

Exploring the Gap between Business and IT: an Information Culture Approach

Valerie A. Martin, Mark Lycett and Robert Macredie

Department of Information Systems and Computing,
Brunel University
Uxbridge, Middlesex, UK, UB8 3PH
{valerie.martin@brunel.ac.uk, mark.lycett@brunel.ac.uk, robert.macredie@brunel.ac.uk}

Abstract

Integrating the IT organisation with the business is a major challenge facing companies today. Barriers often arise because of diverse information cultures between business and IT. In this paper a theoretical framework based on culture and information is proposed and used to investigate the barrier in a large company. The findings suggest that diverse information cultures indeed contribute to the barrier. Therefore this work presents a framework for understanding information culture and the effect it has on business/IT relationships.

Keywords: Business, IT Organisation, Information, Culture

1. Introduction

The integration of IT with the business is a major challenge facing large information intensive companies. IT has evolved from a largely supporting, reactive role to one that is crucial to the strategic advantage of companies, especially large companies which are heavily reliant on information (Porter and Millar 1985). Nowadays, IT is seen not simply as technological resources, but as the collection of all the people, technology, structures and processes which can supply IT services and solutions to the business. It has often evolved separately to the business units requiring staff with a specific set of skills, and in many companies IT has been centralised and separated from the business units. This has happened in the US and the UK in particular, implicitly creating a 'barrier' between them (Currie 1994). This is often referred to as the IT organisation.

This paper explores the barrier between the IT organisation and the business in a large information intensive company in the financial services sector. The paper proposes that understanding information culture is crucial to understanding the barrier between the business and the IT organisation. This concept is especially salient as information intensive organisations rely heavily on information in all its forms to function effectively. Understanding the degree to which an organisation functions as an integrated information culture can pinpoint problems in understanding the barrier. An information culture recognizes information in its richer, dynamic and holistic sense of activities, processes and behaviours, and the values and beliefs pertaining to these. This paper proposes that a poorly integrated information culture may be the cause of the barrier between the business and the IT organisation. The research question examines *the extent to which information culture can affect the barrier between the business and the IT organisation in an information-intensive company.*

The paper explores the business/IT barrier within the context of an information culture. Section 2 proposes that the focus on new technologies in information-intensive companies is a main contributory factor to the barrier. This section also looks at perceptions on the nature of information and claims that differing perceptions cause the cultural barrier. Section 3 explores culture and IT and defines information culture and how it can be used as an analytical research framework. The research approach is then tackled in Section 4, and in Section 5 the findings are presented and discussed, illustrating that the model works as a framework for analysis. Section 6 discusses the implications, showing that the information culture is not particularly strong in this Company, and this is contributing significantly to the barrier between the business and the IT organisation. It also concludes that although the IT organisation needs to be more business focused, the business has a responsibility to help them to do this. Section 7 summarises and proposes information culture as a new way of viewing and managing information.

As it stands, this work primarily presents a framework for understanding information culture and the effect information culture can have on business/IT relationships.

2. Defining the Barrier

2.1 Cultural Differences

In 1996 Ward and Peppard claimed that it is imperative to seek a better understanding of the cultural barrier between business and IT. Since then (Peppard and Ward 1999), they have focused less on cultural factors and more on issues of leadership, values and beliefs, structures, processes and service quality. This paper continues some of their earlier work, and takes the view that the cultural barrier between business and IT needs more in depth exploration. It is human behaviour that can enact the organisational processes that can integrate business and IT. Even well intentioned values and mindsets cannot change the organisation if there is no practical way of understanding and implementing new working practices. Cultural differences can be manifested in behavioural differences.

The cultural barrier between business and IT reveals itself in various areas. Peppard and Ward (1999 op.cit.) have also realised that good IT performance is not just about the IT organisation's ability to deliver solutions and systems to the business. It is about organisation wide involvement from both business and IT. Lack of this accountability from the business exacerbates the cultural differences, which also exacerbates the barrier. They also suggest that the barrier between the business and the IT organisation is caused not only by these factors, but also because of a lack of learning and understanding of not only their own, but also each others issues. This divide between business and IT, together with the focus on technology, has led to the responsibility being put on IT to be more responsive to business needs. This, coupled with the tendency to separate IT from business in many large companies, has contributed to the barrier.

There is some evidence that business and the IT organisation emphasize different aspects of information and this is a potential cause of the cultural barrier between business and IT. Schein, for example, has pointed out the cultural differences between the IT organisation and the business (1992). IT assumptions about the nature of information tend to focus on the type of information that can be manipulated or easily supported through technology. This mindset, he explains, is in

total contrast to the business mindsets that are more concerned with the holistic and human aspects of information and communication.

