

Design as a strategic resource

Design's contributions to competitive advantage aligned with strategy models.

A dissertation submitted to the University of Cambridge for the degree of Doctor of Philosophy

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September 2009

Abstract

There is increasing interest in, and recognition of, the contribution that professional design services can make to a firm's long-term performance. The term *strategic design* is used ambiguously by design commentators and in empirical literature, with little relation to established theories of business strategy. This thesis documents a study seeking to align the many views of design's strategic benefits, and to clarify the practical and conceptual relationships of these benefits.

The research began with a model development phase, based on literature of corporate strategy and design management, and on exploratory interviews with design practitioners. The second phase sought to test and develop the model derived, through fieldwork interviews and observations.

The study identifies nine strategic contributions that can be made by designers or design activity for a firm, and relates them to established models of business strategy. Field interviews and case studies find firms recognising and exploiting some or all of these contributions. However, in some cases – even in highly design-capable firms – these contributions may be recognised as important but are not practiced.

Case descriptions serve as examples in context, providing specific, comparable views of design application in two firms, and demonstrate how the design contributions may provide a framework for examining design exploitation in an organisation and identifying opportunities for improvement.

Acknowledgements

I am grateful to the many colleagues, friends, and family who have supported me through this long endeavour. I am especially indebted to my supervisor, Dr James Moultrie and to my advisor Dr Nathan Crilly. To both I am grateful for their unstinting support and wise guidance, endless patience, and friendship. I must also recognise the support and inspiration I have received from colleagues and friends in Cambridge, at the Institute for Manufacturing. In particular I thank Dai Morgan and Caren Weinberg, and Andrew Muir Wood for his proof reading. Thanks also to Hema Karah for his companionship and encouragement.

This work was supported primarily by the Engineering and Physical Sciences Research Council, with generous support from another organisation I am unable to name. I am grateful to them, and to all the many participants who give up their time to help with this study, and whose insights and opinions it has been a pleasure to share. I am especially grateful to Carrie M. and Dave B. who helped me immeasurably in arranging contacts in the case studies.

I am also grateful for inspiration from Isabella Moultrie, Ned Stevens, Scarlett and Lara Ginn, Faith and Solomon Mignott, Etienne Porter, James Darroch and my godsons William Porter and Nat Price, all of whom were conceived after and delivered before this thesis. Also to Susie and *ma grandmère formidable*, Margueritte who are both dearly missed.

Thanks to all my enormous and lovely family, especially the Cambridge Chapter – Tom, Ruth, Amy, Hettie and Martha – for the tea and music.

Above all, my thanks and love go to Sofia. The end.

This thesis is dedicated to my dad, Dominic.

Declaration

This thesis is the result of my own work except where explicitly stated, and includes nothing that is the outcome of work done in collaboration. Any reference to the work of others is clearly indicated in the text. This thesis has not been submitted in whole or in part for consideration for any other degree or qualification at this University or any other Institute of Learning. This thesis contains fewer than 65,000 words (including appendices, bibliography, footnotes and tables) and fewer than 150 figures.

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Cambridge 2009

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Glossary of terms

Communication design

Concerned with conveying information and concepts through text, imagery, moving image (film and animation) and sound. Increasingly this term is preferred over *graphic design*, reflecting more accurately both its purpose and the range of media used.

Ergonomics

The science of understanding human interactions with technology and other artefacts. Physical ergonomics concerns anatomical and physiological aspects of comfort, ease, health and safety (e.g. seating posture, building access, drug packaging). Cognitive ergonomics concerns mental aspects such as ease of perception, comprehension, memorability, often also termed *usability*. See also *human factors*.

Graphic design

Traditionally pertaining to printed matter (posters, book jackets, advertising, packaging etc), the discipline of the graphic designer now also includes design for moving image, interactions and interfaces, and visual identity (branding). Some practitioners in these fields prefer the term *communication design* (see above).

Human Factors (Engineering)

The application of ergonomic science to the design process.

Industrial design

The conception and specification of industrially manufactured goods. Often used interchangeably with *product design*. Industrial designers often work with engineers and marketers to create new or improved products, and increasingly interaction designers.

Interaction design

The conception and specification of the behaviour of designed artefacts with which a user can interact, originating in HCI, now relevant to the many goods and systems which feature embedded software, such as mobile phones, medical devices and in-car navigation.

Interface design

Subgroup of interaction design, commonly pertaining to interaction systems that specifically present visual elements such as graphic icons, symbols and metaphors (sometimes, more accurately, termed *GUI design*).

