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A FRAMEWORK LINKING INTANGIBLE RESOURCES AND CAPABILIITES TO SUSTAINABLE COMPETITIVE ADVANTAGE

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This article is concerned with the role of intangible resources in business strategy. In particular it is concerned with identifying the intangible sources of sustainable competitive advantage. Sustainable competitive advantage results from the possession of relevant capability differentials. Regulatory and positional capabilities are concerned with intangible assets; functional and cultural capabilities are concerned with competencies. A framework linking intangible resources to capabilities has been devised and is used as the basis of a new technique for identifying the relative contribution which the different intangible resources make to competitive advantage. The results of the use of this technique in six case studies are reported.

INTRODUCTION

This article is concerned with the strategic management process; in particular it is concerned with identifying the intangible sources of sustainable competitive advantage.

The expression 'intangible resources' is not an expression in common use; for the purposes of this article it is used to describe the following:

1. the intellectual property rights of patents, trademarks, copyright and registered designs
2. trade secrets
3. contracts and licenses
4. data bases
5. information in the public domain
6. personal and organizational networks
7. the know-how of employees, professional advisers, suppliers and distributors
8. the reputation of products and company
9. the culture of the organization; e.g., the ability of the organization to react to challenge, to cope with change, etc.

A case will be argued for a new perspective in the management of corporate affairs. The importance of reputation, know-how, etc. is readily acknowledged; but until recently there has been little attempt to identify, and give structure to, the nature and role of intangible resources in the strategic management of a business. This is partly due to the fact that it is often very difficult for accountants and economists to allocate an orthodox valuation to intangibles as they rarely have an exchange value; in consequence they usually lie outside the province of the commodity-based models of economics and accountancy. It is also the case that until recently intangible resources have not been treated as a coherent subject with an identifiable taxonomy. This work sets out to demonstrate that a taxonomy of intangible resources can be developed which provides a means of identifying both the sources of sustainable competitive advantage, and the relative contribution which the

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different intangible resources make to business success.

The general contribution which this study sets out to make to the subject of management studies therefore is to provide an additional perspective with respect to the role of intangible resources in business strategy.

The difficulty encountered by the accountancy profession when it attempts to value 'homegrown' brand-names which have not been the subject of an exchange (Barwise, *et al.*, 1989) raises the more fundamental question regarding the significance of any quantification of shareholders' funds which does not recognize the value of intangible assets. Johnson and Kaplan state that:

> A company's economic value is not merely the sum of the values of its tangible assets, whether measurable at historic cost, replacement cost, or current market value prices. It also includes the value of intangible assets: the stock of innovative products, the knowledge of flexible and high-quality production processes, employee talent, and morals, customer loyalty and product awareness, reliable suppliers, efficient distribution networks and the like. . . .reported earnings cannot show the company's decline in value when it depletes its stock of intangible resources. . . .recent overemphasis on achieving superior short-term earnings peformance is occurring just at the time when such performance has become a far less valid indicator of changes in the company's long-term competitive position.
> Johnson and Kaplan (1987: 202)

The valuation of the shareholders' funds of a private, as opposed to a state owned, university is only trivially related to the value of the land and buildings which it owns; the resources which are of strategic significance are reputation, research momentum, etc., as it is these factors which govern the future earning potential. An indication of the significance of intangibles can be obtained from a comparison of the balance sheet valuation of a publicly quoted company with its stock market capitalization. The extent to which market capitalization exceeds ordinary capital and reserves varies considerably from company to company. Some examples are given in Table 1.

Any premium over the balance sheet valuation which the stock market valuation contains is, in part, a reflection of the intangible resources which cannot be assigned a balance sheet valuation, but which are held to be the source of future earning capabilities.

Handy (1989) suggests that successful businesses will need to become more like universities insofar as they should be learning organizations. Itami and Roehl (1987) have argued that successful organizations recognize that most activities offer the potential to either enhance, or degrade, their key invisible assets, which they define as including reputation, know-how, etc.; and that these businesses expect to accumulate invisible assets, as well as conventional assets, as they complete each turn of the business cycle.

