Organisational factors and knowledge management within large marketing departments: an empirical study

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Keywords

Knowledge management, Intranets, Tacit knowledge

Abstract

One hundred and seventy-nine heads of sales or direct marketing departments in large UK companies across five industry sectors completed mail questionnaires concerning the knowledge management (KM) practices employed by their firms. The extents of the KM systems operating within sample enterprises were analysed with respect to each company's use of teamwork, level of bureaucracy and centralisation of decision making, innovativeness, and ability to cope with change. Respondents' views on the contributions of KM to marketing management were also examined.

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Introduction

Interest in the systematic use of "knowledge management" (KM) as a means for gaining a competitive edge in business situations has grown considerably in recent years (see, for example, Lloyd, 1996; Brooking, 1997; Skyrme and Amidon, 1997; Davenport *et al.*, 1998; Nahapiet and Ghoshal, 1998). Several reasons have been advanced for the implementation of KM within (typically large) companies, including the widespread digitalisation of business environments (Clippinger, 1995); the rise of time-based competition as a marketing weapon (requiring firms to learn as much as possible in very short periods – Seemann and Cohen, 1997); the integration of advanced manufacturing technology with design and marketing; the globalisation of operations (resulting in businesses having to co-ordinate complex geographically dispersed activities undertaken by people who rarely meet face-to-face); and the high incidence of mergers and takeovers whereby two or more enterprises need to bring together different information gathering and dissemination systems. Joint ventures and strategic alliances also create possibilities for obtaining competitive advantage via KM, because "alliances generate the potential for firms to acquire knowledge associated with partner skills and capabilities which can then be incorporated into their own systems and structures" (Inkpen, 1996, p.123). Businesses increasingly recognise, moreover, that the knowledge accumulated by employees represents a valuable asset and that the people who possess the most knowledge are usually the best able to resign their posts. Hence, an effective KM system is essential for retaining employees' knowledge within a firm.

Nerney (1997) reports survey data suggesting that in 1997 about a quarter of US blue-chip companies used KM, and that another 70 per cent planned to introduce it in 1998. Likewise Skyrme and Amidon's (1997) survey of the KM practices of 430 European and North American companies revealed that one-third of them were developing programmes to improve their capabilities in the KM field. Ninety-six per cent of the sample regarded customer knowledge as the most important asset for maintaining competitiveness, followed by knowledge of best practices, corporate competencies, and market trends. (A majority of the firms saw the creation of an

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Intranet in conjunction with a mapping of a company's knowledge resources as the best way to progress in the area.) Yet despite the continuously expanding utilisation of KM by leading-edge enterprises, hardly any research into the in-house management of marketing knowledge has been completed, in sharp contrast to KM research concerning other disciplines (particularly human resource management and financial and operations management). Instead, marketing academics have concentrated on market orientation, especially with respect to linkages between market orientation and organisational learning (see Bennett, 1998 for a review of this literature). Key indicators of market orientation allegedly include the organisation-wide gathering of information followed by its interdepartmental dissemination, consideration and processing; and the organisational use of this information to respond to change (Kohli and Jaworski, 1990). Slater and Narver (1995) suggest that the capacity to react quickly and effectively to outside change depends on a deep understanding of external environments and the free exchange and flow of information to ensure that expertise is available where and when it is required. Hence, they argue, market orientation constitutes a critical input to the idea of the learning organisation because it presupposes extensive customer and competitor research, the internal spreading and employment of information to improve performance and the integration of functions in order to gain knowledge, innovate, and react quickly to market change.

Factors other than market orientation encouraging the development of KM include advances in information technology (allowing companies to accumulate vast amounts of information on customer and market characteristics) and the general broadening of the typical business executive's role to incorporate a wider variety of tasks, hence stimulating his or her demand for knowledge. In the marketing sphere the latter consideration might be especially relevant *vis-à-vis* relationship marketing, integrated marketing communications, customer support and liaison, database management, and new product development. Wilkstrom and Norman (1994) argue that because marketing is no longer "a clearly delineated function at the end of the production chain" and that since nowadays "there are many functions and people who influence the customer relationship", then it is not logical to have marketing handled solely by a specialist department (p.64). Thus, knowledge about customers needs to be shared throughout the organisation.

Nature of knowledge management

Davenport *et al.* (1998) define knowledge as "information combined with experience, context, interpretation and reflection" (p. 43). Data begets information which in turn can be converted into knowledge by setting it against a background, assessing its implications, making comparisons, and adding other supplementary items. Information is "descriptive and historical, relating primarily to the past and the present whereas knowledge is predictive and associative and unveils hidden facts" (Kock and McQueen, 1998). Knowledge can be useful or useless. Useful knowledge (i.e. that which possesses "value for action" (Martinez, 1998, p.88) emerges when the recipient of information understands, translates and applies it to specific duties. Knowledge is perishable but, properly harnessed, can result in wisdom that may be directed towards a plethora of operational tasks. Definitions of knowledge management abound. Four representative examples are reproduced below which suggests that the constructs of "knowledge capture", storage, dissemination and use lie at the heart of the KM concept.