These approaches reveal cultural disparities in understanding of the business/IT relationship.

2.2 Information and Meaning

The study of the management of information has traditionally been technology-driven, and attempts to explain the impact of IT on the organisation appear to have exacerbated the business/IT barrier. Ward and Peppard (1996) describe two opposing worlds in companies with sophisticated IT: one of business striving for excellence and one of the IT organisation striving for new technologies. There is a profusion of academic and practitioner interest in the area and terms such as 'Information Technology Management', 'Information Systems Management', 'Information and Communication Technologies' and 'Information Management' have become common titles for books, papers and conferences. Many academics have traced and classified stages of development in the management of information over the last thirty years.

Nolan's model showed that the introduction of computers in organisations was concerned with data processing, rather than the more modern emphasis on information (1979). Porter and Millar (1985) recognised the value of information itself to business, as opposed to simply recognising the value of data processing. Their view recognises the increasing information component but their terminology restricts this information to what is encompassed in the technology only. The same is true of the work of McFarlan (1985), Earl (1989) and Ward (1995). These views show a tendency to assume that all information in an organisation can be managed through technology. The rapid advances in the sophistication of information technology and their application in business has exacerbated this belief.

These models are all different in their approaches to the management of information. However, they all have one thing in common: efforts have focused on consolidating the manipulation of technology rather than understanding the content, meaning or purpose of the information that is being manipulated. It seems as if the more sophisticated the technology, the more the focus on managing the technology, as opposed to managing information.

Broadening out this argument, Ward (1995 op.cit.) and Earl (1996) have written extensively on the impact of IT on the business organisation. However, by emphasizing both IT and the organisation as separate entities, which may conflict with each other, they are actually exacerbating the barrier. The two are being viewed as separate entities, rather than integrated parts of the same organisation.

2.3 Perspectives on Information

There is much divergence in the understanding of the nature of information. The literature in this area tends to consist of fragmented bodies of theory in interrelated areas. King, Hufnagel and Grover (1989) claimed that 'information' is taken out of 'information technology', and suggested that IT strategy and information strategy should actually be separate management policies in organisations. Weick (1969) claimed that the crucial events in an organisation are processes,

rather than tangible fixtures; therefore focusing on the dynamic and richer aspects of information, and this he refers to as 'enacted information'.

Other writers have explored the nature of information in more depth. Mingers (1995) claims 'information' is purely objective, whereas 'meaning', is fundamentally intersubjective, based on a shared, agreed understanding between people. Information systems reside within these systems of meaning. Although he does not see information as intersubjective, he is clearly aware of the broader concepts relating to information and information systems, therefore his argument is similar to others: information technology needs to be viewed in an organisational context.

It is clear from these arguments that information is an ambiguous term: terms such as 'information and communication processes', 'systems of meaning' and 'enacted information' refer to the fact that information is not something that is always tangible and formal. Therefore, it is not important what the term is: what is important is recognizing the fact that information technology is only one element in its wider organisational context of activities, dialogue and culture.

Another theme to the information debate is the argument that formal information is focused on at the expense of informal. Frank Land (1987), for example, claims that typical technology-driven systems disappoint because the designers eliminate the informal elements of the information. Similarly, Davenport (1993) suggested that organisations tend to simplify information to fit into computers, thus losing the rich complexity of organisational information. Managers get the vast majority of their information from non-IT sources - two thirds from face to face or telephone conversations and one third from documents. Both Liebenau and Backhouse (1990) and Liu (2000) clearly illustrate and expand on these two types of information, and their conclusions are very similar:

- i. The informal information system is ad hoc, including the assumptions, expectations, beliefs and meanings that hold an organisation together. It is also behavioural, built on norms and enacted through interpersonal communication, usually oral.
- ii. The formal information system includes literate culture, rules and bureaucracy, and is often manifested through paper-based systems. The technical information system exists within the formal information system.

These approaches illustrate information as a broader and more complex concept than information technology. There are four general themes that can be drawn out: two elements to the informal information system:

- the mindsets, expectations, values and beliefs which people hold and
- the enactment of behaviours through interpersonal communication.

and two elements to the formal system:

- routinised procedures and rules and
- those aspects of routinised procedures and rules which can be codified and manipulated through technology.