INTANGIBLE RESOURCES

The purpose of this section is to establish the nature and characteristics of intangible resources, and to introduce a degree of classification.

There is an established literature covering intellectual property rights (Hodkinson, 1987; Eisenschitz, 1987; Johnston, 1986), and there is an emerging literature in professional journals on the valuation of intangibles, particularly brand names (Holgate, 1988; Mullen, 1988; *Economist*, 1992). The last two decades have seen much written on the subject of organizational culture (Harrison, 1972; Peters and Waterman, 1982; Kanter, 1983; Handy, 1985; Schein 1985; amongst others); and there is a growing interest in the subject of organizational learning (notably Argyris and Schon, 1978; Morgan, 1986; De Geus, 1988). A general approach to this subject area is rare, with the notable exception of Itami and Roehl (1987), and the aim of this work is to bring these, and related, subjects together in one framework which can encompass the broad area concerning the role of intangible resources in strategic management.

Intangible resources may be classified as 'assets' or 'competencies'. Intangible assets include the intellectual property rights of: patents, trademarks, copyright and registered designs; as well as contracts, trade secrets and data bases. The intangible resource of reputation may also be classified as an asset due to its characteristic of 'belongingness', and whilst it may be defendable to attack with respect to libel, it cannot be said to have the property rights of, say, a trademark which can be bought and sold. Skills, or

Table 1. Three examples of ordinary capital and reserves compared with the relevant market capitalisations
Source: Hemmington Scott Publishing; publishers of the Hambro Company Guide. Reproduced with permission.

Company	Year ended	(1) Ordinary capital & reserves £(million)	(2) Market capitalisation £(million)	Column (2) / Column (1)
Unilever	31/12/90	2,802	12,908	4.6
Tesco plc	28/02/91	2,160	4,731	2.2
Thorn EMI plc	31/03/91	657*	2,222	3.4

*Includes £(m) 270 intangibles.

competencies, include the know-how of employees (as well as suppliers, advisers and distributors), and the collective attributes which add up to organizational culture. When a company is taken over, the acquirer can be confident that he has acquired the acquiree's intangible resources such as patents, but he cannot be certain that he will retain the intangible resources of know-how, culture, or networks which are people dependent and which can potentially 'walk away'.

Intangible resources may be classified with respect to the following characteristics:

The 'Having' capabilities represented by intangible assets, e.g., patents	&	The 'Doing' capabilities represented by skills and competencies, i.e., know-how
Intangible resources which are 'People Dependent', e.g., reputation	&	Intangible resources which are 'People Independent', e.g., data bases
Intangible resources which can be protected in law, e.g., trademarks	&	Intangible resources which cannot be protected in law, e.g., organizational networks

The intangible resources which have the nature and characteristics of assets, may or may not exist in a legal context:

Intangible Assets which are Legally Protectable	*Intangible Assets which are not Legally Protectable*
Trade marks	Information in the public domain
Patents	Reputation (of product & company)
Copyright	Organizational & personal networks
Registered designs	
Contracts & licenses	
Trade secrets	
Data bases	

Intangible resources which are competencies, or 'Doing' capabilities are:

Functional Skills	*Cultural Capabilities*
Employee know-how	Perception of quality standards
Supplier know-how	Perception of customer service
Distributor know-how	Ability to manage change
Servicers' know-how, e.g., advertising agencies, etc.	Ability to innovate
	Team working ability, etc.

These classifications will be linked to the model of capability gaps put forward by Coyne (1986) and this taxonomy is presented in the next section.

THE DEVELOPMENT OF A FRAMEWORK LINKING INTANGIBLE RESOURCES AND CAPABILITIES

A taxonomy of intangible resources in a strategic context is presented in this section by developing the notion of intangible assets and competencies, and by associating each individual intangible resource with a capability. Because we are concerned with the role of intangible resources in business success, the framework will be developed by considering in turn: sustainable competitive advantage, capability differentials, and then relating the different types of intangible resource into a framework of capabilities.