Definitions of knowledge management

- Knowledge management is the process of creating, capturing, and using knowledge to enhance organisational performance (Bassie, 1997, p. 25).
- Knowledge management is the management of the information, knowledge and experience available to an organisation – its creation, capture, storage, availability and utilisation – in order that organisational activities build on what is already known and extend it further (Mayo, 1998, p. 35).
- Knowledge management is the process of capturing a company's collective expertise wherever it resides, and distributing it to wherever it can help produce the biggest payoffs (Blake, 1998, p. 12).

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- Knowledge management is about encouraging individuals to communicate their knowledge by creating environments and systems for capturing, organising, and sharing knowledge throughout the company (Martinez, 1998, p. 89).

It follows that measures are needed to make knowledge visible, to codify it through documentation and electronic processing, and to share it among an organisation's members. Without such procedures a firm is liable to suffer from organisational amnesia; to forget what it did and why, and thus have an impaired learning capacity. Table I lists the 12 most common examples of KM practices employed by (predominantly US) companies as reported in a sample of 60 articles on knowledge management published in management studies journals and practitioner magazines in 1997 and 1998. Most of the methods shown in Table I rely on the use of digital business communications which facilitate KM via the warehousing, transmission and sharing of information through e-mail, video-conferencing, electronic publishing, Internet and Intranet services, and through the tagging and linking of relevant information in an electronic company thesaurus that enables people to access easily any topic of interest. Such a thesaurus (or "company encyclopaedia") will hold in a single database the knowledge currently contained in company manuals (brand, product, operations, etc.), process descriptions, reports, customer databases, market (and other) research documents, customer support materials, key memoranda between departments, and notes submitted by executives.

Davenport *et al.*'s survey of knowledge management projects in 31 large US companies identified four dominant objectives within KM programmes:
(1) the creation of knowledge repositories;
(2) the improvement of knowledge access;
(3) the enhancement of the knowledge environment; and
(4) the development of knowledge as a corporate asset.

Table I Knowledge management methods

Knowledge maps, atlases and inventories	Knowledge thesauruses and company encyclopaedias
Communities of practice	Decision audit programmes
Knowledge resource pools	Forums and discussion databases
Expert networks	Technical libraries
Video-conferencing	"Learned lessons" databases
Identification and analysis of internal and external best practices	Executive masterclasses

Knowledge repositories store the knowledge embedded in hard copy and electronic media and make it available to all. Some firms seek to improve the quality of knowledge access by creating "expert networks" whereby individual queries are sent to a central section which redirects them to expert specialists within (or sometimes outside) the organisation. A problem here is that the employees most in need of help may be reluctant to seek it for fear of being regarded as personally inadequate. Hence incentives might be offered to encourage people to seek assistance (see Davenport *et al.*, 1998). An alternative approach is for a company to put together a "knowledge map" containing details of where knowledge may be found. Seemann and Cohen (1997) liken knowledge maps to "corporate yellow pages", showing the repositories of codified knowledge and listings of people with particular expertise (their CVs, competency profiles, etc.) under topic rather than departmental headings. Details of specialist outside consultancy services might also be included. One of the main purposes of a knowledge map is to prevent individuals having to "reinvent the wheel" consequent to ignorance or lack of access to past experience. A "knowledge atlas" is a consolidation and cross-referencing of an organisation's knowledge maps and is intended to illustrate "knowledge highways" which connect people to the knowledge they need. Note however that maps and atlases do not themselves store information. A "knowledge thesaurus" (or "company encyclopaedia") will fulfil this function, enabling browsers to search for knowledge on specific subjects. Devices whereby individuals come together (perhaps electronically) to record their own experiences and learn from others (e.g. via video-conferencing, decision audits, or "learned lessons programmes" which analyse information on solutions to previous problems) also figure prominently in Table I. These include "communities of practice", defined by Gupta and Rohe (1997) as groups of people with a common interest created by their exposure to similar problems. Such a grouping is normally voluntary and hinges on "shared values, beliefs and ways of doing things" (p. 178).

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Note how the majority of KM methods involve the use of a company Intranet to make the knowledge and expertise of the organisation explicit and accessible and (crucially) to integrate learning into the firm's knowledge base. The development of an Intranet improves the fluidity of the internal flow of information, which branches out horizontally as well as vertically into all parts of the business. Employees can publish information on their personal homepages as well as gather information continuously from a multitude of sources. This should improve company decision making, enable employees to respond quickly to complex enquiries about products, contract terms, etc., innovate, and become more efficient in their operations (Chase, 1998). A problem with the implementation of KM is the fact that staff need to be trained in writing, editing and formatting skills in order to input items to a knowledge repository, as information has to be presented in a prescribed standardised fashion. More generally, KM is said to require "new skills, new mindsets and models, commitment throughout the organisation, as well as new thinking on what is meant by effective management" (Lloyd, 1996, p. 576). Two particular difficulties relating to the latter are:

(1) that knowledge is an "invisible, intangible, ephemeral, soft asset" (Clippinger, 1995, p. 28) whereas managers traditionally have been accustomed to working with assets that are tangible and concrete; and
(2) that since "knowledge is power" it follows that "knowledge politics" are important within organisations, with the sharing of knowledge by managers being frequently regarded as threatening and "unnatural" (Davenport, 1997, p. 189).