This paper takes the stance that information is not objective, as in technology driven approaches, but intersubjective. The form it takes may vary – information may take the outward appearance of technology, paper or voice-based dialogue, or a combination of these. However, information derives its real meaning from a shared, common understanding between people, and it is this common understanding, or the lack of it, that is at the heart of working relationships between business and IT.

3. Information Culture

3.1 Shared Meanings

Much of the literature on organisational culture, especially in relation to IT, is based on the concept of common meanings and understandings. The literature produces three broad themes, and they are described in this section.

Common interpretations and understanding are focused on a number of factors such as organisational vision, customer satisfaction, work practices, the value of information and language. In a strong information culture this is reflected through cohesive activities and behaviours and the way in which formal and informal information is understood and put into practice. Liu (2000 op. cit.) claims a healthy organisation would possess a cohesive culture where values and beliefs were relatively shared. Walsham built on the work of Morgan (1986) but claiming that information systems only make sense when they are viewed as being based in shared meanings and realities (1993). Sub-cultures demonstrate where lack of consensus and lack of a common reality precludes a cohesive culture.

Common language and terminology: Davenport (1994 op.cit.) refers to the need for organisations to come to a ‘common definition’ and a ‘shared understanding’ of terms and expressions in common use. In organisations information means different things to different people, and can evolve in many directions, taking on multiple meanings. This has to be taken into consideration when defining information systems. Grindley (1992) claims a survey conducted on recognizing the culture gap by Price Waterhouse/Financial Times revealed one of the problems as the need for IT management to explain terms and issues simply, with as little technical jargon as possible.

Behaviours enacted through dialogue that reflect common understandings: In the areas of dialogue and informal communication Smircich (1983) recognises that modes such as language can facilitate shared realities through dialogue. Similarly to this, Soft Systems Methodology (Checkland 1981) is based on the belief that diverse interpretations of situations can become more shared and understood when groups and individuals engage in dialogue. Also closely related is the sociotechnical approach, wherein Pan and Scarbrough (1999) argue that culture, conversation and social interaction are a significant aspect to developing information systems in organisations.

These approaches are based upon the belief that a healthy culture is dependent upon a system of shared meanings, and that these meanings can become shared through a process of dialogue enacted through the use of a common language. However, the literature on culture and

information focuses mostly on the informal system, ignoring most of the aspects of the formal system.

3.2 Information Culture Defined

The four levels based on the formal and informal information systems defined in section 2.2 are close to the three levels defined in the last section. The main difference is the addition of formal information and IT. To date there has been very little attempt to provide an integrated approach to information covering formal and informal information. A recent exception to this is the work of Ratcliffe-Martin and Sackett (2001) on the nature and management of information in small companies, which provides clear lessons for companies of any size. They propose that an information culture is a systemic combination of formal and informal means of information processing and communication, interpretation and understanding, and activities and behaviours.

This paper draws together all these approaches, and uses a definition of an information culture as *a system of shared meaning, manifested in the formal and informal information systems that are enacted through people, processes and technology*. In Figure 1, the information culture is divided broadly into two dimensions:

- i. The informal information system, which spans two layers of the culture, and covers beliefs, values, meanings and also informal behaviours.
- ii. The formal information system that covers formalized systems, structures, processes and procedures. Within this lies the technical IT system.