Sustainable competitive advantage

Companies have sustainable competitive advantage when they consistently produce products and/or delivery systems with attributes which correspond to the key buying criteria for the majority of the customers in their targeted market. These attributes, will include factors such as: price, specification, reliability, aesthetics, functionality, availability, image, etc. Any company which is making sales must, logically, enjoy an advantage in the eyes of those customers who are buying from them. It is clear therefore that competitive advantage exists in the eyes of customers, and the 'recipe' of attributes which constitutes advantage in the eyes of one customer will not, necessarily, appeal to another. *Competitive* advantage is enjoyed by those companies who are appealing to a current, or emergent, majority of customers in their targeted market. In order to have *sustainable* competitive advantage Coyne (1986) suggests that not only do the product and/or delivery system attributes need to be significant to customers, to be *sustainable* they also need to be the result of a capability differential which will endure.

Capability differentials

Coyne (1986) identifies the sources of sustainable competitive advantage as being four types of capability differential, viz: 'functional differential', 'cultural differential', 'positional differential' and 'regulatory differential'. (Coyne's article uses the terminology 'business system gap', 'organization quality gap', 'position gap' and 'regulatory/legal gap'). Competitive advantage can derive from one, or more, of the four differentials but only these four; in that sense they are exhaustive. The nature of the four capabilities is examined below.

Capabilities based on assets

Regulatory capability. Regulatory capability results from the possession of legal entities such as: intellectual property rights, contracts, trade secrets, etc. Some of these may be accorded a balance sheet valuation, they are all defendable, in some fashion, in law.

Positional capability. Positional capability is a consequence of past actions which, for example, have produced a certain reputation with customers, a certain configuration of the value chain, etc. Positional differential is a consequence of previous actions and decisions. In some cases the defendability of one's position may reside in the length of time it would take a competitor to achieve one's position.

Capabilities based on competencies

Functional capability. Functional capability relates to the ability to do specific things; it results from the knowledge, skill and experience of employees, and others in the value chain such as suppliers, distributors, stockbrokers, lawyers, advertising agents etc.

Cultural capability. Cultural capability applies to the organization as a whole. It incorporates the habits, attitudes, beliefs and values, which permeate the individuals and groups which comprise the organization. When the organization's culture results in, for example: a perception of high quality standards, an ability to react to challenge, an ability to change, an ability to learn, etc.; then that culture is a contributor to competitive advantage.

In summary therefore functional and cultural capabilities are based on competencies, or skills, such as advertising, or zero defect production; whilst positional and regulatory capabilities are related to assets which the business owns, such as brand names, or reputation. The first two capabilities are therefore concerned with 'doing', whilst the second two are concerned with 'having'. It is clear therefore that competitive advantage results not only from distinctive competencies, i.e. skills, but also from intangible assets; these two perspec-

Table 2. A framework of intangible resources and capabilties

	Capabilities				
	Functional	Cultural	Positional	Regulatory	
People Dependent	Know-how of employees, suppliers, distributors	Perception of quality Ability to learn, etc.	Reputation Networks		Skills
People Independent			Data bases	Contracts licences trade secrets (incl. some data bases) int. propy. rights	Assets

tives can be combined within the concept of capabilities as shown in Table 2.

Each capability is produced by one, or more, intangible resource: e.g., a regulatory capability may result from a patent, or a trademark; and a positional capability may result from reputation, or an established distribution network. Intangible resources may therefore be thought of as being the 'feed stock' of the capabilities, and each intangible resource can be uniquely associated with a capability.

The following questioning routine illustrates the way in which each intangible resource may be uniquely associated with a capability differential:

Is the resource an asset (is it something which one 'has'), or a competence (something which one can 'do')?

If asset:—Is the resource defendable in law? If 'Yes' then the resource is associated with the regulatory differential.

—If it is not defendable in law then the resource is associated with the positional differential.

If competence:—Is the resource a functional, or professional, skill? If 'Yes' then it is associated with the functional differential.