It is essential that within the knowledge-driven company all knowledge enters the common domain and cannot be used by individuals to advance their personal interests. Hence, shared decision-making, teamwork, group bonuses, and reward systems that emphasise contributions to information input and dissemination rather than information retention are necessary. Chase's (1998) international survey of the approaches adopted to KM in 500 companies revealed that 80 per cent of respondents cited "existing organisational culture" as the major barrier to the implementation of a knowledge based management system. Other important problems were "lack of ownership of the problem" (64 per cent), "organisational structure" (54 per cent), "lack of senior management commitment" (46 per cent), "lack of rewards and recognition" (46 per cent) and "emphasis on individuals rather than teamwork" (45 per cent). Skyrme and Amidon's (1997) survey of 430 firms similarly found that a majority recognised that their internal cultures represented a major barrier to effective knowledge transfer, and that employees' behaviour would have to alter.

Knowledge categories

Marketing requires knowledge of customers and their preferences, competitors, products, distribution channels, service providers, laws and regulations, and general management practices. This knowledge needs to be stored in a company "knowledge base" comprising brainware, hardware, groupware and documentware prior to its transformation and hence application to useful activities (Zeleny *et al.*, 1990). Brainware consists of experience, personal skill and acquired knowledge; hardware is the processes, equipment and other touchable items that incorporate knowledge. Groupware encompasses informal procedures, rules of thumb, stories and unwritten protocols; while documentware is made up of databases, written reports, handbooks, patents, and formally documented knowledge held within information systems. Once it has been internalised, the company's knowledge needs to be accessible to persons who need it, e.g. via its availability in documentware, through verbal communications within a human network, through retention in databases, etc. Employees have to know what knowledge exists within the organisation and which of their own experiences should be downloaded into the knowledge base in order to assist others.

Company knowledge bases invariably possess several layers: personal, departmental, divisional, strategic business unit, and organisational. Very often, however, a large amount of a firm's knowledge is stored in brainware, i.e. the least traceable and accessible medium and hence the most difficult to transmit and then deploy in an optimal manner. Hence, effective KM frequently boils down to the selection and implementation of

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methods for transforming knowledge stored in brainware (and thus only available to one or a few individuals) into forms (groupware, documentware and hardware) that can be shared by many other people. The most common vehicle for sharing knowledge within organisations is perhaps oral communication (see Kerssens-Van Dronglen *et al.,* 1996), but it is known that this is not necessarily the best medium. Rather, theory predicts that the use of structured task and responsibility sharing project teams is far more likely to lead to meaningful and comprehensive flows of knowledge among team members, and hence to improved performance (Hauptman, 1986; Brown and Eisenhardt, 1995). Action-orientated task fulfilling project teams, it seems, are a powerful device for transforming tacit knowledge into explicit knowledge. The latter is capable of codification and articulation and thus can be transferred easily. Tacit knowledge, conversely, resides in the minds of people, and is not amenable to transfer (Grant, 1997). Individuals are the primary repositories of tacit knowledge, which is difficult to unravel and to communicate between sections.

For example, salespeople's knowledge about customers is often tacit in that it is personal, anecdotal and situationally prescribed. Such knowledge, according to Clippinger (1995), is "typically neither created nor shared through traditional channels, rather it emerges and evolves from the bottom up in a somewhat helter-skelter pattern" (p. 28). Edvinsson (1996) similarly points out that much customer relationship knowledge is tacit and transferred via conversation and on-the-job training (and also that it is not protected by intellectual property law so that once transferred there are few means for the original owner to reassert ownership). Note how downsizing and re-engineering exercises result not only in the loss of the tacit knowledge held in the heads of the outgoing people, but also tend to discourage those who remain from sharing their (politically valuable) knowledge. The tacit knowledge possessed by employees leaving a business may be tapped by inviting them to make ("master class") seminar presentations which are recorded and entered in the company's thesaurus. Davenport *et al.* (1998) report that Hewlett-Packard tackle this problem more formally via the use of a community-based electronic discussion forum designed to transfer tacit knowledge into a repository. This system "captures tips, tricks, insights and experiences" into a Lotus Notes Database and makes them available to more than 2,000 people scattered in the company's branches throughout the world. Interestingly, the frequency of communication between individuals has not been found to facilitate information transmission (Lee, 1994). Instead the "kinds of person" involved and the quality of their relationships may be considerably more important.

The investigation

The present study sought to gain an insight into how marketing executives in large companies manage knowledge and to explore the relationships between the extent and nature of a company's KM and certain organisational factors. Specifically, the investigation examined knowledge management in two functional areas (direct marketing and sales management), where significant concern for and involvement with knowledge management are the most likely to be found. Direct marketing is a specialist function with technical as well as managerial dimensions and requires a knowledge of *inter alia*, database management, consumer behaviour, market research, budgetary control, promotional media and creative strategy, and various aspects of the direct marketing services industry. Reed (1997) notes that UK direct marketing managers are on the average younger, academically better qualified, and better paid than marketing personnel in other functional areas. They represent a knowledge-based resource whose work involves the utilisation of both practical and cognitive knowledge. Direct marketing technology has advanced at a rapid rate and is today capable of handling huge quantities of information. The discipline is high-tech, subject to continuous change and a big employer of intellectually able and occupationally mobile people (Bennett and Gabriel, 1998).