Product design

See industrial design.

Service design

The design of a unified customer (or end-user) experience, in which intangible experiences are considered as important as tangible products, and the design of both is addressed holistically. Collectively, they are the service. Increasingly applied to public services such as healthcare delivery, in which many stakeholder views much be accounted for.

Strategy, corporate

Strategy includes an organisation's long-term plans and actions, both for the future (intended strategy), and in the past (realised strategy). It is manifest externally as a strategic *position* – a decision to offer particular products in particular markets, but also internally as a *perspective* – a way of doing things [Mintzberg, 1994].

Strategic design

The effective use of design to improve and maintain performance in businesses or non-profit organisations.

Value chain

The process or sequence by which a firm creates a product valuable to its buyers. Primary activities directly involve the offering. Secondary activities, such as infrastructure and HR, are required to support primary value activities. Value activities should be consistent, optimised and mutually reinforcing to achieve “strategic fit” [Porter, 1985].

Abbreviations

CP	Consumer products
CSR	Corporate Social Responsibility
GUI	Graphical User Interface
HCI	Human-computer interaction
HF	Human factors
HR	Human resources (management)
KM	Knowledge management
MBV	Market-based view of strategy
OKMS	Organisational knowledge management system
R&D	Research and Development, Alpha's Technology Development division
R&V	Research and Ventures, part of Beta's Technology Development division
RBV	Resource-based view of strategy

Typographic conventions

In this thesis, “double quotation marks” denote direct quotes from literature or from interview transcripts. ‘Single quotes’ indicate figures of speech, jargon, or ‘buzz-words’. *Italics* are used for emphasis. Capitalised nouns are used for department and division names within the organisation, and for names and pseudonyms of brands, products and companies. This imprint is set in Helvetica Neue and Matthew Carter's Georgia

Chapter 1

Introduction

Design skills and services are fundamental in the development of manufactured goods, and for many firms are integral to their high value, 'high design' positioning. They are also often, but not necessarily, a major contributor to the innovation process. In discussions and literature, firms like Apple and BMW are mentioned so often as to have become cliché but, while they are undoubtedly important examples of design excellence, design is not just about adding value to command a higher price for goods. It is increasingly recognised in industry and in empirical literature that design contributes strategically to firms pursuing other strategies – not only manufacturers but all manner of businesses – in ways beyond conceiving and shaping a product. Design can help to create and build on a firm's relationship with its customers, end users and other stakeholders, meeting and exceeding their needs and desires; it can help to drive and exploit innovation, to expand or redefine a market, and can be applied within the firm to improve processes, work environments and communications. All these are established and increasingly accepted capabilities of design.

So there is growing interest in, and recognition of, the contribution design services can make at a firm's strategic level. However, the term 'strategic design' is used ambiguously in both empirical and professional literature, with a range of meanings from using design to differentiate and increase margins by raising perceived value in 'designer goods', to actually shaping corporate strategy itself. Such usage often has little relation to established theories of business strategy.

1.1 Aim of the study

There is already much empirical work that describes the valuable contributions design can make to a firm, and the many challenges of managing design as a resource. Similarly, there are many theories and models of corporate strategy in empirical and industry literature. This study does not seek to challenge or add to these. The aim of this research is to

consolidate and align these two fields. A clearer and more complete understanding of the relationship of design to strategy is valuable both in industry and to the body of empirical knowledge.

This study seeks to align the many views on the strategic benefits of design capability for a firm, and to clarify the practical and conceptual relationships of these benefits: what does it mean for design to be strategic?

To achieve this, the study will first refer to empirical and industry literature of both design management and business strategy to synthesise a consolidated view of the conceptual overlap between them both; that is, a set of design capabilities that reflect i) what contributions design is capable of, and ii) what is strategically beneficial to a firm.

Second, the research will attempt to validate this set in industry by answering: Are these phenomena observed in practice? Are they recognised as strategically important by providers and users of design expertise?

Thirdly, the research aims to demonstrate how this consolidated conceptual view can provide a rich description of design practice in a firm.

1.2 Research approach

1.2.1 Research design

Robson [2002: 81] advises that research be designed according to a simple framework of five elements (figure 1, below). The purpose of the study and its theoretical context inform the research question that might be asked; the research methods and sampling strategy chosen must be appropriate to the question. Briefly put, for this study these are as follows:

Purpose: To align the many views on the strategic benefits of design capability for a firm, and to clarify the practical and conceptual relationships of these benefits.

