

An investigation of the use of intranet technology in UK retail banks

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Reports results of a two-part questionnaire survey of information technology (IT) managers at 21 major UK retail banks, some of whom are using intranets and some not, to determine the degree of acceptance of intranets in the UK banking sector and to reveal the extent, of and reasons for, the adoption of intranets in their back offices; to explore the existing problems of using intranets; and to reveal the potential usage and development of intranets in the near future. The response rates for banks using intranets and those not using intranets was 46.15% and 42.68% respectively. The results indicated that the respondents are very positive (80%) about using the intranet as an ideal platform for all their information systems and only 20% feel its utility is exaggerated. A phased approach is recommended for the introduction of an intranet which allows both users and administrators to learn and improve the intranet in the deployment process in a cost-effective way.

INTRODUCTION

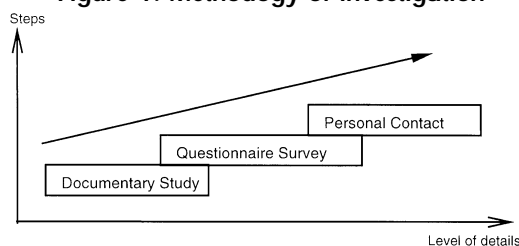
Document delivery within the corporate organization has long been a problematic, expensive and system dependent investment. However, the global acceptance and widespread of the World Wide Web (WWW) has revealed its potential as an effective solution for internal communication systems. The banking industry, although it has a long history of adopting new technology, has been slow in responding to this trend until recently. Various studies have demonstrated the acceptance of intranet into corporate computing in many industries, but they do not adequately answer the question of how this technology has been deployed or the levels of services it supplies to its users. This type of study is particularly uncommon in the UK banking sector. This paper is intended:

- to reveal the extent of the adoption of intranets in the back office, the reason behind the decisions to adopt the technology, and how it is being utilized;
- to reveal the existing problems of using an intranet and the difficulties involved, from planning to operation;
- to reveal the potential usage and development of intranets in the near future, based on the banks' experience.

RESEARCH METHODOLOGY

The methodology adopted for this investigation consisted of three major steps as shown below. The second and third steps were intended partly to compensate for any inadequacies in the earlier stages.

Figure 1. Methodology of investigation



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Two sets of questionnaires were designed for two groups of participants, ie. those who do and those who do not use intranets.

SIZE AND SECTOR SAMPLE

The sector chosen for this study is the UK retail banking industry, which consists of major retail banks, building societies with public limited company (plc) status and major financial institutions involved in retail banking services.

Twenty one major financial institutions involved in retail banking business were identified for this study, using Pauley *et al.* (1993) as a reference. Participants were given a guarantee of confidentiality, which has been maintained throughout.

It is felt that technical staff are normally more willing to discuss and respond to surveys, therefore it was decided to sample only the IT related managers who would be involved in getting the Intranet into their organization.

REVIEW OF INTRANETS IN THE RETAIL BANKING SECTOR

Evolution of information technology (IT) in retail banking sector

Information has been vital to the retail banking business since its inception. As part of a bank's business, it accumulates large amounts of information about the financial and personal circumstances of its customers, and about their behaviour as consumers at different outlets. The traditional problem has been to mobilize and integrate this information for the use of all business activities. This includes information made available at time of need to their staff, customers, and others such as auditors and investors. As the size of retail banking business grows, the cost of information transfer within branch networks becomes significant. More recently, such information transfer has had to take place not only within individual countries but also across national boundaries. This inevitably requires more sophisticated information systems, and it can be damaging to the banking operation when the systems are deficient. However, solving these problems is costly both in terms of money and effort. On the other hand, the bank cannot afford to lose their competitive edge by not being able to use new technology innovatively and effectively.

The problems of IT in retail banking

The de-regulation of the UK financial market and the opening of the European Monetary Market has intensified market competition. This has led to organizations merging and taking-over others, to ensure larger shares of profits. As a result, the differences between the financial institutions are blurring and new problems of technology compatibility in terms of information integration and exchange are arising.

Technology may prove to be the bankers' salvation, but can also be a fatal distraction. The banks, being enthusias-

tic users of IT, have suffered from a 'backlog problem'; which is a carry-over effect from the early systems which evolved over the last 30 years and have been altered and fixed many times. Anderton (1995) has estimated that 75% of a computer systems department's costs are spent in coping with backlog problems.

Besides, more communication and distribution channels are evolving, and also more information is available to consumers. In other words, the customer's choice is widening and the barriers to new entrants to the sector are diminishing. An extensive branch network, which has been prohibitively expensive to new entrants, suddenly becomes a costly burden for organizations which have a network in place. An example of the competition may be seen in the rise of supermarket banking, *Links* and *BankNet* in 'cyber-space', these being retail banks that operate without a branch network.

In addition to this, the 'millennium bug' or 'Y2K (Year 2000) problem' and the implementation of European economic and monetary union, have forced UK banks to reassess their own internal IT operations and re-engineer their systems that support the business of the European market. However, IT spending does not grow significantly across all aspects of banking. In fact, according to Haskins (1997), spending in the back office of both retail and wholesale banking is reducing greatly.

IT undeniably has not answered all the information problems of banking business. Apart from bringing information to the desk, it also overloaded the end users with information from both new and diverse sources which are often repackaging of the same information. However, it may be hypothesized that banks must continue to find new ways to make sense of their information. This implies the need to filter information from many sources, ensure information consistency and accuracy, and direct relevant information to where it is needed within the bank. This demands not only skill in IT programming, but also that effective end-user tools be made available for information creation and management.