Likewise, sales management has recently experienced widespread technological change (see Barker, 1997 and Parthasarathy and Sohi, 1997 for details of relevant literature), with automated sales force management and feedback systems being increasingly applied to the selling function (Grove *et al.*, 1992; Holstrom and Anders, 1996). Indeed, Parthasarathy and Sohi (1997) cite estimates

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of US companies having spent more than US$2.7 billion on salesforce automation in 1997. Knowledge management relating to sales allegedly enhances customer service relationships, decreases response times and improves teamwork and inter-departmental co-ordination (Albers, 1997). For example, Ainscough *et al.* (1996) describe how a knowledge base for sales staff can be created from the "selling scripts" and experiences of multiple expert salespeople recorded in a computer expert system, which can then be used to gain competitive advantage. Barker (1997) claims that "automated salespeople" are on average three times more productive than sales staff in firms without IT-related selling facilities because computer technology contributes substantially to sales forecasting and planning, the rapid provision of customer contact and status information, and the accumulation of knowledge about markets, distribution channels, customer service requirements, etc. Note moreover how teamwork and knowledge sharing is known to be critically important for improving sales force effectiveness (El-Ansary *et al.*, 1993; Barker, 1997).

An important aim of the study was to examine the influence of organisational factors on the implementation of KM within large companies. Graham and Pizzo (1996) argue that effective KM is most likely in businesses that find the right balance between organisation systems which on the one hand are sufficiently open and flexible to allow creativity to flourish, but on the other possess enough formality and discipline to ensure that creativity produces tangible outcomes. Bureaucracy and formal communication, they suggest, inhibit spontaneity, experimentation and the freedom of expression necessary for innovative responses to environmental change (such as the application of KM). Equally, however, a formal bureaucracy might facilitate the "rapid and continuous transformation of ideas into superior products and services" (Graham and Pizzo, 1996, p. 338). They acknowledge that a great deal of knowledge originates from personal intuition, networking and chance encounters, but contend that structured and standardised procedures are needed to capture, control and connect the knowledge thus gained to business objectives. Other researchers have similarly concluded that mechanistic organisation structures are better for internal knowledge dissemination (see Menon and Varadarajan, 1992 for a review of relevant literature). Thus, it has been alleged, formal and centralised systems facilitate communication flow via their extensive monitoring and reporting requirements, and through their increased utilisation of marketing plans and policy implementation programmes which demand large amounts of information. Centralisation of decision making, in particular, has been found to facilitate the implementation of innovations as it enables the development of precise and definite control procedures throughout a company (Gatigon and Robertson, 1985; Fletcher *et al.*, 1996). Concomitantly, centralisation is said to assist the introduction of any technological innovation which requires organisational standardisation for its proper adoption (Parthasarathy and Sohi, 1997). KM systems typically depend on organisational standardisation as they are usually tied to standard hardware, software and training. Therefore, according to this argument, large centralised organisations are more likely to adopt KM innovations. John and Martin (1984) claim the existence of empirical evidence of positive significant linkages between centralised bureaucratic formalisation and the implementation of innovative programmes.

The alternative position alleges that flexible and relatively informal management structures facilitate (i) fast and effective internal communications and willingness to accept change, and (ii) interdepartmental communication and the frequent and unhindered sharing of information that successful operation within turbulent commercial environments necessitates (Woodman *et al.*, 1993). Arguably, firms operating such systems are more adventurous in their information gathering activities, more critical in their interpretation of information, and encourage individual initiative which in turn intensifies the thirst for knowledge. Wilkstrom and Norman (1994), in particular, assert that KM fits best with an open organisational environment "capable of eliciting the creativity, the problem-solving capacity and the social and business competence represented by its employees" (p. 69) mainly because of the quintessentially innovative character of knowledge generation, which requires an organisational climate based on flexibility, variation and renewal. Thus, "conservative renewal-inhibiting values

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suffocate generative forces at birth" (p. 73), and knowledge creating people leave the company. Ekvall *et al.* (1987) also conclude that bureaucratic organisation structures restrain internal knowledge dissemination consequent to their hierarchical, complicated and time-consuming communication channels. They argue moreover that the caution and conservatism typical of employees operating within formalistic structures are incompatible with innovative knowledge management. Bureaucracy has the potential to clarify goals and situations; but it has been claimed that even this aspect of it inhibits the more radical forms of innovativeness and creativity via its detrimental impact on "challenge, support for ideas, freedom and trust" (Wilkstrom and Norman, 1994, p. 78). The very existence of clear-cut goals might dampen the discussion of new ideas that is essential for effective knowledge management.

Such considerations suggest the following hypothesis:

H1 The less bureaucratic an organisation the more likely that it will possess extensive KM systems.