Theory: Empirical literature on business strategy and of design management.

Research Question: In what ways does design make strategic contributions to businesses?

Methods: Literature review and concept synthesis; exploratory semi-structured interviews; case studies.

Sampling strategy: Senior, experienced professionals in design and related industry.

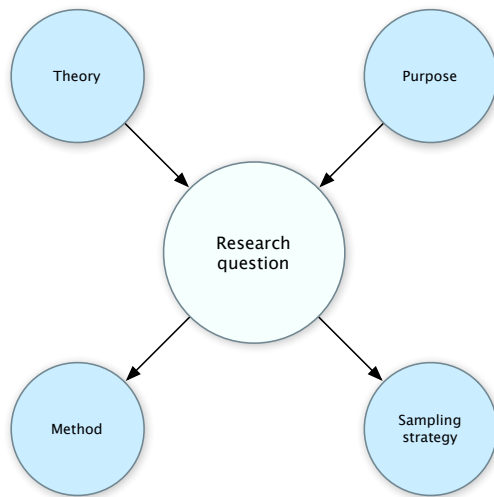


Figure 1: Framework for research design [Robson]

In keeping with Robson’s view of flexible research, the approach was only loosely defined initially, and emerged as the context and question became clearer. Essentially, the process took the following structure:

- Review of design management and business strategy literature;
- Synthesis of a consolidated view of their conceptual overlap;
- Exploratory interviews to confirm a demand for and interest in the question, and provide further concepts for inclusion;
- Diagrams compiled to aid discussion;
- Industry context explored through two case studies and corroborative interviews;
- Conclusions about phenomena and validity of model drawn from findings.

1.2.2 Philosophical grounding

There are two main opposing philosophies of research. Positivism seeks to explain the world in logical objective absolutes and laws, and mostly with quantitative data. Phenomenalism accounts for the subjective realities of those involved [Easterby-Smith *et al.*, 2002], requiring that “empirical observations take account of subjects’ meaning and interpretational systems” [Gill & Johnson, 1991: 8]. Like many empirical studies into business environments, this study attempts to gather knowledge about a complex situation, largely by gathering voiced opinions. For this reason a positivist approach is not likely to yield useful results [Susman & Evered, 1978]. This research does not seek to prove or refute immutable, generalizable laws, but uses fieldwork methods to provide a rich descriptive account of the matter at hand. It proposes to describe phenomena that are observed or re-

ported which may be meaningful or useful in a more general context. This study is therefore grounded on a phenomenological approach.

1.2.3 Methodological alternatives

Phenomenological methodologies considered for this study were Grounded Theory, Action Research and Case Study. Following a flexible research design, this option was kept open during phase 1, the exploratory stage, as noted above. As the study progressed, these options were considered.

i. Grounded theory

Grounded theory is a methodology which aims to develop new theory based on data from interviews and observations [Glaser & Strauss, 1967]. Theories are conceived, developed and tested by the researcher which explain the data, and are supported by the data [Strauss & Corbin, 1990]. As this study sought to *describe* practice and attitudes, rather than to *explain* them, such theory development was not deemed appropriate. However, grounded theory might be a justifiable and fruitful approach for subsequent studies, if theories of causality are sought to explain the findings presented in this thesis.

ii. Action research

Action research methodology is a participant-observer approach which seeks insights into an action towards change. The researcher is directly engaged with the change process, as part of a community of practice [Stringer, 1999].

During the later stages of phase 1, an action research approach was considered and attempted, through which the researcher might develop and execute an interventional tool to assist firms in understanding their use of design. Based on the themes identified in literature, a workshop-based tool was devised to relate a firm's strategic concerns to the experiences of stakeholders throughout and outside the organisation. The workshop sought to stimulate ideas for improving these experiences through design, in ways which might have a direct or indirect impact on the organisation's competitiveness and performance.

Although pilot workshop sessions achieved promising results, there was little uptake from firms invited to participate. This was attributed to the large investment of time required, for benefits which were unclear to potential participants. Because of the limited time available for this study, the workshop was shelved in favour of a more achievable case study approach.

iii. Case study

Ultimately a case study methodology was chosen for the second phase of the study, which sought to explore the industrial context of the phenomena identified in phase 1. This was deemed appropriate according to three key criteria, having attempted but rejected an action research approach:

“Case studies are the preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context.” [Yin, 1993: 1]

The phenomena under investigation are broad, and might be evident only in certain parts of a firm (if at all), they may be subtle, or take many forms, so participants might not identify them explicitly. Specific questions such as might be used in a survey would be unlikely to provide adequate richness of data.