The rise of intranets in the retail banking sector

The rise of intranet in many industries follows closely the development of the Internet. The reasons for that are largely due to its perceived benefits. Among those, the extraordinary ROI (Return On Investment) figures are most appealing to many organizations, as is evident from the case studies in the *UK Corporate Intranet Survey* (1998). The ROI is far higher than in any other technology investment, as has been discussed by studies such as Telleen (1996). Young (2000) notes that, '[t]he concept of intranet portals, the customization of different information resources, will become increasingly important as more people within an organization begin to use the intranet'.

The efficiency of the back office has a very significant impact on a bank's competitive edge. This can be exempli-

fied by the problem of the cheque clearing system, in the days when the back office was the major bottleneck. In fact, this problem still exists in some finance institutions. Creating effective back office systems is still a vital key to serving customers effectively and retaining them, as Warren (1997) observes. Major retail banks have begun to recognize this relationship. For example: *TSB Bank* extended their intranet into the customer service domain, by allowing some account holders to log into their intranet. The *Bank of Scotland's* intranet has evolved to become mission critical for their competitive strategies. The *Halifax* has decided to develop an intranet to support its 28 000 staff. Apparently, based on this development there is an increasing positive attitude in adopting the intranet in this sector. In a 1997 press release, *Current trends in the use of Internet and intranet technologies by wholesale and retail banks* (1997), TCA Consulting found 60% of its 21 respondents (banks) were actively using an intranet and expected this to increase to 90% by 1998. Undeniably, intranets have proliferated in retail banking business. The only thing which seems unclear is how they are being used and exploited.

Interestingly, the Electronic Business Forum's Intranet Survey, published as an *E-Business Management Report* (2000) notes that '57% of respondents are now actively considering an Extranet', and quotes two banks on the perceived benefits, thus: 'A common front for our customers, extra security with software encryption and dynamic passwords' and thus: 'Global corporate image now available 24 hours a day'. It appears that it may be the case that the technologies are making converts quickly, even in this traditional area, and it is noted in the same survey that, across the range of organizations surveyed, in the period June to August 1999, that a trend continues for Intranet control to move away from the IT departments (40%), and towards chief executives (16%), user managers (17%), boards of directors (11%) and 'knowledge workers' (16%). The corresponding figures for the previous year were: IT departments (59%), chief executives (12%), user managers (9%), boards of directors (14%) and 'knowledge workers' (6%). It will be interesting to determine, in a few years' time, whether the new, specialized, category of 'knowledge workers', 'knowledge managers' and their cognate professionals have established themselves to a similar extent in the world of retail banking.

THE USE OF INTRANET IN PRACTICE

Three case studies, of Barclay's (UK Corporate Intranet Survey 1998, report 3), the Halifax (Mansell Lewis, 1997) and Legal and General [L&G] (UK Corporate Intranet Survey 1998, report 1) provide valuable information for this examination.

The benefits and the promises

A list of key benefits is derived from the Intranet development plans of its respondents and can be summarized into three main areas:

- better communication;
- better information sharing and dissemination;
- cost saving on printing.

Banks see their intranet as a way to add business value and provide a paradigm for better information management. In other words, it is not just a transport mechanism but also a support for business applications. The primary benefits for them are greater efficiencies in communication, logistic supply chain and bureaucratic procedures. The implication is added competitive benefits.

Database access is another area of interest to banks. The use of an intranet reduces the dependence on complex and proprietary hardware and software to access larger databases. It allows banks to use thin clients (computers which only have memory and a network connection) and browsers, to access these databases. It has made access to legacy systems much simpler, for larger groups of staff within the organization, as well as for clients. The implication is more efficiency in information sharing and exchange.

Cost saving is one of the important motivations in the calculation of ROI. In general, it is a calculation derived from the following fundamental formula and is represented as a percentage (%).

$$\frac{(\text{Revenue} - \text{Cost})}{\text{Cost}} \times 100\%$$

This formula is taken from the area of printing and publishing, which includes manuals, procedures, reports, newsletters, product information etc. However, it is not just the matter of cost saving which interests the banks, but also lesser effort to disseminate information accurately, promptly, and cost-effectively. Many organizations seem to stop at these immediate benefits and do not further consider what an intranet can represent in strategic, operational and organizational terms. It would be a mistake to argue the case for installing an intranet by projecting the likely ROI, because ROI is a reflection after an intranet's installation, ie. it is a realization, rather than an expectation, of benefits. The important message here is that ROI projection should not be a substitute for a well thought-out business case.

The basic technology is relatively cheap, but the costs of running and integrating the system are still as uncertain as before, as is often the case in IT deployment. This has resulted in various information technology failures cited in the Durlacher intranet Report (1997). The capability and user-friendliness of intranets are proven in various industries. However, the price for these benefits is the huge demand for utilizing the services. This implies an increase in network traffic and complex integration of the functionality of legacy systems, which are much more costly than the fundamental technology. This could be

very painful. In other words, linking back end applications to intranet can be very expensive, and it is possible that this is an important underlying factor in the current pace of intranet development in this sector.

Issues of planning and implementation

The nature of an intranet should make it very predictable in the planning and implementation stages, since it is flexible, scaleable, and easily customized. There are 'rules of thumb', but there is as yet no evidence of specific research in this area.

A traditional approach, based on a centralized organizational structure, has been favoured for setting policy. However, it might severely constrain the full utilization of intranet functionality, because of the technology's inherently open and distributed approach. It will be interesting to see how banking organizations attempt to balance these. The Halifax sees the intranet as a key element in ensuring improved communication, which involves peers, customers, and suppliers. It wanted the intranet to be business-driven and prioritized the deployment on that basis. It has embarked on a three-phase intranet project working with European information technology services group *CMG*: publishing information based on organizational hierarchy, introducing group working, and developing applications (Mansell Lewis, 1997).