A number of researchers have concluded that firm size is positively related to the adoption of new innovations (see Fletcher *et al.* (1996) for details of empirical studies supporting this proposition), allegedly because larger enterprises possess the resources to meet the high capital outlays needed to introduce new systems. Also big companies might have the management expertise necessary for the effective implementation of the latest methods. This leads to a second major hypothesis, viz:

H2 The larger the company the more likely it is to have an extensive KM system.

Organisations which welcome change are perhaps more likely to possess a culture which encourages the gathering of information and the sharing of knowledge (Deshpande and Webster, 1989). Ideas will be exchanged and communication flows increased. Risk-taking is common in a change-friendly business, again creating demands for knowledge and information. This implies:

H3 The more change-friendly a business the higher the probability that it will have a substantial KM system.

Likewise, environmental turbulence is associated with uncertainties that increase the need for information (and hence knowledge). Hence there is ambiguity about the right courses of action to take and perhaps therefore a greater demand for knowledge. Thus:

H4 The more turbulent and uncertain the commercial environment within which a company operates the more likely that it will have extensive KM facilities.

In order to test these hypotheses (and to explore other relevant issues emerging from previous sections), a questionnaire was developed consequent to a review of relevant literature in the KM field and pretested on a sub-sample of 75 large UK companies selected at random from the sampling frame for the investigation. Concomitantly, telephone interviews were conducted with the chief information officers of two major firms (one in engineering, the other in financial services) with a view to improving the relevance and precision of specific questionnaire items. After a follow-up, 17 replies were received (23 per cent) which enabled the refinement of the wordings of the draft questions and the removal of redundant statements. The sampling frame for the study comprised the sales and direct marketing (DM) directors of the UK's 100 largest companies (by turnover) in each of the following sectors: retailing; financial services; food manufacture and supply; electrical and electronic machinery, equipment and supplies; chemical and allied products. The addresses of sampling frame firms were downloaded from Volume 6 of *Key British Enterprises 1998* (Dun and Bradstreet Ltd) resulting (after the deletion of entries obviously not concerned with direct marketing or salesforce management) in a mailing to 300 direct marketing directors and 500 sales directors. After follow-ups a total of 179 replies were received (22 per cent), comprising 101 from sales directors and 78 from DM executives. Although this is less than a majority of the sampling frame it is considered satisfactory because: (i) the response rate is comparable with those achieved by similar studies employing sampling frames of unnamed senior executives in major blue-chip companies (see Morgan *et al.*, 1998, p. 361); (ii) response rates were similar across the five sectors; and (iii) there was no statistical evidence of response bias within the replies. Responses were scanned for significant ($p < 0.01$) differences (using the Mann-Whitney U-test available on SPSS) between the results

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for: the earliest and latest batches of questionnaires returned; sales and DM directors; and firms in the five industry sectors, no such differences emerging. Also a large number of firms (11 per cent) of the sample sent letters stating that it was company policy not to reply to questionnaires, indicating that this was the dominant reason for non-response.

The questionnaire itself had five sections, the first of which asked respondents to tick boxes indicating which KM methods were already employed within their companies, and which methods they were intending to implement. This was followed by two sections containing (shuffled) items relating to organisational issues (centralisation of decision making; bureaucracy and the ability to cope with change); innovative tendency; knowledge accessibility within the firm; teamwork; and whether individuals were prepared to share knowledge with colleagues. All items were scored on 5-point scales: 5 = strongly agree, 1 = strongly disagree. Section 4 had a number of questions concerning company size, the number of marketing employees, perceived financial performance relative to competing firms, and the turbulence of the company's environments. The final section involved perceptions of the contributions of KM to sales management or direct marketing (5-point scales: 5 = very important contribution, 1 = no contribution whatsoever) depending on the person to whom the covering letter was addressed. Although the questionnaire was mailed to two separate addressees (sales director and head of direct marketing) in 300 of the sampling frame companies, replies from both people in the same company were received in only 17 instances. Where this occurred the two responses were averaged and the mean replies for that enterprise used for subsequent analysis.

Results

Table II gives the results regarding which of the various KM methods listed in the questionnaire were currently in use within respondents' firms, and which ones they intended implementing in the near future (figures in parentheses show the percentages of companies planning to introduce a particular method). It can be seen that company KM systems were overwhelmingly based on the use of an intranet (53 per cent, with a further 38 per cent stating that one would be introduced in the near future), and that video-conferencing, company encyclopaedias and the employment of electronic devices such as "Lotus Notes" were commonplace. Half the sample companies possessed formal procedures for identifying and considering best practices, with nearly a third more planning to introduce this technique.