Case study and interview procedures are described in more detail in later chapters. Figure 2 represents the process that was ultimately followed, key outputs, and their relation to the structure of this thesis.

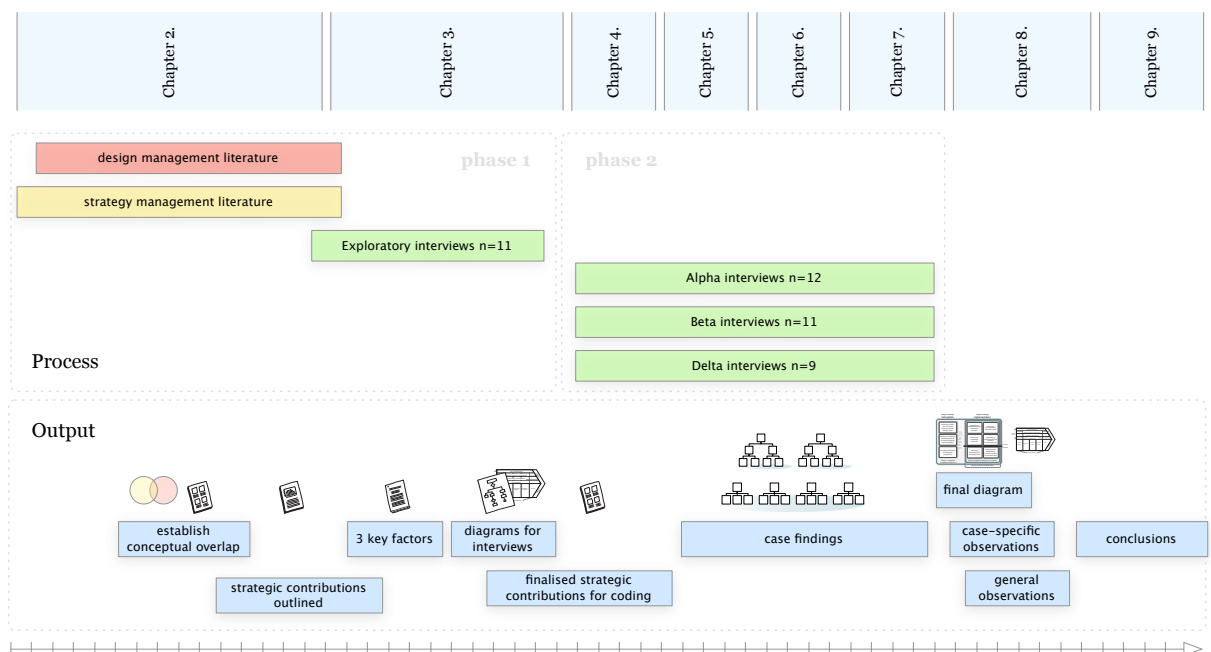


Figure 2: Research progression and thesis structure

1.3 Terminology

Design

The word design is used ambiguously and often, both in everyday speech and formal academic writing. To clarify, this study is concerned with the specialised contributions known generally as creative design services. These are commonly described, according to the specialisation of the individuals and firms concerned, by the media or domains in which they work, such as graphic, moving image, product (or industrial), interaction, interior or environmental design. In real-world industries there is often further specialisation.

There is a broader definition of design which refers, after Simon [1969], to any activities which involve the specification of a solution or a plan to change an existing situation to a desired one. Such a view of design has some relevance here, and is discussed later in this thesis. However, this study mostly focuses on the service or expertise provided by professional designers in firms and in agencies.

Strategy

The term *strategic* is used to mean those factors pertaining to the long-term viability of an organisation. Strategic design then is the use of design to become and remain competitive (in businesses) or effective (in non-profit organisations).

Mintzberg [1994], suggests that the word strategy can mean:

- A *plan* for the future (intended strategy), but also a *pattern* of actions in the past (realised strategy).
- A *position* – a decision to offer particular products in particular markets (external), but also a *perspective* – a way of doing things (internal).

(Also a fifth type, a *ploy*, to outmanoeuvre a competitor)

These are simply different dimensions of the strategy concept, not competing strategy approaches. Some of those are discussed in some depth in Chapter 2. In practice, the many various strategy approaches are combinations of some or all of these, with varying emphasis.