—If the resource is concerned with shared values and attitudes then it is associated with the cultural differential.

The relationship between: sustainable competitive advantage, capability differentials, and intangible resources can be represented by a schematic which is presented as Table 3.

The framework shown in Table 3 was used as the basis of structured interviews carried out with senior executives in six companies. A summary of the results of these studies is given in the next section.

THE CASE STUDIES

The companies approached for the case study stage were chosen on the grounds that they would be prepared, and able, to test the new approach. This criterion meant that all the companies which took part in the study were successful. The six companies involved in the case studies did so on the condition that the results would be confidential and that their identity would not be disclosed in any publication, they are therefore referred to anonymously.

Motor manufacturing	Baker & retailer
Manufacturer of branded snack foods	Bus company
Manufacturer of branded outdoor clothing	Supermarket retailer

Table 3. The framework used as the basis for the structured interviews

Stage 1. The 'recipe' of product attributes comprising competitive advantage (CA)

Price	Quality	Functionality	Aesthetics	Availability
...%	...%	...%	...%	...%
Image	After Sales Service	Innovation	Customer Convenience	etc. Total
...%	...%	...%	...%	...% 100%

Stage 2. The roles of the capabilities in producing competitive advantage

REGULATORY	POSITIONAL	FUNCTIONAL	CULTURAL
Protectable in law	Due to previous endeavor	Due to skill & experience	Capabilities of the Organization
(1) .... %	(2) .... %	(3) .... %	(4) .... %
contribution to CA	contribution to CA	contribution to CA	contribution to CA

Stage 3. The role of each intangible resource within the relevant capability

	%		%		%		%
Trade Secrets	...	*Data bases*	...	*Know-how of:*		*Perception of:*	
Contracts	...	*Reputation of Product*	...	*Employees*	...	*Quality*	...
Licenses	...	*Reputation of Company*	...	*Suppliers*	...	*Service*	...
Patents	...	*Networks*	...	*Franchisors*	..	*Ability to manage change*	...
Copyright	...	*Value Chain configuraiton*	...	*Distributors*	...	*Ability to innovate*	...
Trademarks	...	*Established distribution network*	...	*Franchisees*	..	*Team working ability*	...
Registered designs	...					*Participative management style*	...
Totals	*100%*		*100%*		*100%*		*100%*

Stage 4. The sustainability of competitive advantage

4.1 How easy is it for the competition to match the product attributes which produce the competitive advantage:

	Easy	Medium difficulty	Difficult
Price	(—)	(—)	(—)
Quality	(—)	(—)	(—)
Functionality	(—)	(—)	(—)
Aesthetics	(—)	(—)	(—)
Availability	(—)	(—)	(—)
Image	(—)	(—)	(—)
After sales service	(—)	(—)	(—)
Innovation	(—)	(—)	(—)
Customer convenience	(—)	(—)	(—)

4.2 How sustainable are the capability differentials? i.e., how durable is the superiority of the key intangible resources?

Key Intangible Resources*	Low	Medium	High
4.2.1	(—)	(—)	(—)
4.2.2	(—)	(—)	(—)
etc.			

*Identified from Sections 2 and 3.

Stage 5. The management of the key intangible resources

How should the key intangible resources be managed with respect to:

Recognition
Protection
Exploitation
Enhancement

The average sales turnover of the six companies was £125 million ($230 million), and the executive who participated in the case study exercise was either the Managing Director or the Personnel Director.

A new analysis technique

The schematic shown in Table 3 was developed so that it could be used as a new strategic analysis technique. The objective of this analysis technique is to identify the relative contributions which: product attributes, capabilities, and intangible resources make to sustainable competitive advantage.

The benefits which it is believed that managers will derive from this technique are threefold:

- The identification of the intangible resources which are key to success.
- The ability to communicate this information throughout a management team by the use of the framework.
- The identification of the key intangible resources provides the opportunity to focus on the issues of the protection, exploitation and enhancement of these resources.