An initial examination of the results suggested that they differed mainly between firms operating numerous KM systems and those which applied just a couple. This was confirmed by a K-Means clustering of the 162 cases (via SPSS 8.0) into two groups using the total number of KM methods employed by a company as one of the discriminating variables and the composite variable for "knowledge accessibility" within the firm as the other. The two-cluster solution outperformed three- to five-cluster alternatives (RMSD = 2.01); the ANOVA for the accompanying discriminant analysis generating F-values (1, 160 df) of 98.712 and 48.971 respectively ($p < 0.000$). These discriminants had Wilks' Lambdas of 0.189 and 0.221 and successfully allocated 86 per cent of all cases into either of two categories: companies using three or less techniques (hereafter referred to as "limited KM" enterprises, $N = 69$), and those applying four or more techniques ($N = 93$). (The latter firms will subsequently be described as having "extensive" KM.) Table III shows the mean responses for these groupings *vis-à-vis* sections of the questionnaire dealing with an enterprise's perceived ability to cope with change, innovative tendency, use of teamwork, and bureaucratic and centralisation inclinations. Clearly, change-friendly firms were more likely to employ KM extensively (see section A of Table III). Significant differences also arose between the two groups in respect of experimentation and innovation (B(i)), and interaction among departments to discuss plans and strategies (C(iii)). Critically, companies regarded as bureaucratic (D(i)) and as operating highly centralised decision making (D(iii)) were more likely to have extensive KM systems than others, implying the rejection of the first (and central) hypothesis of the investigation. Cronbach's alpha was computed for the items within each of the sections A, B and C, the results (see Table III) indicating sound reliability. Hence the scales for the items in

Table II Knowledge management methods

Formal listings of where knowledge on various topics is to be found (such listings are sometimes known as "company yellow pages", "knowledge maps" or "knowledge atlases")	25% (30%)	**Use of Lotus Notes or similar electronic devices whereby people record their experiences of specific issues, problems, activities, etc.**	38% (24%)
Use of an Intranet (i.e. the "in-house" version of the Internet) to publish information	53% (38%)	**Identification and discussion of internal/ external "best practices"**	50% (31%)
A formal system for referring difficult problems to specialist experts.	6% (32%)	**Technical libraries within the company**	45% (15%)
Electronic storage of company policies, procedures, operating manuals, etc. on an accessible database (sometimes called a "company encyclopaedia" or "company thesaurus")	38% (28%)	**Video-conferencing**	42% (22%)
		Seminars/presentations given by executives about to leave the company (these are sometimes referred to as "master-class seminars")	2% (5%)
Electronic discussion forums	13% (9%)	**"Communities of practice", i.e. meetings of people with a common interest in certain types of problem**	31% (19%)
"Learned lessons programmes", i.e. the systematic analysis of solutions to previously experienced problems	2% (8%)	**Decision audits, i.e. the systematic analysis of the effectiveness of the procedures used to make important decisions**	17% (21%)

Note: Figures in parentheses refer to the percentages of respondents stating that their firms intended introducing the technique in the near future

Table III Organisational issues[a] (mean values) [b]

		Limited KM (N = 69)	Extensive KM (N = 93)
A. Ability to cope with change (alpha = 0.94)			
(i)	**This organisation can cope with rapid and unexpected change**	2.44	2.97[c]
(ii)	**This organisation can quickly reallocate its resources and undertake new activities in order to exploit emerging opportunities**	2.63	2.95
(iii)	**It takes this organisation a long time to alter its working methods and procedures**	2.11	1.88
B. Innovation (alpha = 0.92)			
(i)	**This organisation regularly experiments and innovates in its use of marketing methods, advertising, promotional materials, etc.**	2.52	3.06[c]
(ii)	**If other firms introduce new marketing methods we quickly adopt them ourselves.**	2.70	2.63
(iii)	**Employees of this company are encouraged to question existing policies and working methods, to innovate and challenge current systems**	2.50	2.55
C. Teamwork (alpha = 0.89)			
(i)	**In this firm interdisciplinary cross-functional teamwork is extremely important for taking decisions and solving problems**	2.67	2.46
(ii)	**In this firm group (rather than individual) bonuses make up a significant part of managers' total remunerations**	2.82	2.92
(iii)	**People from different departments frequently interact to discuss current marketing strategies and future plans**	2.40	3.19[c]
D. Bureaucracy and centralisation			
(i)	**This organisation is very bureaucratic**	2.42	2.96[c]
(ii)	**This firm has many rules and procedures that must be followed when making decisions that lead to change**	2.59	2.88
(iii)	**Management decision making within this organisation is highly centralised**	2.50	2.97[c]

Notes: [a] 5-point scales: 5 = strongly agree; 1 = strongly disagree. A shuffled ordering of the items appeared in the original questionnaire; [b] Standard deviations varied between 0.70 and 1.19; [c] Denotes a statistically significant difference at the 0.05 level or less

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each section were combined to form three composite variables. Items (i) and (ii) of Table III section D correlated significantly (R = 0.87) and thus were composited. However the correlation between this new variable and D(iii) (i.e. centralisation of decision making) was (at R = 0.41) insufficient to justify the latter's incorporation into the bureaucracy aggregate.

Table IV gives the mean responses for questionnaire items relating to (i) respondents' perceptions of how readily knowledge could be accessed within their organisations, and (ii) employees' willingness to share knowledge. (The Cronbach alphas for these collections of items were sufficiently high to permit their combination into single-scale variables.) It can be seen that the extensive application of KM was significantly associated with easier access to knowledge (section A), and that firms with extensive KM tended to encourage knowledge sharing via their reward and appraisal systems (B(ii)). These latter companies gave their employees more training in KM than did firms in the other category (C(ii)) although the difference was not significant (the standard deviations for this variable were larger than for any other item).