In general, the deployment skills are either obtained inhouse, by out-sourcing, or through a combination of both. Successful deployment has the following characteristics that make use of the flexibility and scaleability of intranet:

- initiated by a small group which consists of people from different parts of the organization;
- deployed in phases, which begin with a small project then gradually expand to others.

The organizational effects of intranet

Online access to organizational information was often restricted to a small pool of staff in the old days, but is now open to all within the organization. This paradigm shift demands a more open approach to working relationships and knowledge transfer, which is likely to be felt uncomfortable by many people, because the intranet is diluting the power of ownership of knowledge.

Change in the aspect of human behaviour is often the most difficult task in business re-engineering, and requires careful planning and time. This understanding was revealed by the Durlacher's intranet research too (Durlacher Intranet Report, 1997); more than 75% of its respondents (large companies) recognized the significant organizational effect of intranets on corporate culture. Intranets inevitably lead to new and fundamentally different ways of organizations doing business, such as group collaboration. One of the significant examples is the changing role of IT departments, from active program-

ming to active facilitating. One point worth noting is that the cultural and process changes which the intranet brings may be too great to deal with, if it is not brought into operation gradually and purposefully.

The concern of security and network capacity

Concerns regarding security breaches are still the top obstacle to deploying Intranets in the retail banking sector. TCA found more than 25% of its participants are concerned about security, out of the six suggested problems of intranets (intranets score a big hit with banks, 1997). However, this issue should not be treated as a specific problem of Intranets because security breaches in computer networks have long been a problem. It is the extension to internet (Extranet) that requires extra vigilance.

In fact, many security breaches were not mainly due to the system design itself, but to the absence of proper oversight. For example, there may be a failure to establish policies to ensure that audit logs are systematically monitored, and suspicious or unauthorized access events are resolved (Melia, 1997). Therefore, the complete solution to security breaches has to consider human practices, physical security, system integrity, data integrity and system design. This has not changed much since paper based documentation gave way to technology. Technology is likely to resolve the last three concerns completely but not the first two.

It is hypothesized that widespread concerns of intranet security are more an issue of perception than of real obstacles. Security on the Web can be addressed practically to provide levels as high as the traditional delivery channels. For example, a 'firewall' prevents unauthorized communication between specific applications or users on internal and external networks; a 'proxy server' regulates data flow and detects intrusion attempts into an organization's network; secured socket layers at both ends of a link ensure safe communication sessions, and data encryption prevents message packets being read by others. These Internet related technologies control user access, communication channels and maintain overall network security, while leveraging existing network and computing resources. Some practical examples are:

- the use of 128 bit data encryption technology in the Royal Bank Of Scotland and Barclays has apparently been very reliable (no breaches reported so far);
- the transactions between the intranet and mainframe computer of the Swedes Bank are restricted, using separate authorizations for Web and host access (Keneally, 1997).

The introduction of an intranet is often assumed to increase the strain on the company's networks because of its media rich environment which requires larger bandwidth for data transmission. For example, there may be a proliferation of embedded high-resolution graphics in

Web pages. However, intranet is not the only technology developing towards multimedia; recent developments such as video conferencing and workflow systems are also bandwidth intensive technologies. In other words, the increasing requirement for bandwidth is not a problem exclusive to intranet. There is a trend towards an online and interactive network interface. This problem can be offset partly through proper system design and continuous education of end users. For example, the use of proxy and cacheing servers has saved about 30% of Web traffic in HP's intranet (Helm, 1997).

Budgets for the intranet

The source of budget is often a difficult issue since the Intranet is a cross-departmental application, which is claimed to benefit all users within the organization. Unlike other technology deployment, the flexibility and scalability of an intranet allows relatively cheap application trials within a small part of the organization. Besides, the pilot's cost can easily be justified on the basis of eliminating paper and speedier electronic distribution of operational information. Therefore, it is very logical that Ann Cheese at Barclays suggests that the costs be translated across different budgets under a range of people (UK Corporate Intranet Survey 1998, report 3). This approach has also been suggested in the literature and seems to be the common approach in the various case studies mentioned above.

However, the on-going running costs of the intranet will still be the same even though they are distributed among several departments. In other words, extra budget is needed to maintain and expand the technical aspects of development, such as network hardware and connection. It was highlighted by David Bicknell that significant increases in ongoing spending on LAN (local area network) infrastructure, server hardware, security and IT staff training after intranet deployment, do exist (Bicknell, 1998).

Funding for new back office technology is apparently the most difficult part of spending in the current state of the financial market. As was discussed earlier, the retail banking sector is now coping with the pressure of open market (EC policy, threats from other institutions etc) and the Y2K problem. Therefore, the selection of a funding source for corporate-wide intranets is still unclear at this review but will probably depend on the priority of the bank in determining their competitive edge.

Intranet applications

The potentials of intranet applications are many, and the depth and scope of the technology reflects its maturity. However, according to the UK Corporate Intranet Survey (1998), intranets are primarily used for e-mail, information dissemination, electronic publishing, and remote access. The conclusion was that intranets are still in the earliest phases of development in terms of what is being done as opposed to what could be done. As compared to

the Durlacher Intranet Report's (1997) finding of e-mail (90% of UK companies) and database access (80% of UK companies) as the main application, the depth of application has not changed dramatically. These figures are further supported by TCA's findings where 100% of banks in its review are using an Intranet to distribute information. Some other evidence can also be found in the case studies mentioned earlier. For example,

- NatWest is exploring the potential of information dissemination through an Intranet. It utilizes push technology (e.g., an alerting service) to inform specific users with relevant information, it publishes news, and permits access to databases. It even provided online access to the library catalogue of the Chartered Institute of Bankers through their intranet as an incentive for staff who are undertaking continuous professional development (Basker, 1998).
- Halifax uses an intranet to disseminate core information and enables its staff and departments to publish their own information.
- Barclays intranet is opened to the wide range of systems running on the existing private Barclays network infrastructure. These applications are human resource systems, publishing, the telephone directory and the opportunity to run newsgroups. At this stage, it is primarily used for publishing information.
- L & G is using an intranet primarily for information publishing and retrieval.
- Lloyds is using an intranet to deliver its training course.