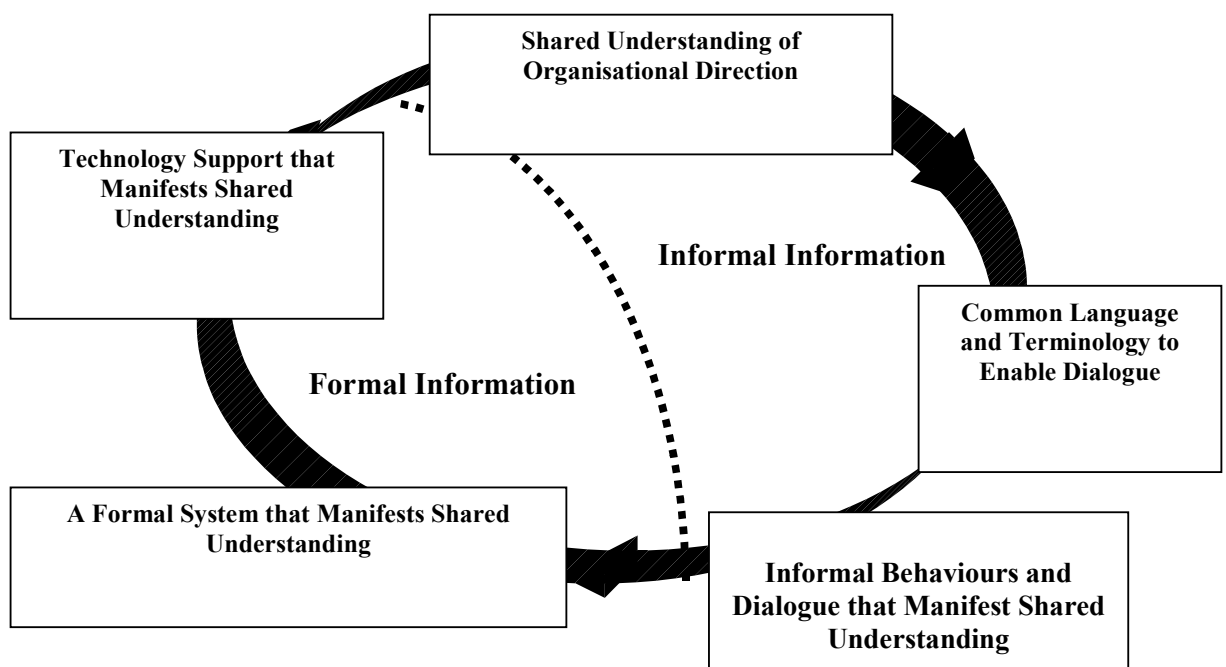


Figure 1. Information Culture: Conceptual Framework for Analysis

These are focused down into five themes:

Informal:

- i. *Shared understanding of organisational direction:* Subcultures may have different understandings and appreciations of business objectives, and this may be especially so between the business and the IT organisation.
- ii. *Common language and terminology to enable dialogue:* Subcultures can have semantic difficulties in communicating because of jargon, or pragmatic difficulties because they assign disparate meanings through contextual differences.
- iii. *Informal behaviours and dialogue that manifest shared understanding:* Informal behaviours are usually enacted through language and dialogue, and in an integrated information culture they will be shared across sub-cultures.

Formal:

- iv. *A formal system that manifests shared understanding:* The formal system is usually about bureaucratic, paper-based systems that can be standardised across subcultures.
- v. *Technology support that manifests shared understanding:* Technology-based information systems will be standardised and integrated to a large extent through compatible software and hardware, and also common semantics and standards.

The approaches of Liebenau and Backhouse (1990 op.cit.), Liu (2000 op.cit.) and Land (1987 op.cit.) on the formal and informal information systems are somewhat rational, however, and tend to assume there are clear divisions between each. In practice, this is not possible. If an intersubjective stance is taken, they are all part of an integrated system. Therefore, the circularity of this model shows that these five elements are all part of a systemic whole.

4. Research Approach

4.1 The Context of Research

The next phase of the research was to apply this framework as an exploratory tool to investigate the business/IT barrier in a single case study company.

FinCo is a large financial services provider with recent pre-tax profits of nearly £2 billion and a customer base of over 15 million people. The research discussed here is set in the context of retail banking, which provides services ranging from current accounts through credit cards and buying and selling shares to sending money overseas. There is a network of approximately 700 branches, some 3000 ATMs, telephone call centres and Internet banking facilities and they all supply Retail Bank customers.

FinCo has separated the business from the IT organisation, and is now experiencing a barrier between them. The retail bank consists of business units catering for such things as customer service, retail sales and information management and is relatively distributed. The IT division is made up of units catering for solutions delivery, infrastructure and architectures and support, but is relatively centralised. Increasing competitive pressure within the financial services sector has

led to the mutual influence of each division on the processes of organisational innovation, strategy and change being fragmented. Because of this, the 'barrier' has emerged as an area of organisational concern due to its perceived negative effects on organisational communication, effectiveness, and value creation.

The unit of analysis was the barrier between the IT organisation and the business, and the objectives of the data collection exercise were to gather opinions and views in this area, using the information culture model as a conceptual framework. Data collection was done through semi-structured interviews, backed up by an analysis of documents and archival records. Thirty-four interviews were conducted, including one main-board director, fifteen directors and eighteen senior managers - covering both the retail bank and the IT organisation. The interview questions were divided into three areas, covering (a) the nature of the business/IT relationship, (b) intent for enhancing the business/IT and (c) information and culture.

The resulting data was analysed using a 'common sense' breakdown of issues, root causes and potential action strategies (Avison and Wood-Harper, 1990). After this the data was analysed using information culture as a reference point, breaking it down into different levels: understanding of organisational direction; language; informal communication; the formal information system and the IT system.