The technique may be likened to a psychometric test for individuals in as much as both are based on perceptions. If extensive validation can be achieved for this new technique for analyzing intangible resources then it may be possible to identify typical profiles for companies in different sectors, with different levels of performance, etc.

A summary of the case study results

Whilst the main subject of this section concerns the case studies, reference will be made to a national postal survey which was carried out at an earlier date. The sections which follow contain the summary results of the case studies, with comparison, where appropriate, with the results of the national survey.

Stage 1. Competitive advantage

The most commonly quoted attributes making up the 'recipe' of competitive advantage were: quality, availability, image and price; although there was considerable variation in the six 'recipes'. This variation is to be expected given the varied nature of the six companies studied. The relative contributions which the different attributes were assessed as making to the 'recipes' of competitive advantage are shown in Table 4.

The product attribute of 'Availability/Outlet Location' was rated 1st (or 1st equal) by the executives from the bakery, transport and retailing companies, three companies which deal directly with the public. The three manufacturers, who distribute through third parties, rated 'Quality/Functionality' as the most important product attribute.

Stage 2. The contribution which capability makes to competitive advantage

In assessing the contribution which each capability makes to competitive advantage executives were assessing both the *importance* and the *strength* of the capability. For example the importance of the regulatory capability may be related to, say, a patent; whilst the strength may be related to the company's ability to pursue legal issues. The importance of the functional capability may be related to a particular skill, say labor productivity, whilst the strength may be related to the training capability of the organization.

The ranking of the contributions which the different capabilities were perceived as making to competitive advantage are shown in Table 5.

Table 4. The 'Recipes' of competitive advantage

	The Percentage Contributions to Competitive Advantage					
	Motor Manufacturer (%)	Packaged Food (%)	Outdoor Clothing (%)	Bakery (%)	Transport (%)	Food Retailer (%)
Quality/functionality	20	30	40	25	5	20
Availability/outlet location	15	10	10	25	90	40
Image	10	15	30	10		20
Price	20	10		20	5	15
Aesthetics	15	25	10			
Innovation	5	10				
Customer service/after sales service	15		10	20		5
Total	100	100	100	100	100	100

The three companies which rated 'Availability/ Outlet Location' as the most important product attribute rated the Positional Capability as either the 1st or 2nd most important capability. This is to be expected as the Positional Capability comprises aspects of the company which have taken time to acquire and typically distribution networks which enable availability to be achieved fall into this category.

The Regulatory Capability was rated as the least important contributor to competitive advantage by all executives. This result is in accord with the results of the national survey (Hall, 1992) where chief executives gave a very low importance to the contribution which intellectual property rights, contracts and licenses made to business success. We shall see that this result is a little surprising as reputation, which is often embodied in a registered trademark, is rated very highly with respect to the contribution it makes to business success.

Stage 3. The key intangible resources

The intangible resources most commonly identified as being key in the national survey, and the case studies, were:

Case studies	*National survey (N=95) Top five ranking*
Company reputation	1. Company reputation
Product reputation	2. Product reputation
Employee know-how	3. Employee know-how
Perception of quality standards	4. Culture
Ability to manage change	5. Organizational networks

The numbers involved in the case studies did not allow a ranking of the key intangible resources to be established, however the results of the survey and the case studies were broadly similar. The most significant difference is the importance accorded to the subsets of culture: 'Perception of Quality Standards' and 'Ability to Manage Change' by the executives participating in the case studies. These subsets of culture were not featured in the national postal survey but were identified in the case studies.

The cause and effect relationship between the feed stock intangible resources and the key product attributes is clear except in the case of the product attribute: 'Image', and the intangible resource: 'Product Reputation', which are clearly similar. It can be argued that reputation and image are factors which are both inputs and outputs, i.e., they are feedback factors. Image is a key ingredient in the 'recipe' of competitive advantage. Reputation is a resource which needs to be husbanded and leveraged. The brand leverage practiced by the Mars company illustrates this well: the image of the Mars chocolate bar is a key product attribute with respect to competitive advantage; equally the product's reputation is a resource which can be leveraged by marketing a Mars chocolate ice-cream. It can also be argued that image is concerned with nature, whilst reputation is concerned more with quality. For example, a certain quality performance car may have an image which has stayed relatively constant, whilst its reputation (for quality) has varied.