This evidence corresponds with that of *Price Waterhouse's UK Financial Survey*. The primary applications can be summarized as follows:

- e-mail;
- information dissemination and exchange;
- database interaction.

Workflow study is another increasingly significant Intranet application in the banking organization. Intranets running Java applications are being used to transfer branch processes or telephone banking centre processes to the central processing centre. However, these applications are rather simple compared to what could be done by the Intranet.

THE POTENTIAL FUTURE OF INTRANETS

Some evidences revealed by TCA's banking survey are quite positive for the 'growth' of Intranets in this sector:

- bankers commonly believe that Internet related technologies will have a fundamental effect on future banking business and technology strategies;
- more than two thirds of its sample give either 'Gaining

experience' or 'Because everyone else is' as the rationale for their Intranet plans;

- intranet deployment will rise to 90% in the following year (ie.1998);
- Internet is being used as an opportunity to reduce dependency on market data vendors by publishing their data directly to their current and prospective clients.

However, the current development in the banking organization is contradictory. First of all, current intranet spending remains very low and very few applications are planned for the following year which make use of the browser as client to back or middle office systems.

The direction of the development of groupware is also crucial to intranet deployment. For example; *Lotus Notes Domino* server's full intranet compatibility is intended to secure its proprietary share of corporate information systems in the financial market. This is further supported by the surveys of both Price Waterhouse and TCA. According to their findings, groupware products will stay indefinitely in the banking organization and are increasingly being seen as an vital back-end server development tool.

Durlacher's intranet research also revealed some interesting reasons for not using intranet. Based on its findings, most organizations are very satisfied about their existing systems and foresee no benefits in adding intranet into their network. This evidence is consistent with the recent research findings of Pitney Bowes in America. It discovered that intranets and the Internet are not as important as older technologies in communication. Fax is still considered much more important in sending vital information internally (Gandy, 1998).

Management priorities as a barrier to intranet development have been revealed in the TCA survey, the *Durlacher intranet report*, and the *Corporate intranet Survey*. This could include dealing with 'Y2K bugs' and European Monetary Union.

It seems that intranets are not going to be the principal focus of this sector in the near future. Perhaps bankers, being bitten by experience, have become wary of pouring their money into new technology where returns are uncertain, and choose instead to use the existing technologies better, or experiment with the technology on a smaller scale. It is improbable that the future will materialize as predicted by the TCA.

Considering the pace of intranet development and various research findings we would expect to see rapid deployment both in term of depth and breadth. However, the above evidence does not seem to support this. The intranet apparently has not been utilized to its full potential, and it is suggested that the retail banking sector is still in the early stage of exploring the technology.

It was thought probable that there was more to be learned from existing intranet users within the sector than was shown in this review, perhaps due to restricted access to documentation, perhaps because of the secretive IT

strategies of the sector itself, which prevent further understanding of the subject matter. As a result, it was decided to collect a new pool of primary data about the subject.

THE FINDINGS OF THE SURVEY

This survey is based on the responses of organizations that are using the intranet (users) and supported by organization that are not using the intranet (non-users). Four types of questioning styles are used: yes/no, choose any one, ranking, and free answers. Therefore, they are compiled and presented differently to bring out implications best. Since the sample is rather small its statistical results are computed as percentages (with reference to the number of respondents). Intranet users and non-users are referred to as Set 1 and Set 2, respectively.

Participation

Only 46.15% and 42.68% responses were received in Set 1 and Set 2 respectively. The average participation is 44.5% and it covered a wide spectrum of samples, as the branch network of these participants varies from 20 to more than 2000 branches.

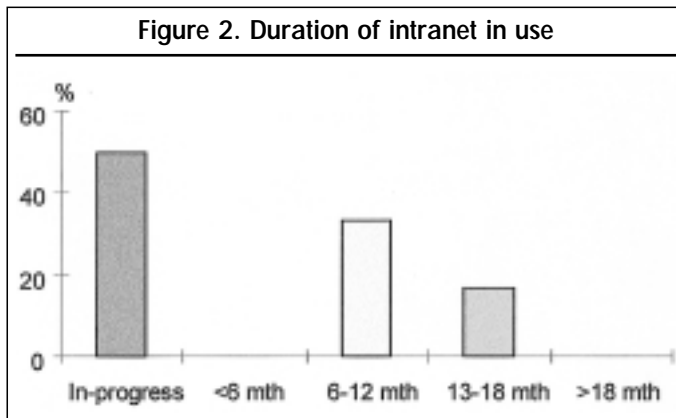
The use of intranet

The table below shows current intranet users in the retail banking sector.

	unknown	with intranet	without intranet
No. of organisation	1	13	7
In %	4.76	61.90	33.33

These figures cannot be directly co-related to TCA's figure, but due to the overlapping nature of the banking business they are very relevant. The findings of 61.9% of intranet users in retail banking sector shown in Figure 2 is slightly more than the 60% revealed by TCA. However, the forecast for a potential rise to 90% in the following year is apparently not supported here. Besides, not all respondents are in the state of full deployment as 50% of them are still in the process of deploying and deployments are, as yet, mostly confined to the IT department. In other words, the actual deployment figure could be less, if we consider this offset. This is seen as evidence reinforcing the findings of the literature review: the proliferation of intranets is slow and there is more speculation than actual deployment in this sector.