5. Research Findings

The research found that, in this Company, there are clear strengths and weaknesses in the establishment of an information culture on all five of these levels. Perceptions from both IT and the business have been separated, drawing parallels with the previous section on cultural differences between the two sides.

Level 1. Shared understanding of organisational direction:

Retail blames IT for not being business focused. There is a degree of recognition on this from IT and they are trying to improve in this area.

The Retail Bank complains that the IT organisation does not fully appreciate the Retail Bank business objectives or the need to treat the business as their valued customers. For example, the business complains that the IT organisation is too insular and IT focused. They think that the IT mindset is concerned with working for IT first of all, and working on a business project is only secondary to that. Up until about two years previously the IT organisation had been known as 'The Fortress', indicating that there was very little sense of overall organisational direction within. It was generally agreed there was little sense of being part of the same organisation, with the same objectives, and primarily the business feel that the IT organisation do not support them in their aims:

"I think it's very important that IT understand that, the view of Retail management would be that their department only exists as a support to the Retail Bank."

However, the IT organisation were able to provide more insight into this problem, saying

that it is natural for IT to have different objectives:

“.... too often it appears there are different objectives. And probably some of this is natural because the IT people will focus on IT deliverables and people from business will focus on business deliverables.”

Level 2. Common language and terminology to enable dialogue:

The retail bank blames IT for their over-technical jargon, and IT again have given some recognition of this. This can have the effect of poor communication or intimidation of business people, as well as poor understanding of what is needed for project deliverables. However, it is not simply a matter of technical jargon, but interpretation:

“.... it is not necessarily just a jargon thing: it's partly a jargon thing and it's partly knowing how to interpret what that means in an operational way”.

Therefore, there are both semantic and pragmatic aspects to language: terminology and the meaning that the terminology conveys to the organisation. Again, however, IT have claimed that they are aware of this and are already starting to do something about it:

“The best way to actually get into this is to have, use logic and use rationale, and articulate the benefits to the person that you're trying to influence, in language that they understand. Not in your language, not “I want to have a bigger wire and a faster box.” Business people don't care about that. Business people care about time, they care about cost and they care about speed to market”

Level 3. Informal behaviours and dialogue that manifest shared understanding:

Here, IT blame Retail for their ad hoc behaviours and poor communication which make life hard for IT, yet significantly, Retail appear to have no awareness of this. The business has a well-established project initiation process. When a proposed project has to go through a rigorous process of formal paperwork around which dialogue and discussion ensues. If the PIP is considered feasible, it goes into the form of a project charter in more detailed format, which generates more dialogue including representatives from both the business and the IT organisation. Projects are then prioritised by the Retail Executive Team, and allocated resources.

‘Backdoorings’, especially in the initiation of projects, is a primary issue. Competition is such that business people often try to bypass the system through informal networks to enable their own projects to be favoured. One quote from IT complains about the ‘entrepreneurial’ mindset of business:

“.... it's by-passing the process - some people see processes as things to be challenged and avoided, because they're entrepreneurial spirits and that's what entrepreneurs do.”

The business use informal networks and contacts, and will initiated dialogue in which IT

is not involved. Although this may be quite a normal state of affairs for the business, it leads to lack of consistency and confusion for IT over what they should be prioritising, for whom and for when. IT complains about the 'emotional' mindset of the business compared to the 'factory floor' mindset of IT.

IT also complain that following on from this is much ad hoc and informal communication with the business which leads to lack of effective communication in the project planning stage. Dialogue is skimmed over and not thought through, resulting in what they call 'half stories' and there is little opportunity to sit down and talk things through effectively.

PIPs and project planning form part of the formal information system, consisting of formalised rules, schedules and quantifiable information and theoretically should be easily supported by technology solutions. However, IT perceptions and practices cannot easily fit around the informal system that is prevalent to the business. This leads to problems for the IT organisation in terms of integrating a variety of complex operations using IT. For example:

"We've got conflicts because we've got mixed workloads, we've got on-line transaction systems and batch runs... it's not performing very well".

Level 4. A formal system that manifests shared understanding:

On this level, both Retail and IT appear to be aware of poor formal processes and standards, and both give recognition to the problem, albeit for different reasons.

