dismantle.

In summary the quest for effective competitive intelligence acquisition and analysis within the management information structure can derive benefit from examination of best practice of the nation-state. However, such consideration must be balanced by a concern with utilising methods for collection which go beyond the formal intelligence cycle to incorporate an ability to consider dynamic environments where the organisation engages in competition with other actors. The next section of this paper illustrates such a technique.

3. A system interpretation of intelligence product

In order to make clearer the use of system models to facilitate intelligence analysis and gathering, a distinction is made between three levels of intelligence product, namely

- point data,
- process-based information,
- system-based knowledge

with an implication of an increasing contextualisation within a declared system understanding.

At the lowest level of system understanding business intelligence is concerned with data points. These are essentially isolated pieces of data, often very important to the success of our endeavour, but viewed as being essentially unconnected to the surrounding activities of the competitor. For example, we might wish to know the cost of production of a competitor’s product. While we are fully aware that the cost of production is a result of a number of underlying factors in our competitors’ operation, such as wages levels, production efficiency, etcetera, it is the end effect which motivates our data gathering rather than the underlying factors.

There are, however, certain advantages in viewing the competitor’s cost of production as part of a linear process of cost/value accretion. Firstly, it may not be possible to acquire the cost of
production directly. Such information is closely guarded and attempts to obtain it directly may be neither successful nor ethical. If we view the cost as the end of a process, however, we can enquire what the components of that cost might be. Our accountants may offer the suggestion that the end cost is dominated by only a small number of factors, say wages bills, cost of capital expenditure and raw materials. We can easily estimate the first; advertisements in the trade press for various levels of staff present a ready source of data. Similarly, the cost of capital expenditure can be estimated by knowledge of the cost of money and estimations of the cost of set-up of the production system. The third component, the cost of raw materials, is a piece of data which can be acquired by the simple expedient of inviting quotes from suppliers. Thus, by considering process-based information we can make estimates of directly inaccessible data and, moreover establish confidence levels by cross referencing incomplete data directly acquired with other estimates derived from process understanding.

So far, however, we have still had the aim of establishing single data points, albeit underwritten by a process understanding. A further step, leading to system-based knowledge, is to take into account the complex commercial system of which the data points and process-based information are only parts. The essential characteristic of their system-based knowledge is that it is concerned with knowledge which derives from an understanding of the commercial system as a whole. For example, while it is appropriate at the operational level to be concerned about the costs of a competitor in order to estimate, say, the entry price of a ‘me-too’ product, at the strategic level companies are concerned with wider issues, such as the product strategy of competitors. Here an understanding of the relative balance of a competitor’s expenditure of resources on innovation (in order to establish differentiated products) on market process innovation (in order to achieve a low cost base) on advertising (to achieve, for example, brand loyalty or perceived quality) is essential to make an appreciation of the long term strategic posture of the competitor. If we are concerned with a level of strategic intelligence gathering above the product strategy level — at the market strategy or corporate level, for example — the need for a broad-based system context is even stronger. Such an appreciation can only be achieved by establishing a rich and extensive model which spans both the internal processes of the protagonists and the essential market mechanisms.

4. System structures

An appropriate structure for such a model can be seen in Fig. 1. The hatched areas represent internal systems models for ourselves and the competitors (only one competitor being shown here). The centre section represents a system model of the dynamics of the market mechanisms, distinguishable from the internal processes by the common nature of the variables. For example, a variable called Company A’s profit would clearly fall within the internal model of company A (in spite of the inherent knowledge that a profit won by A in a fixed market implies a loss of profit by other companies). Conversely, a variable called total market size would naturally fall within the central market model, since it is specific to neither company alone.

Note that there are certain linkages between the internal processes of the protagonists and the central model. For example, if a company expands its core competences by internal investment in techniques to reduce costs (process innovation) or to enhance the differentiation of its products (investment in research) the effect will not simply be felt in terms of the company’s internal state.
Certainly, the internal costs will be reduced or the salary bill increased (internal effects) but additionally the total market size may increase as new customers are attracted into the market by the reduced costs or increased features of the product. These links are shown conceptually in Fig. 1.