Figure 2. Duration of intranet in use



WHY INTRANET

The reasons for using or not using an intranet are many. Some of the major factors that lead to this decision are discussed here.

The underlying technology

Various client/server architectures exist, but not all of them can assure smooth migration to an Intranet. For example, to migrate from SPX/IPX architecture will require an inter-mediary protocol stack to handle the mixed protocol. However, this would make administration more complex, and increase network complexity. This could be very costly both in terms of money and man-hours, and it may be worthwhile to consider replacement of the entire network.

To take this factor into account, the prior use of TCP/IP architecture was considered. 60% of respondents in Set 1 indicated its existence prior to Intranet deployment, whereas 66.67% of respondents in Set 2 do not use TCP/IP. When these two figures are correlated, (see Table 2) it can be seen that most organizations that have TCP/IP are using intranet, and most organizations that are not using intranet do not have TCP/IP. This relationship is indicative that the existence of TCP/IP does have an effect on the organization's decision in migrating their information systems to an intranet.

Table 2. Use of TCP/IP architecture - users vs non-users

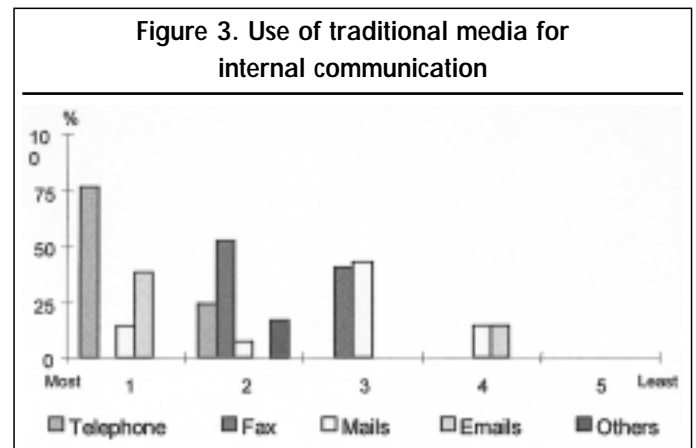
	Using TCP/IP	Not using TCP/IP
Organisation with intranet	83.33%	16.67%
Organisation without intranet	33.33%	66.67%

Additional information on capacity of network and clients' workstations were also gathered from Set 2 to reinforce the influence of this underlying technology. This is reflected by the bandwidth of back office networks in use; 33.33% of respondents use up to 56kbs and T1 connection respectively.

Network capacity at 56kbs is unlikely to be sufficient for operational transaction activities of a banking organization at a corporate-wide level. Besides, another 33.33% have no computer network in the back office. These figures, totalling 66.67%, are a significant negative constraint for Intranet growth in this sector because it represents a considerable amount of new investment. One factor in favour is the type of computer used in the back office, in that 66.67% are using Pentium computers. However, this positive offset is unlikely to have any significance in term of network setup cost.

Of traditional communication tools for internal communication, telephone remains the most favoured option (76.19%), and fax the second (52.38%), as shown in Figure 3. Conventional mailing is getting less significant here since most respondents (42.86%) ranked it third most important (below average) although 14.29% saw it as the best option. On the other hand, e-mail is becoming more significant as 38.1% ranked it the best option. However, this picture varies quite significantly among the intranet users although the majority are still at the departmental stage of deployment. According to the respondents, the usage of traditional means of acquiring information which is not immediately available in hard copy is now decreasing severely since intranet deployment.

Figure 3. Use of traditional media for internal communication



Internet experience

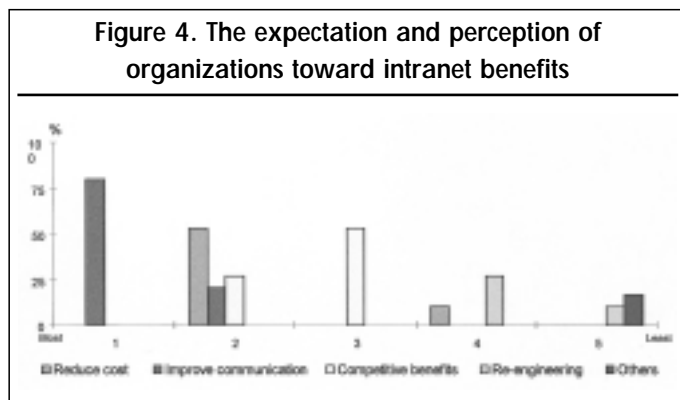
Based on the initial contact, 90.48% of potential participants (19 out of 21) already use the Internet. The survey's findings are consistent with this figure and the length of use of the Internet is equivalent in both types of users. It shows the relationship between intranet experience and its development in the sector. The experience of using Web to disseminate product information is one main reason why intranets are first exploited for internal information dissemination.

Most intranets have been deployed quite recently (see Figure 2). Apart from the 50% that are still in the process of deployment there are also 50% in total which

have been using the intranet for between six and 18 months. When this figure is cross-checked with the Internet deployment, it indicates that most organizations with more than 18 months' Internet deployment are just in the process of deploying an intranet at departmental level. Such a big gap before an organization moves to intranet deployment is indicative of the pace at which banking organizations learn to exploit the power of information dissemination. This is also an indication that the migration to intranets has just begun.

The expectation and perception

It is hypothesized that organizations are influenced both by known and forecast benefits, when contemplating intranet installation. All respondents see reduction of costs, improvement of internal communications, and competitive benefit as the most important benefits prior to installation. However, the weightings of these benefits are slightly different. Figure 4 shows the combined result of both samples.