Respondents' perceptions of the relative importance of the contributions of their KM systems to various aspects of marketing management are outlined in Table V, which gives the results for both the questionnaire referring specifically to direct marketing activities and the one focusing on sales management. Table V indicates significant differences in perceptions of the contributions of KM in relation to knowledge of customers and markets (items (a) and (n)), sales and campaign planning (items (c) and (i)), and cost control (item (m)). The alpha value for the 14 elements of Table V was 0.89, justifying their combination into a single scale to measure the perceived level of KM's contributions to marketing management.

To investigate further the implications of Tables II to V, regressions were run seeking to explain the dependent variables listed in Table VI. A stepwise procedure was adopted

Table IV Knowledge processing[a] (mean values)[b]

		Limited KM (N = 69)	Extensive KM (N = 93)
A. Knowledge accessibility (alpha = 0.86)			
(i)	**Within this organisation, managers invariably know where they can find the knowledge, expertise and information they need**	2.45	3.66[c]
(ii)	**This firm has formal systems for routeing knowledge on specific topics to managers with an interest in the subject**	2.51	3.29[c]
(iii)	**Within this firm, managers have easy access to the information they need**	2.70	3.37[c]
(iv)	**Within this firm, most knowledge is held in the heads of employees rather than in documents and databases**	2.50	2.38
B. Reluctance to share knowledge (alpha = 0.92)			
(i)	**Within this firm people tend to hang on to the knowledge they acquire and are reluctant to share it with others**	2.72	2.83
(ii)	**The appraisal and/or reward systems of this firm encourage employees in different sections and departments to interact, work together and share the knowledge possessed by various sections**	2.85	3.44
(iii)	**Employees fear that sharing their knowledge with others might reduce their influence within the firm**	2.78	2.61
(iv)	**Within this firm, interdepartmental knowledge sharing occurs as a matter of course**	3.01	3.32
C. Miscellaneous			
(i)	**Within this firm, knowledge is disseminated to a wide range of people rather than on a "need to know" basis**	2.40	2.54
(ii)	**Managers receive training in the skills needed to input information to company knowledge management systems**	2.52	2.99[c]
(iii)	**Within this firm people tend to disseminate the knowledge they acquire through informal rather than formal methods**	2.96	2.77

Notes: [a] 5-point scales: 5 = strongly agree; 1 = strongly disagree. A shuffled ordering of the items appeared in the original questionnaire; [b] Standard deviations varied between 0.66 and 1.31; [c] Denotes a statistically significant difference at the 0.05 level or less

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Table V Perceived contributions of KM systems[a]

		Limited KM (N = 69)	Extensive KM (N = 93)
(a)	Knowledge of customer characteristics (lifestyles, locations etc.)	3.02	4.19[b]
(b)	Knowledge of competitors	2.40	2.97[b]
(c)	Sales planning and forecasting	3.01	4.0[b]
(d)	Monitoring/evaluating selling activities	2.44	2.23
(e)	Database management	2.69	2.50
(f)	Monitoring/evaluating DM campaigns	2.74	2.91
(g)	Knowledge of customer buying behaviour	2.65	2.70
(h)	Market segmentation/targeting	2.12	1.87
(i)	Campaign planning	2.60	3.3[b]
(j)	Knowledge of customer service requirements	2.43	2.15
(k)	Knowledge of external marketing services firms	1.46	1.18
(l)	Administrative management	1.89	1.58
(m)	Cost control	3.20	4.07[b]
(n)	Knowledge of markets and market trends	2.51	3.46[b]

Notes: [a] 5-point scales: 5 = very important contribution; 1 = no contribution whatsoever. Standard deviations varied between 0.69 and 1.06; [b] Denotes a statistically significant difference at the 0.05 level or less

whereby any regressor failing to assume significance at the 0.1 level was dropped provided its exclusion did not worsen the overall explanatory power of the results. Outputs were then checked for statistical problems (multicollinearity, heteroscedasticity, etc.) using the M-Fit package (no serious difficulties becoming apparent). Regression A of Table VI attempts to explain the total number of KM methods employed by a company (as defined in Table II). The outcome confirms the proposition that firms perceived as bureaucratic and as utilising centralised decision making tend to have more extensive KM systems than the rest. Also significant were "relative financial performance" and "environmental turbulence". The former variable was obtained from a questionnaire item which asked respondents to specify the extent to which they agreed or disagreed (5-point scale) with the statement "This firm's overall financial performance has in general been better than that of competing firms". A high score for the item should indicate that a firm has been generating the resources necessary to install new management systems. Note that because KM is a very recent innovation, the reverse direction of causality is unlikely to have occurred: KM will not normally have been in place long enough for it to have exerted a significant influence on company profits. Two questionnaire items assessed the degree of environmental turbulence: "The markets in which this firm operates are subject to rapid and unexpected change" and "This firm operates in a fiercely competitive environment". Responses to these items were highly correlated ($R = 0.802$, $p < 0.000$), justifying their aggregation into a single measure. (Items (e) and (f) were not used as regressors in this equation as they represent consequences of KM rather than causes.) As a check on the results for regression A it was rerun with the dependent variable (arbitrarily) weighted in terms of possible differences in the relative importance of its constituent elements. Thus, possession of a company library was given a weight of 1; identification and discussion of best practices scored 2, etc; through to scores of 12 for the (advanced) techniques of company thesauruses and knowledge atlases. This modification did not change the overall structure of the regression output, although the significance levels of innovative tendency and relative financial performance increased substantially.