Fig. 1 shows no links directly between the two companies. In the case where two companies are in a direct competitive stance one against the other this will be representative but to the extent that the companies are in a non-competitive relationship (such as technology sharing) there will exist links between the companies which do not pass through the market mechanisms and which will therefore bypass the market model in the system modelling structure exemplified by Fig. 1. It may be argued that no relationship between companies is entirely without market consequences, and to the extent that this is true, it will be possible to eliminate linkages which bypass the market model.

5. A system modelling example

The system models exemplified by Fig. 1 can be implemented in a number of ways and it is not within the scope of this paper to argue in detail the respective merits of wholly quantitative models vis-à-vis those which take into account the less clearly defined contributions to be made to system behaviour by their constitutive human elements. In the context of competitive intelligence, however, it is observed that any system modelling approach which fails to reflect the effects of human behaviour upon the business system is unlikely to be adequately rich in its representation (Checkland, 1984).

A modelling approach, known as qualitative systems dynamics (QSD) has proved successful in practice (Powell & Bradford, 1998). The method is based on the well-known systems dynamics method (Coyle, 1996) of influence diagrams. The building block of a QSD influence diagram is the linkage of two descriptive variables by an arrow which indicates causality and consequent correlation between the variables. Causally related variables with negative correlation (for example, the well-known effect of economy of scale in production, where increased volume results in a reduced cost of unit production) are connected by an arrow with a negative sign attached. Positively related variables (for example cost of production affecting cost of goods sold) have a positive sign attached.

It must be stressed that the signs attached to the heads of the arrows indicate only the causality and correlation between the variables; if cost of production goes up it pushes cost of goods sold up.
with it ( + sign). There is no implication that a particular variable is rising or falling at any particular time. If the cost of production falls, it will cause the cost of goods sold to fall (still a positive correlation, hence a + sign).

By building chains of such causal connections, diagrams which capture the characteristics of systems can be built, and in particular the effects of loops of variables can be examined. Fig. 2 shows a relevant example.

Here we see that if we increase the funds available in a company we are more able to invest in the development of new markets. This in turn increases the size of the available market which increases the sales volume, the sales income and the profit, with the result that more funds become available thus increasing the capacity for investment in new markets. It should be noted that the QSD method does not claim that this investment cycle will increase without constraint. Firstly, there will be compensating loops in the rest of the system which will act as limiting mechanisms to the isolated behaviour of Fig. 2. Secondly, the very purpose of expressing system behaviour in this fashion is to identify management agendas and action plans which will control the system, and to the extent that management is effective in this respect the effect of loops such as that of Fig. 2 will be provoked or attenuated. Identification of potentially unstable loops such as that of Fig. 2 is a useful indicator to managers that, left alone, such mechanisms can build strongly either in our favour or against our interests, and that a management agenda can be derived which promote the linkages in the loop when such linkages are in our interests and can be attenuated when they act against our interests. Powell and Bradford (1998) report a case study in management of product safety which illustrates this agenda setting.

Other loops, described as goal-seeking, behave in a potentially stable fashion. Fig. 3 shows a loop (related to that shown in Fig. 2) where the funds made available to develop new markets is seen to increase the cost of goods sold, which in turn causes the profit to fall, which in turn causes a fall in the funds available for market development. Thus, there is an inherent tendency for such a loop to seek a stable level. The extent to which it will stabilise is a function of the strength of the linkages between the variables, but qualitatively the loop presents the possibility that management action can strengthen the tendency of the underlying system dynamic either to run away or to stabilise.
Fig. 4 shows the full diagram from which Figs. 2 and 3 are extracts. It derives from an actual consultancy concerned with establishing the nature of the competitive environment for a major international defense company. While it is a simplification of the actual overall model produced it captures many of the important illustrative points for competitive intelligence. Comparing it with Fig. 1 we see that the central section has a market model showing, for example, that increased switching costs will tend to raise the height of entry barriers to a new entrant (predation). If new entrants cross that entry barrier (predation up) the market share of companies A and B (the incumbents) will fall (A’s market share and B’s market share).