The principal benefit in the organization's view, as shown, is still communication improvement, followed by cost reduction in the back office. Only one respondent sees the potential benefit of thin client applications on an Intranet to permit streamlining of central data processing. This is the benefit of efficient resource management. Considering the amount of back office administration, this is quite understandable and we can also use this evidence as an inducement for the banking sector to deploy Intranets. One thing of which we can now be sure is that Intranet deployment is no longer a merely fashionable act.

Very few respondents actually see the close relationship between these benefits. The ability to gain improved communication and cost reduction is opening up new opportunities to re-engineer the way businesses are conducted, and will eventually lead to competitive advantage in the market place. The evidence of ranking these benefits itself demonstrates this trend. It is possible that the two classes of respondents perceive these benefits differently. The urgency of achieving the first two have more importance to IT departments than to others, possibly

because it helps to justify their existence in the eyes of other departments.

Consideration was also given to the satisfaction level of end users regarding the methods of internal communication in explaining the decision behind intranet deployment. Unfortunately, the responses are mixed: 66.67% feel comfortable with the efficiency and effectiveness of their existing communication and only 33.33% are dissatisfied with it. Nevertheless, it is an indication that the non-intranet users are far more comfortable with their existing system than expected. This may make the justification of intranet deployment more difficult.

On the negative side, there are explicit reasons for not using an intranet. 33.33% of respondents indicate management priority as the main reason for this, this is consistent with other studies in different industries. However, the security issue does not seem to be significant here, since all other concerns indicate the same percentage.

PLANNING AND IMPLEMENTATION

The mission of intranet

The respondents are aware of the importance of integrating the case for intranet implementation with the organization's long term strategy, since 100% of intranet deployments are part of the overall IT strategy. Some organizations even align it with their overall group strategy and values. As for the use of an intranet, 83.33% have policy control on content creation. However, the type of policy imposed on the content varies. In summary, the emphases are on:

- content ownership;
- consistency in content appearance;
- application to both formal and primary documents;
- intranet etiquette;
- enhancement of document attributes for ease of retrieval.

These policies are explicitly written at corporate level and for delivery through the intranet but not formally permanent, because some respondents are amending them through their intranet project team on a regular evaluation basis. In other words, all intranet deployments are carefully planned, positioned and monitored for the benefit of the organization as a whole.

Managing intranet deployment

As for rolling out, most organizations are applying a team approach. 83.33% of respondents rolled out the intranet with a dedicated team and only 16.67% are still managed by the IT department. However, the type of team members varies slightly with the size of the IT department. Some organizations have large IT departments, which are structured according to function in relation to other departments (e.g., a communication department within

an IT group), mostly had their members within the IT department. In smaller organizations, it usually consists of members from various departments. Some respondents also included an external agency. On the whole, IT departments still maintain control in intranet deployment.

The survey also demonstrates a significant shift in funding approach; 50% of respondents funded the intranet project through their existing overall IT budgets; 33.33% and 16.67% are funded through departments who are involved, and new project funds, respectively. This could be a clear indication of the role of IT departments in initializing implementation of an intranet. To be able to slice part of the overall budget for a system trial, the cost of the system itself must not be a burden. This is clearly a requirement of scaleable and flexible system deployment, which are inherent in the intranet. On the other hand, considering this major funding source and the concentration of deployment in IT departments, IT departments are taking an active role in pushing for an intranet which is very different from other industries, where the IT department tends to be passive. In addition to this evidence, it was also asked whether the deployment and use met the allocated budget; unfortunately, the response determined nothing specific.

Regarding speed of deployment, the findings show a minimum of three months is required to complete the deployment. Although it was not, as has been claimed possible, completed in a few weeks, it is definitely far speedier than any other systems deployment.

Training for end users

Fifty per cent of respondents have IT training courses delivered through online training packages and 33.33% through internal courses conducted by the IT department. Types of online training package indicated by the respondents are Computer Based Training (CBT) package and Frequently Asked Questions (FAQ) Web pages. Apparently, training in the intranet environment is moving away from a centralized approach towards a self-help approach, and IT departments are acting as a key facilitator in making this approach a reality. However, the difficulty could be the process of changing the learning attitude of end users and the willingness of individual branches of the bank to allocate their staff time for 'training'. This is being experienced and is highlighted by one of the respondents.

THE DEPTH AND BREADTH OF USES

The depth of using intranet refers to the complexity of the application and its delivery. This complexity can include integrating proprietary systems, automating document creation, simplifying the user interface, etc. All these complexities may be skill-intensive for the IT department, but are a reflection of the price of ultimate ease of use for end users. The breadth, on the other hand, refers to the range of services and information made available on the intranet.

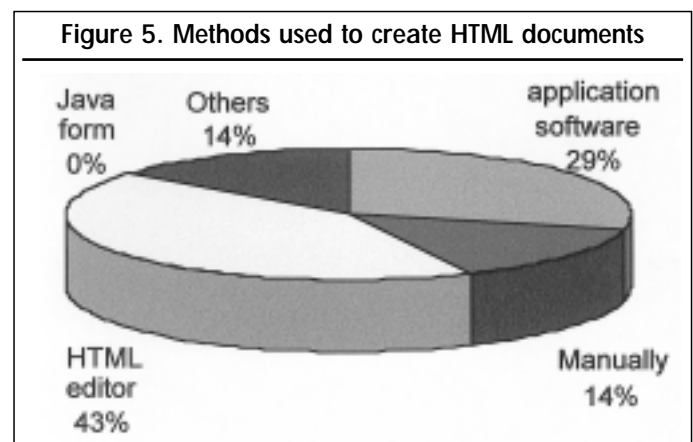
Reading and writing HTML documents

When asked who are using the intranet, 66.67% of respondents claim that access is given to all staff. The other 33.33%, specify restricted access, saying that this is mainly because the deployment is still confined to a small department. For the first time, a corporate information system can benefit all staff within an organization.