Regression B seeks to explain composite scores for respondents' perceptions of the value of the contributions made by KM to marketing (see Table V). Knowledge accessibility was a major factor influencing perceived contribution levels. Reluctance of employees to share their knowledge (see Table IV(B) affected this variable negatively. Other significant influences were the amount of teamworking within the firm and whether the company was change-friendly.

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Table VI Regression analysis

		A (T-values in parentheses)	B (T-values in parentheses)	C (Chi-square values in parentheses)[c]	D (Chi-square values in parentheses)[c]
(a)	**Bureaucracy composite**	0.612 (2.02)[a]		0.221 (2.76)	0.20 (3.97)[a]
(b)	**Centralised decision making**	0.599 (2.07)[a]	0.644 (1.72)	0.159 (3.89)[a]	0.299 (4.21)[a]
(c)	**Innovative tendency composite**	0.677 (1.90)		0.267 (4.0)[a]	0.261 (3.99)[a]
(d)	**Teamwork composite**	0.406 (1.82)	0.599 (2.11)[a]	0.101 (2.04)	
(e)	**Ability to cope with change composite**		0.727 (3.46)[b]		
(f)	**Knowledge accessibility composite**		0.710 (3.61)[b]		
(g)	**Relative financial performance**	0.802 (3.723)[b]		0.291 (4.45)[a]	0.251 (4.01)[a]
(h)	**Reluctance to share knowledge composite**		–0.491 (2.08)[a]		
(i)	**Size (number of employees)**			0.179 (2.89)	
(j)	**Environmental turbulence composite**	0.724 (2.26)[a]	0.795 (1.54)		
	R-squared	0.672	0.641		
	-2LL statistic			110.5 (155 df)	97.74 (157 df)
	Regression Chi-square			29.2 (7 df)	24.53 (5 df)

Notes: [a] Denotes statistical significance at the 0.05 level; [b] Denotes statistical significance at the 0.01 level; [c] Wald Chi-squares with 1 df.
Dependent variables: A. Extent of a company's KM system; B. Level of the perceived contributions of KM to marketing management; C. Company does/does not have an Intranet; D. Company does/does not have a knowledge map

Regressions C and D are logistic regressions with the state variable 1 = The company does possess an Intranet (or knowledge map in the case of regression D); 0 = The company does not possess an Intranet (or knowledge map). Centralised decision making is a significant independent variable in both equations. Bureaucracy is also significant in regression D. It is clear moreover that innovative tendency and the availability of resources (item (g)) also help explain the adoption of these (relatively sophisticated) KM methods. Company size did not figure prominently in any of the regressions. The median number of employees of the sample companies was 26,000 (range 701 to 181,000); the median size of their marketing departments was 110 employees. It seems that organisational factors and internal management orientations are more important in these respects than the size of an enterprise's workforce.

Conclusions

The results of the present study do not support hypothesis 1, that the less bureaucratic an organisation the more extensive its KM systems. Rather the outcomes are highly compatible with the view that bureaucracy facilitates the introduction of new methods (cf. Rogers, 1983; John and Martin, 1984; Menon and Varadarajan, 1992; Graham and Pizzo, 1996). Also, centralised decision making seemingly enhanced the ease with which KM could be applied within sample companies (cf. Gatigon and Robertson, 1985; Fletcher *et al.*, 1996; Parthasarathy and Sohi,

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1997). No evidence emerged to suggest that bureaucracy and centralisation stifled the widespread utilisation of innovative KM systems (cf. Ekvall *et al.*, 1987; Woodman *et al.*, 1993; Wilkstrom and Norman, 1994). Hypothesis 2 is also rejected: internal orientations and how well a firm had been performing financially were better predictors of the extent of a company's KM than was the number of people it employed. The third hypothesis is generally supported. Change friendly enterprises were more likely to have extensive KM than others, and this variable significantly affected respondents' views on the contributions of KM to marketing management. The results are also compatible with hypothesis 4: firms regarded as operating in especially turbulent environments tended to operate KM systems more extensively than the rest.

Overall the outcomes to the study underscore the value to an enterprise of developing formal KM procedures. Companies which used KM extensively were on the whole those reported to be more innovative, readier to cope with change, and better able to access knowledge than other firms. In general the contributions of KM to both direct marketing and sales management were highly regarded. It is clear from the results that KM is being taken extremely seriously by this sample of large UK companies, and that new KM techniques are being introduced at a rapid rate. Note however that a couple of the practices described in the US literature on KM do not appear to have been taken up within these large UK firms. Table II shows that there was minimal use of "master class" seminars given by people about to leave a company, and hardly any systematic analysis of solutions to previously experienced problems. This raises the possibility that British companies might be able to gain substantial benefit by implementing these techniques more widely, hence avoiding the problem (cf. Davenport, 1997; Chase, 1998) of "knowledge walking out of the door" when individuals leave a firm.

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