The internal models of this illustrative influence diagram show the effects of increased investment in research on designed quality and features, both of which in turn affect the perceived quality. This then increases the extent to which a company can claim a relative premium in the market which then increases the price.

While the simplified Fig. 4 does not purport to be an adequate representation of a business system, it shows many of the characteristics of the more complicated influence diagrams appropriate for actual consultancy work. Its use for competitive intelligence targeting and analysis will now be illustrated and certain conclusions drawn regarding the nature of the system origins of competitive intelligence of various types.

6. Use of the QSD diagram to target and analyse competitive intelligence

Within the context of influence diagrams such as Fig. 4 the tripartite distinction between point data, process information and system-based knowledge can now be seen as relating,
respectively, to

- the individual variables within the diagram,
- chains of causality represented by sequences of arrows linking variables and,
- loops and connected loops.

6.1. **Point data**

Individual variables within the diagram represent items of intelligence which we might seek to measure essentially in isolation from the surrounding system connections. An important piece of point data which might allow us to assess the ability of a competitor to compete against us in terms of speed of innovation might well be the rate of research investment. The point data approach would then lead us to attempt the acquisition of that data directly. Such an enquiry is extremely difficult; companies guard the details of their research expenditure carefully, and as it does not form part of any statutorily required public declaration, it is unlikely that any company for which research expenditure was important would willingly release such data. Resort might then have to be made to less direct methods. Staff recruited from the competitor might bring information with them; existing staff of the competitor might be indiscreet; benchmarking standards may give insight of the expenditure to be expected. Even so the amount of intelligence available if the competitor’s research expenditure is treated merely as an dissociated point variable is limited. Since the
measurement of such a variable is dissociated from the surrounding system dynamics the point data is essentially an item of intelligence assessed in a static fashion.

6.2. Process-based information

A more successful analysis approach which contributes to the targeting task is to consider the linear processes of which research investment forms one element. See Fig. 5 below.

Such a perspective puts the research investment in the financial context of the company. Investment in research is seen as competing with investment in process (eventually to reduce production costs) and with investment in market development. The analyst is now in a better position to estimate the research investment of the competitor. Bounds can be placed on the investment by making estimates of the other two competing variables. For example, our accountants may inform us that the investment in process is dominated by the cost of capital investment. Since we can observe the building of capital equipment and because we can determine the likely costs of specific purchases of large plant (by making legitimate enquiries of suppliers) we can estimate the likely financial expenditure on process. More refined estimates would result from a more detailed process model, and might involve the visible effect of recruitment and the expenditure on production staff by observation of the recruitment activity (through public advertisements for staff) and the going rates for salaries at various levels. The essential characteristics of the process-based information view is that pieces of intelligence can be built up by considering contributory associated factors upon which more data may be available. Such a processual approach already falls within the readily available techniques of competent intelligence analysts.

6.3. System-based knowledge

There is more to be gained from taking a whole system view, however. Fig. 6 shows a different extract from Fig. 4.

It will be seen that investment in research forms part of a closed loop which passes through cost of goods sold, price, sales income, profit, available funds and back to investment in research. There are three other loops in the diagram, two passing through investment in process and another passing through investment in markets.

Fig. 5. A process view of research investment (extracted from Fig. 4).
An understanding of the place of the competitor’s investment in research in a dynamic loop which encompasses price and profit allows us to make dynamic estimate of the research investment over time. By targeting our competitive intelligence resources upon the key variables of the model constituted by Fig. 6, we can mobilise a whole series of pieces of information such as the year-on-year profit of the company, the year-on-year prices, the relative investments on process and in new markets. The analyst thus has the basis for bypassing the protection measures which the competitor can put in place to protect against data-point acquisition and certain process-based inferences on our part. It is significantly more difficult to protect against the dynamic effects of variables which of necessity are publicly available, either because of regulatory requirements or by virtue of their publication being part of the offering process by which trade is carried out (prices, to take an obvious example).

7. Strategic intelligence and the market model

Intelligence product such as the research investment rate discussed above operate at essentially at the tactical or operational level. At the strategic level companies require insight into the policies which are being pursued by their competitors. We might enquire, for example, whether the overall policy of the competitor is changing on balance between cost competition and differentiation. We might wish to know whether the competitor’s strategy has changed from exploitation of an existing market to the development of new markets. The QSD influence diagrams give insights into the appropriate targeting of intelligence resources at this strategic level.