An issue for both the business and the IT organisation is a lack of consistent processes generally in business-as-usual. In Retail there is some awareness of the difficulties of relying on the informal system and the need to establish more formal, standardised systems. This is important for Retail to enable them to allocate people and resources in project planning, so that they do not have to sort out confusions further down the project life cycle. When this does happens projects have to be de-scoped, and there is much 'to-ing and fro-ing' between the two sides. They also complain that the IT organisation is simply not fast or flexible enough, and it takes too long to update a system. A quote from retail was:

"We need a template for allocating people and resources to projects, to time scales. There are two frustrations: why can't they allocate more people to the business priorities and business systems that have priority behind them, and why is there a huge discrepancy and time lag between prioritisation and mobilisation?"

The IT organisation would also prefer more standardised processes with the business. They expressed frustration over the lack of consistent formal processes and procedures throughout the Company, causing duplication and confusion when trying to deliver solutions and services. They also complained that different business units within Retail adopt different formalized approaches to creating business initiatives, to running projects and also to what is considered business as usual and what is a project. Also, retail processes are created in a haphazard way, leading to more confusion for the IT

organisation:

“... it probably is no great surprise to you that some of the business areas crank out a system in Access or Excel or whatever and there's no documentation for it whatsoever.”

Level 5. Technology support that manifests shared understanding:

Both sides recognize the problem of poorly integrated and inflexible information systems, although they both give different reasons for this state of affairs, once again, blaming each other. There is complaint from the business about the ‘spaghetti’ in the front-end systems. What the customer sees is not clean, is full of duplication and conflicting messages:

“...spaghetti of stuff that goes on behind the scenes. What they don't have is a sort of 'what you see is what you get'. What the customer sees and experiences is not clean.”

There is also concern from Retail that systems are not updated and changed quickly, which is obviously frustrating in terms of project management and customer response. The business says that the buying patterns of the British public are constantly changing, especially in terms of ATMs and current accounts. People want 24-hour access, and significant down times of ATMs are not acceptable any more, but unfortunately systems cannot always cope with this.

From the IT side, there is a huge awareness of the lack of investment in IT infrastructure:

“We have never had an infrastructure investment budget, it has always been on a case by case basis. There is a need to make some very radical changes to some bits of our infrastructure: this is expensive.”

For example, the Retail Bank has run on Cobol for 20 years but this is now an outdated programming language: this means their system is inflexible and they cannot find the people with these programming skills any more. Their data network servicing the branch network is no longer capable of managing their volumes of traffic such as management information and the Internet. They are therefore ‘patching and mending’ resulting in the ‘spaghetti’ which the business constantly complain about.

6. Discussion of Findings

6.1 Comparison of Results with Model

The findings show that there is a gap between business and IT, and this is caused by a weak, disjointed information culture where IT and business have a tendency to ‘blame’ each other for poor delivery of projects and IT solutions. These findings show that the five level model of information culture has been instrumental in providing an analytical tool that can reveal how the barriers between the business and the IT organisation are perceived. The findings are

summarised in Table 2:

Information Subcultures and the Business/IT Barrier

Informal	Business Perceptions	IT Organisation Perceptions
<i>1. Shared understanding of organisational direction</i>	The IT organisation is not business/ customer focused – they are IT focused, and this creates a fundamental barrier.	The IT organisation is not business focused, but this is quite natural.
<i>2. Common language and terminology to enable dialogue</i>	The IT organisation blinds the business with technical jargon. Their own language is not easily understood in terms of what it means to business.	It is realized to some extent that IT must translate their solutions in business terms.
<i>3. Informal behaviours i.e. dialogue that manifests shared understanding</i>		‘Backdooring’, in the business, especially in informal dialogue in the initiation of projects confuses IT. Poor and inconsistent communication with business in project planning leads to lack of consistency and confusion for IT in scheduling.
<i>4. A formal system that manifests shared understanding</i>	Lack of consistent and standardised processes with IT. IT too slow to respond with solutions and descoping of projects is frequent.	Lack of consistent and standardised processes with business units: IT trying to do something about it. Business units build formal systems without documentation, on an ad hoc basis.
<i>5. Technology support that manifests shared understanding</i>	‘Spaghetti’ in the front-end systems, full of duplication and conflicting messages or simply does not work. Systems cannot be updated and changed quickly.	Lack of business investment in IT infrastructure, systems outdated and inflexible because of this.

Formal

Table 1: Research Findings

This table illustrates the commonalities and disparities in perceptions between retail and IT. The first axis compares the perceptions of Retail against those of IT, taking into account all five levels shown on the second axis. Therefore, there are discrepancies and blame on all five levels in this Company. However, on four of these levels there is at least some degree of recognition of the problems, though generally it appears that Retail blame IT for the problems, and expect IT to do something about it. On the other hand, it is clear that IT have issues with Retail in these areas, especially as on Level 3 there is no recognition at all from Retail about the ad hoc communication practices that go on, making it hard for IT to deliver solutions on time, to requirements and within budget.