Table 5. The ranking of capabilities with respect to the contribution they make to competitive advantage

Capability	Number of times placed			
	1st	2nd	3rd	4th
Regulatory (e.g., patents)	0	0	0	6 times
Positional (e.g., reputation)	3 times	1 time	2 times	0
Functional (e.g., know-how)	2 times	4 times	0	0
Cultural (e.g., ability to manage change)	3 times	1 time	1 time	1 time

Note: The rows total 6 equalling the number of case studies; the columns do not always total 6 due to the incidence of '1st equals' etc.

Stage 4. The sustainability of competitive advantage

The sustainability of competitive advantage has two aspects; one is concerned with the sustainability of the key product attributes, and the other is concerned with the durability of the superiority of the key intangible resources over those of the competition.

Stage 4. Part 1. The sustainability of the key product attributes

This section is concerned with the responses to the question 'How easy is it for the competition to match the product attributes which produce the competitive advantage?'

A summary of the responses to this question is given in Table 6.

The attributes of 'Availability' and 'Image' were identified as being the most difficult for a competitor to match due to the time involved. This suggests that short cuts to competitive advantage are rare.

Some attributes were scored more than once; e.g., 'Quality' was scored 'Easy' with respect to the ability of large competitors to match, and 'Difficult' with respect to the ability of small competitors to match.

Most of the executives assessed 'Price' as being an attribute which it is easy to match in the short term. Whilst price is obviously a factor in the marketing mix, none of the companies held it to be of paramount importance.

Stage 4. Part 2. The durability of the key intangible resources which produce the competitive advantage

This section is concerned with the responses to the question 'How sustainable are the capability differentials? i.e., how durable is the superiority of the key intangible resources?' The results of the case studies are summarized in Table 7.

Employee know-how (of all types) was identified as being of medium to high durability 11 times; similarly culture (in all aspects) was identified as being of medium to high durability five times; company and product reputation however was only identified three times as being of medium to high durability. As one executive remarked '. . .reputation can be lost overnight due to unforeseen circumstances . . .' There is a perception therefore that whilst reputation is the most important contributor to business success, it is not the most durable.

Stage 5. The management of intangible resources

The approach of interviewees to the issue of the *management* of intangible resources tended to be one of defining how they were currently managing the business (which was demonstrably successful), rather than how they should be managing the business because there was clearly something wrong.

Table 6. Summary of the assessments of product attributes with respect to their sustainability

	Difficulty for a competitor to match		
	Easy	Medium Difficulty	Difficulty
	Number of times identified		
Availability	2	1	4
Image	2	2	3
Quality	2	3	2
Aesthetics	1		2
Customer service			1
Price	5	1	
Functionality	2	1	
After sales service	1	2	
Siting of outlets		1	

CONCLUSIONS

Each executive who participated in a case study was asked to evaluate the analysis technique on two counts: 'Did the exercise identify a new perspective for material already known?'; and 'Did the exercise provide a useful aid to communications?' Five of the six participating executives agreed with these propositions.

The fact that all six case study companies were successful needs to be borne in mind. The senior executives of successful companies are very likely to have a clear insight into the nature of their enterprises, and what it is about them which makes them successful. They would be unlikely, as a result of experiencing this technique, to recognize a need to change the way their business was run. Further research is therefore indicated which would involve less successful companies in order to see if the technique affords them a better insight into the nature of their business, and whether an alternative way of managing it is indicated.

The identification of the intangible resources which are the most important for business success has certain implications for management practice.