Let us take the case of a competitor who may be changing policy from existing market exploitation to new market development. Fig. 7 (an extract from Fig. 4) shows some of the key effects.
In a similar way to the analysis of research investment above, the justifying logic of the competitor can be traced in the right hand side of Fig. 7. Investment in new market penetration will drive up the overall size of the market which in turn will drive up the sales volume of our competitor, company B. This will drive down B’s cost of production (because of economies of learning, scale and volume). This will drive down the cost of goods sold which pushes up B’s available profit.

8. System grounding of intelligence product and its relevance to the business task

It will be clear from the above that system understanding is vital for the targeting of intelligence resources and for the analysis of the raw product. To the extent that we can contextualise lower level intelligence product within a higher system level of understanding (point data within a process-based understanding or process-based information within a system-based understanding) then we can contribute to intelligence product at that higher level. The advantages of this contextualisation are not limited to the analysis process alone, however, since a sensitivity to the
indicators and warnings which cue our awareness of a competitor’s change of policy also allow us to target our limited acquisition resource more effectively. Even the simplified system model above shows the extent to which the codification of a system understanding allows greater awareness of these indications than does any attempt to acquire isolated point data.

Intelligence product informs strategic understanding and decision making as much as it does operational decision making, particularly when the core competence or resource-based strategic frameworks are taken into account. These approaches rely on measures of our competence relative to the competitors, and this comparison is in essence an issue of intelligence. We can be as accurate and self-observant of our competences as we wish; without an equally accurate view of the competitors’ competences our developmental strategy will be ill-founded. Naturally, the more strategic the use to which our intelligence product is to be put, the higher the level of the system model which underwrites it.

Whatever the purpose of the intelligence product, however, the tripartite distinction observed above between point-data, process-based information and system-based knowledge informs the targeting and analysis process. The connection between the system modelling and this tri-partite distinction can be summed up in Table 1. Here we see that there is a direct concordance between the level of intelligence product desired, the applicability of that product and the level of system contextualisation which is necessary to produce that intelligence product.

The practical implications of the system-based approach are wide ranging. Firstly, the QSD influence diagrams provide a convenient lingua franca between the intelligence acquisition professionals and the policy levels of the firm. Secondly, the generation of a system diagram produces convergence between the perspectives of the policy-makers and the intelligence acquirers, and this of itself is much to be desired. Thirdly, the contextualisation process addressed above provides a tangible increase in efficiency in raw intelligence acquisition in that marketers and others engaged previously in data-point acquisition become sensitised to the intelligence implications of data encountered by chance. By making them aware of the process implications the relevance of the data can often be seen more clearly. Fourthly, and most significantly, the direct effect on the strategic decision making processes can be tangible. The contribution of intelligence product at the policy process level can often be indirect and under valued, but with a system-based approach the direct applicability of the intelligence product to the detection of policy changes on the part of the competitors, for example, is clearly seen by the senior executives. The effect of this is not only to

<table>
<thead>
<tr>
<th>Level of intelligence product</th>
<th>Corresponding system element</th>
<th>Nature of intelligence product</th>
<th>Mechanism of acquisition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point data</td>
<td>Variable</td>
<td>Static</td>
<td>Direct observation</td>
</tr>
<tr>
<td>Process-based information</td>
<td>Chains and trees of causal links</td>
<td>Causal</td>
<td>Building up information from associated data</td>
</tr>
<tr>
<td>System-based knowledge</td>
<td>Loops</td>
<td>Dynamic</td>
<td>Observation of time-varying data</td>
</tr>
<tr>
<td></td>
<td>Connected loops</td>
<td>Policy</td>
<td>Induction of underlying policy</td>
</tr>
</tbody>
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Table 1
Concordance of intelligence product level with system elements and mechanisms of acquisition
enhance the status of the competitive intelligence function of the firm, but also to improve the policy generation process. This is clearly of significance to the effectiveness and survivability of the company in today’s complex and dynamic business environment.

References


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