Consequently, the findings show that:

- i. The conceptual model of information culture is a useful tool to investigate and analyse the barrier between business and IT in this Company, as it has proved to be a focused framework on which to study the barrier in more depth on these five levels.
- ii. The barrier is caused by different information cultures between business and IT, and there is a weak, fragmented information culture on five levels because of this: this results in poor solution delivery and low morale within IT.
- iii. In particular, the findings have shown that Retail have a tendency to apportion blame to IT, expecting IT to adapt to their own mindset and practices. They do not appear to realize that they need to support IT to enable them to do so.

6.2 Implications for Research

The implications of this research have consequences for future research. The findings in this paper provide new insight on previously ambiguous areas:

- i. *Cultural differences between business and the IT organisation (subcultures):* The Retail business and IT organisation have a barrier because of cultural differences, and these cultural differences manifest themselves in the way in which business and the IT organisation communicate and share information. Retail are more informal, and do little to support IT in order to enable them to support business.
- ii. *Information culture and the formal/ informal divide:* This paper has used the concepts of formal and informal information as a relevant and interesting way to view information in companies. The authors conclude that essentially information is intersubjective and complex, and not simply a technology. This model can be tested and be relevant to any type or size of organisation.
- iii. *Research Method:* This paper has been largely exploratory, and focused on an in-depth case study. As yet the information culture model is still not sound enough to make theoretical generalisations. Future research in this area may point to further testing of these information culture models, and deeper descriptions of each of the levels. For example:
 - IT is not business focused: reasons must be investigated and the role that business plays must be established.
 - IT blinds the business with technical jargon – the reasons may be political,

about power, or simply a need for business to learn IT terminology. Again, this needs to be explored.

- There is a clear mismatch in perceptions about the informal system: the informal practices which are important to the Company and the ways in which issues can be resolved are a high priority for research.
- There is a clear problem concerning the formal system here: there is confusion as to what needs to be standard and consistent.
- Finally, there are mismatched perceptions about technology – this is a huge area that needs further investigation into issues such as budgetary responsibility and infrastructure planning.

However, it is important to point out the limitations of this research: the interviewees were all either directors or managers. Therefore, it may be expected that at this strategic level, there would be more of a common understanding of these issues than further down the organisation. In terms of future research, it would be necessary to investigate the perceptions and working practices of a wider range of people in the organisation to further validate the concept of an information culture.

6.3 Implications for Practice

Although there are clear problems concerning working relationships between Retail and the IT organisation, perceptions of the two sides are cohesive to some extent. There is therefore much common ground for future dialogue and change. Retail need to take more accountability for their own actions and mindsets which may be impeding IT.

The difficulty lies in the huge barrier between academe and industry in terms of how they might understand these issues: it is unlikely that practitioners will know much about these theoretical areas, therefore care needs to be taken in the way in which these issues might be presented to them. Some guidelines can be drawn from the five levels and put into practical terms:

- i. Education and Learning: both sides need to support each other, learn each other's aims and language.
- ii. Communication and knowledge transfer: people need to talk to each other over boundaries, through meetings and encouraging dialogue early on between business and IT.
- iii. Systems and processes: invest in IT infrastructure and development, work out 'best practice' processes and standards which can be re-used and encourage discipline on both sides.
- iv. Overall, the Retail Bank must take responsibility for encouraging this. In this particular Company, this is in fact what is already beginning to happen. An IT Director for Retail has taken on the task of implementing a programme of relationship management. Three relationship managers have been recruited with multidisciplinary skills; the objective is to facilitate better working relationships between business and IT through establishing clearer and more effective communication channels and enabling trust and learning to become an integral part of organisational life.

The model may be used to initiate dialogue so that the business and the IT organisation can work as partners to change the situation and build a stronger more integrated information culture.

7. Conclusions

This paper has examined the extent to which information culture can affect the barrier between the business and the IT organisation in an information-intensive company. Cultural differences between the business and the IT organisation have been defined. In addition, the concept of an information culture has been explored and the way in which this can be used as a conceptual framework to investigate the barrier. The paper proposed that understanding the degree to which an organisation functions as an integrated information culture is crucial to understanding the barrier. An information culture was seen not simply as the IT system, but about the culture of information in a company in its wider connotation. This covers not only technology, but also the richer and dynamic nature of information.