In traditional computerized systems, display of information on the system was often very technically demanding, which required the IT department to handle it. However, creation of HTML does not require intensive programming and is widely accessible. This is reflected in the survey. 66.67% of respondents are updating their Intranet through individual departments and in only 16.67% is this still carried out through the IT department.

A majority of respondents drew a line between corporate and business units in term of content maintenance. For example, there were posts for both central Webmasters and business unit Webmasters. The central Webmaster is responsible for corporate information and the others are responsible for business unit specific information such as Personnel Department, Investment Section, etc. On the positive side, the load of the IT department is being shared. However, on the other hand, it also implies the loss of central control.

As for the method of HTML document creation, 43% of respondents use HTML editors and 29% use the facilities available in their office application software. This level of use could be beneficial both to the organization's network and to individual departments. There are large numbers of existing documents, in many forms, which require conversion. Current developments in office application software, as well as groupware, are tuning toward this answer and the conversion process is normally a simple one, which is easier for general end users.



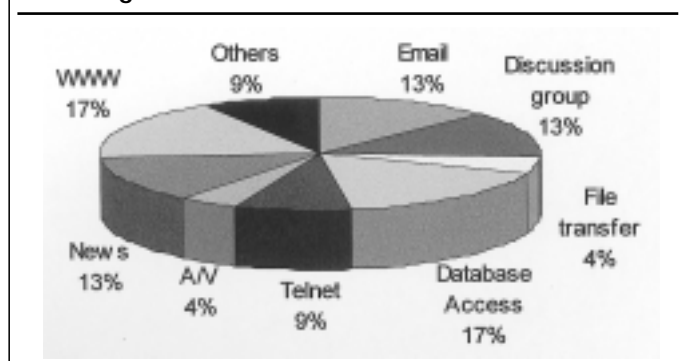
Both office applications and HTML editors also permit off-line editing, which can free up bandwidth for other transactions. However, using an editor will still require substantial knowledge of HTML to give the desired result. Additional policies may be required to

ensure consistency of information presentation on the intranet. The Java approach is that utilizing object-oriented programming has the advantage of reducing the level of knowledge of HTML required by the end users. In other words, the end users do not need to know HTML to create a Web document. However, the respondents seem unaware of this approach. It apparently remains a very new skill for the respondents.

The breadth of intranet services

The range of services available to end users is an indication of the breadth of Intranet deployment. However, it is dependent on the objectives of the organization in providing these services to its staff, i.e., the organization's need and its priority. Given the wide range of potential services, WWW and database access are the most common services implemented in Intranet as shown in Figure 7. News services, e-mail and discussion groups are also important here. Most respondents are using the news services to make announcements, and e-mail to push news updates to the end users. Discussion groups are primarily created in relation to the organization's interests in particular areas. On the other hand, Telnet, FTP and Audio-video are the services being implemented least by the respondents.

Figure 6. Services available on the Internet

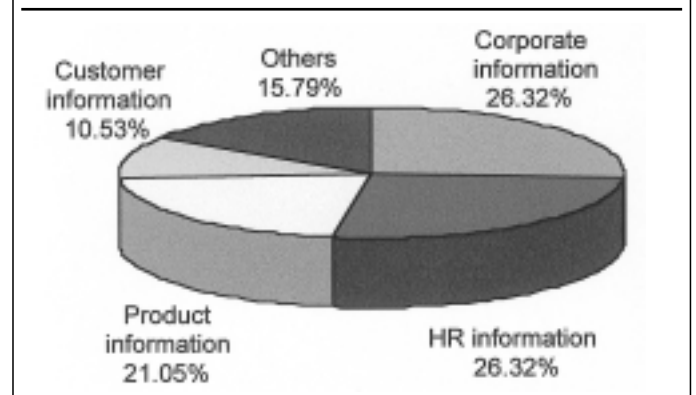


In fact, in completing the 'other' option, only one respondent mentioned workflow. Nobody from the survey response seemed to notice the need for directory services such as search engines and messaging services for alerting purposes. Only verbal conversation with the respondents then revealed the existence of these services in a very few respondents. On the other hand, the size of the Intranet deployment may be too small for the organizations to consider these services as vital. These services have not been mentioned in the banking sector but are beginning to emerge in various other sectors.

There are 26.32% of respondents shown in Figure 7 providing corporate and human resource information on the Intranet. These two types of information are very paper-intensive and costly to disseminate throughout the business world. Therefore, they are often pioneered in

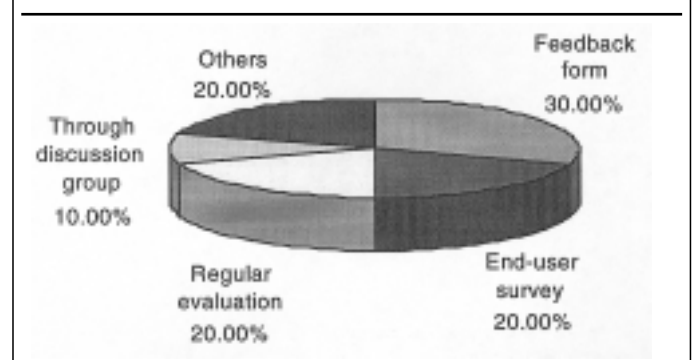
intranet deployment. One respondent also mentioned project information, which is vital in large organizations where many projects could be running at the same time.

Figure 7. Information available to end users



The making of information widely available by intranet is empowering staff at all levels. However, the consequences for system expansion of demand by a wide range of users can be unpredictable. The literature review has shown the unexpected increase in demand after the users encountered the intranet. To counteract this potential chaos, organizations regularly must administer and monitor the response of the end users. Evaluation is the common tool for this purpose but may take various forms. There are a few methods suggested in the questionnaire and the responses are shown in Figure 8.