Reputation

The importance of reputation, whether or not it is embodied in a trademark, suggests that it should receive constant management attention. Reputation, which is usually the product of years of demonstrated superior competence, is a fragile resource; it takes time to create, it cannot be bought, and it can be damaged easily. The emphasis placed on this resource by CEOs suggests that a key task of management is to make sure that every employee is disposed to be both a promoter and a custodian of the reputation of the organization which employs him.

Employee know-how

Employee know-how was rated as one of the most important contributors to business success, it was also rated as one of the most durable resources. This emphasis on employee know-how is in tune with the writing of Prahalad and Hamel (1990) on core competencies. They suggest that strategic thinking has been over concerned with taking a market perspective, and too little concerned with taking a core competence perspective. If employee know-

Table 7. The durability of the key intangible resources

	Durability of key intangibles		
	Low	Medium	High
	Number of times identified		
Employee know-how*	5	4	7
Product reputation	1		2
Company reputation			1
Culture		1	1
Ability to innovate			1
Ability to manage change			1
Perception of quality		3	1
Distribution strategy	1		
Distribution network			1
Data bases			1
Networks		1	1

*The interviewees cited many different areas of employee know-how; for example one quoted his R&D know-how as highly durable, and his I.T. (Information technology) know-how as of medium durability. All of the subsets of know-how have been marked against 'Employee Know-how' in Table 7. It was also the case that some interviewees scored one resource highly *and* lowly, depending on the time scale involved.

how is a major source of competitive advantage there is a clear requirement for the continuous enhancement of the quantity and quality of the 'stock' of know-how. This may be by training, and it may be by 'learning by doing'. The modern tendency to subcontract more and more activity does have the consequence of shrinking the area of competence to a smaller base.

It is possible that the 'mobility' of employees in the West means that the resource of employee know-how is, generally speaking, not as durable as the managers who participated in the case studies believed it to be. It may be that in the future companies will attempt to increase the durability of this resource by changing conditions of service, invoking the legislation regarding trade secrets, etc.

Culture

Culture was ranked as the fourth most important intangible resource by the survey. The case studies identified more aspects of culture as contributing to success than did the survey, these were:

Ability to manage change
Ability to innovate
Team working ability
Participative management style
Perception of high quality standards
Perception of high standards of customer service

To a degree culture is a function of the type of activity which the organization is engaged in, to a degree it is a function of the life cycle stage which the organization has reached; but increasingly it is being recognized that an organization's culture is produced, consciously or unconsciously, by senior managements' actions, and in particular the actions of the chief executive.

Networks

Organizational networks are essentially concerned with human relations which transcend the requirements of organizational structure, commercial relationships, etc. In discussing the 'make or buy' question with the personnel director of the motor manufacturing company in the case study, he maintained that it made little difference whether they made in house or bought in as they treated suppliers as an extension of their factory. Whilst this international company was very powerful, there was clearly a high dregree of networking between its employees, and its suppliers' employees.

Data bases

The top ranked 'People Independent' intangible resource in the postal survey was 'Data bases', and this was assessed as having grown in importance in the last 3 years. This is clearly high-lighting the growing impact of information technology on business affairs.

If, as is claimed in this study, the management of intangible resources constitutes a coherent subject area, then the question of organizational responsibility arises. Should there be a 'Manager of Intangible Resources'? Only one person in an organization can carry the responsibility for all intangibles, ranging from patents to company reputation, and that is the chief executive. This study suggests that chief executives may benefit from periodically carrying out audits of intangible resources with their senior management team. The purposes served by doing this are:

— To identify changes which have occurred
— To ascertain the congruency, or otherwise, of the different managers' perceptions
— To identify the changes which will occur if different strategies are pursued

The methodical approach to analyzing the sources of a company's competitive advantage afforded by the analysis technique makes it suitable for case study teaching purposes, and has been used by the author in this way on both undergraduate and postgraduate courses.

Further work using the analysis technique is required in conjunction with companies in a variety of sectors, and of smaller sizes. In particular work with unsuccessful companies is indicated to see whether the technique can diagnose what is wrong, and prescribe corrective action; particularly with respect to the appropriate organization for, *and management* of, the key intangibles.

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