The research found significant weaknesses in the information culture that reveal mismatches between the business and the IT organisation. Beliefs, understandings, meanings, activities and behaviours, processes and technology-based systems are not always compatible with each other. They reveal that what the business do and think affects the ability of the IT organisation to be business focused and able to close the barrier to some extent. However, the findings reveal that there is enough common understanding about these cultural divisions to give the Company something substantial to build upon when trying to improve their business/IT relationships.

The findings are well grounded in empirical evidence as well as theory, and propose organisation wide involvement from both business and IT in building an information culture. This framework can be used as an analytical tool for future research and also to diagnose and describe the barrier and enable dialogue in these organisations. A strong information culture can be the basis upon which organisations integrate the IT organisation with the business for sustainability of competitiveness in an information intensive global economy.

References

- Avison, D., and Wood-Harper, A. T. (1990) *Multiview: An Exploration in Information Systems Development*, McGraw-Hill
- Checkland, P. (1981) *Systems Thinking, Systems Practice*, Wiley, Chichester
- Currie, W. (1994) *The Strategic Management of Advance Manufacturing Technology in the US, UK, Japan and West Germany*, London, CIMA
- Davenport, T. (1994) "Saving IT's Soul - Human Centered Information Management", *Harvard Business Review*, Vol. 72, No. 2. pp 119-131
- Davenport, T. H., and Prusak, L. (1997) *Information Ecology: Mastering the Information and Knowledge Environment*, Oxford University Press
- Earl, M. (1989) *Management Strategies for Information Technology*, Englewood Cliffs, Prentice Hall, NJ

- Feeny, D.F., Earl, M.J., Edwards, B. "Organisational arrangements for IS: roles of users and specialists", Earl, M. (1996) *Information Management: the Organisational Dimension*, OUP, London
- King, W., Hufnagel, E., and Grover, V. "Using IT for Competitive Advantage", Earl, M. (1989) *Information Management - the Strategic Dimension*, OUP, London
- Land, F. (1987) "Social Aspects of Information Systems", Piercy, N (1987) *MIS - The Technology Challenge*, UWIST/Croom-Helm, London
- Liebenau, J., and Backhouse, J. (1990) *Understanding Information*, MacMillan Business, London
- Liu, K. (2000) *Semiotics in Information Systems Engineering*, Cambridge
- McFarlan, F. W. (1985) "Information Technology Changes the way you Compete", *Harvard Business Review*, Vol. 63, No. 2. pp 98-103
- Mingers, J. C. (1995) "Information and Meaning: Foundations for an Intersubjective Account", *Information Systems Journal*, Vol 5 No. pp 285-306
- Morgan, G. (1986) *Images of Organisation*, Sage, Beverly Hills
- Nolan, R. (1979) "Managing the Crisis in Data Processing", *Harvard Business Review*, Vol. 57, No. 2, pp 55-67
- Peppard, J., and Ward, J. (1999) "Mind the Gap: Diagnosing the Relationship between the IT Organisation and the Rest of the Business", *Journal of Strategic Information Systems*, Vol 8, No. 1. pp 29-60
- Porter, M., and Miller, V. (1985) "How Information Gives you Competitive Advantage", *Harvard Business Review*, Vol. 63, No. 4. 149-160
- Ratcliffe-Martin, V., and Sackett, P. (2001) "Information and Small Companies: Chaos with Intent", *Journal of Artificial Intelligence and Societ*, Vol 15, Nos 1 and 2. pp 22-39
- Schein, E. (1992) *Organisational Culture and Leadership*, Jossey-Bass, California
- Shan, L., and Scarbrough, H. (1999) "Knowledge Management in Practice: an Exploratory Case Study", *Technology Analysis and Strategic Management*, Vol 11, No 3, pp 359-374
- Smircich, L. (1983) "Concepts of Culture and Organisational Analysis", *Administrative Science Quarterly*, Vol 28, No 3, pp 339-358
- Walsham, G. (1993) *Interpreting Information Systems in Organisations*. Chichester, Wiley
- Ward, J. (1995) *Principles of Information Management*, London., Routledge
- Ward, J., and Peppard, J. (1996) "Reconciling the IT/business Relationship: a Troubled Marriage in Need of Guidance", *Journal of Strategic Information Systems*, Vol 5, No 1, pp 37-65
- Weick, K. E. (1969) *The Social Psychology of Organising*, Addison-Wesley, Massachusetts