Figure 8. Methods used to evaluate satisfaction of end users



Feedback methods are widely distributed; 30% of respondents provide a feedback form through the intranet. This is basically an e-mail facility and is only useful for small organizations. Difficulty may arise when attempting to consolidate large numbers of feedback e-mails. Therefore, it requires a form facility and Java to automate the report generation in a useful format. Besides, there is also mixed enthusiasm toward end-user evaluation. Some respondents do it occasionally, some are

very active in using all viable options. Nevertheless, this is an indication of how organizations maximize the intranet for their interests and their capability in using it.

Apparently, all respondents know exactly what their end users want. A majority of respondents found their end users enjoy the instant access, efficiency and ease of use of intranet. Some end users also like the consistent look of information on all applications on the intranet. However, 'liking' and actual practice can be two different things. When asked the usefulness of intranet in relation to their daily work, complete satisfaction is indicated by all respondents and among them 60% feel the intranet extremely useful for their work.

The impact of intranet

The impact on bandwidth is mixed but nobody has reported network overloading. This is to be expected, since the primary role of the intranet in this sector now is to distribute corporate and human resources information. These resources are largely text-based, therefore the impact on bandwidth is not really significant.

On the other hand, there are extraordinary increases in efficiency and effectiveness of overall internal communication. Sixty per cent of respondents experienced excellent improvement and the other 40% experienced slight improvement. Apparently, the concern of bandwidth will only become alarming when the sector begins to explore rich information delivery such as video data flow. So far, no other specific problems were encountered in the sector.

THE POTENTIAL FUTURE

The problems

The concern of information security is also worth discussing. This is revealed by the confidence level of the respondents towards existing Internet security technology. 50% of respondents feel very confident and it is surprising that no respondents have felt threatened by this issue. The reason could be the success in sophisticated network security technology pushed by speculation and demand for Internet commerce. Various levels of security control have been developed to cater for the three goals of Intranet information security: privacy, integrity, and authentication. It was discovered through personal contact that some organizations are well aware of all these technologies and even attempting to implement all of them.

Potential application

The respondents are very positive (80% in total) about using the intranet as an ideal platform for all their information systems. Only 20% feel its utility is exaggerated. As for the potential applications which may be supported by Intranet, 33.33% of respondents responded to this question. The opinions are mixed, but not as exhaustive as the potential applications mentioned in the literature. Some of the suggestions are workflow, mainframe com-

puter access, and database access.

The threats of groupware

The total number of respondents still using groupware is 66.7% and only 33.33% have replaced their groupware. The preference of their end users is partly the reason. However, the main reason is the attempt of the bank to benefit from both systems, due to the fact that groupware products have begun to come equipped with Internet technology. Otherwise, both systems have their pros and cons, and they can be used to complement each other. This is very logical since organizations can preserve their existing systems investment and at the same time exploit the best of two worlds. Apparently, groupware is not threatening the growth of intranet deployment, instead, its integration with Internet technology is more likely to make Intranet more attractive to corporate users.

Interests of deploying intranet in the future

There will not be any significant migration to the intranet in the short term, since a total of 66.67% of respondents in Set 2 will only consider implementing an intranet more than 12 months from the date of the study.

CONCLUSION

This investigation is not a guide to excellent intranet deployment but rather, it provides a starting point to understand and share the successful experience of intranet deployment. There is still much room for further research, such as the tactical way of deployment, intuitive integration or application of intranets, content maintenance approaches, etc. Nevertheless, a proven and intuitive way of deploying intranet can still be drawn from this investigation.

- Phased approach allows both users and administrators to learn and improve the intranet in the deployment process in a cost-effective way. It is consistent with the fast moving, interactive state of Internet technology which demonstrates a potential solution for bankers to mould the intranet better to their business.
- Organizations which will profit the most from intranets will be those who are able to align the intranet with their business structures and both short and long-term strategies. This includes technical support, level of services, and mission critical deployment.
- A clear understanding of the potential challenges involved is vital; such as complexity of systems integration, business re-engineering, and organizational culture.
- Emphasis on total end-user community involvement in developing the intranet. This includes funding, information maintenance, system improvement, problem solving.

- Consider the intranet as the main platform interface to enterprise-wide systems and applications rather than just another application.
- Java is an important booster to ensure friendliness for end users. It has the potential to create useful interactivity, which makes for intranet learning with less effort.
- Define and divide content responsibility in term of business unit (e.g., department, sections, branch etc) and corporate-wide (e.g., Group, HQ, Central Webmaster etc).
- Groupware is likely to gear toward Internet technologies and will be beneficial if you are able to exploit it.
- The banking organizations should be careful of following 'Trend'. Technology should not be implemented just because other organizations in the same field are implementing it, or appear to be doing so. The only justification for implementing new technology is to improve the organizational efficiency, quality of services, and customer services. The organization has to be able to identify these potential benefits before applying the new technology. Ideally all three should be improved, but if any one of the three can be improved, a level of competitive advantage will be gained.
- Be aware of the statistical figures cited in various research studies as it is often in reference to the number of their respondents rather than the actual subject. For example, '30% cost saving' might actually meant 30% of its respondents have cost saving rather than 30% of budget.

It is undoubted that the retail banking business is facing the challenge of using technology effectively to maintain present market position and create new markets. To do so with the intranet, it is pertinent to cite the *Fourfold to Success* stated by Catherine Smith (1998):

EXAMINE what is happening elsewhere

ASK why did it work for them

COMPARE their problem with yours, and

ANSWER will it work for you.

These are still valid today.

December 1999

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