Strategic design

For the purpose of this study, the term strategic design is used to mean the use of design services to create and maintain competitive advantage. Establishing a more specific un-

derstanding of what this might mean is part of the purpose of this study, but a relevant start point is the definition proposed by Olson et al [1998]:

“the effective allocation and co-ordination of design resources and activities to accomplish a firm's objectives of creating its appropriate public and internal identities, its product offerings, and its environments.” [Olson *et al.*, 1998]

Notably, Olson et al use the term *design strategy* rather than strategic design. In recent years *design strategy* has also come to mean a long-term plan for implementing design particularly at a product, rather than corporate, level so to avoid ambiguity this report uses the term strategic design.

1.4 Thesis structure

The structure of the thesis represents the research process, from topic identification, through fieldwork data gathering and analysis, to synthesis of findings, and conclusions (figure 2). The chapter structure is as follows:

Phase 1

Chapter 2 - Literature of Strategy and Design is partly a review and partly a synthesis of the findings. It examines the empirical and industry literature, seeking to clarify the catch-all concept of strategic design. It first describes the increasing recognition of how design can bring value to business. Next it outlines key theories on strategy implementation and formulation, and considers them from the design perspective. Finally, it proposes a set of strategic design contributions for investigation in industry.

Chapter 3 - Phase 1: Exploratory interviews documents the initial fieldwork undertaken to establish practical focus for the study, to confirm that such a study is needed, and to identify additional factors to be considered in the study. The findings are described, and lastly, a set of diagrams is collated for use as interview stimuli in the second phase.

Phase 2

Chapter 4 - Methods and rationale of phase 2 briefly outlines the case studies and other interviews presented in more depth in the following chapters. These case studies explore the use of design in two firms, with additional interviews with designers from several major firms and agencies. Details common to all are described: methods of case selection, interview procedure and protocol, data capture, transcription and coding.

Chapter 5 - Case 1: Alpha Structures details the case study findings from interviews and observations in a multi-national design, engineering and consulting firm.

Chapter 6 - Case 2: Beta Telco details the case study findings from interviews and observations in a multi-national, multi-billion turnover telecommunications firm.

Chapter 7 - Interpretation, corroboration and development relates the findings from cases 1 and 2 to corroboratory interviews with other designers. It then draws some conclusions as to whether such contributions are evidently practised or recognised in real firms.

Chapter 8 - Discussion proposes a simple diagram representing the findings, and presents further observations from the cases and the study as a whole.

Chapter 9 - Conclusions closes this thesis by re-presenting the study findings, summarising its contributions to theory and practice, and then proposes further work that would build on these.

Chapter 2

Literature of Strategy and Design

2.1 Introduction

As discussed in the previous section, this study began with a broad question: what does it mean for design to be strategic? Here it narrows its focus by examining the current state of published empirical and industry literature. This section seeks to clarify the catch-all concept of strategic design by considering some past and current published views on design management and corporate strategy. These two fields have historically distinct bodies of existing literature, but the ultimate interest of this section is in the conceptual overlap between the two (figure 3). This section then is partly a review of existing literature, but also a synthesis of several key concepts from this area of overlap, which is explored in more depth in the next phase of the study.

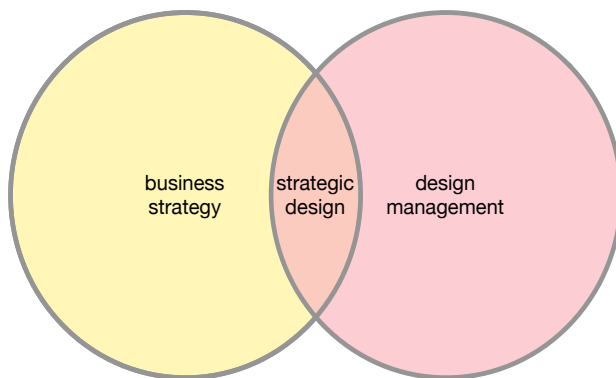


Figure 3: Conceptual overlap of literature on strategy and design management

The bodies of literature in the fields of both design management and corporate strategy are well-established and very broad. In order to engage both at a manageable scale the research began with design management literature, then related this to concepts of corporate strategy, as follows:

2.2 Design's rising profile outlines the contributions made by design services to competitive performance, whether from an outside agency or in-house.

2.5 Wicked Problems and Design Thinking describes the increasing scope of problems being addressed with design methods, up the scale from low-level, detail-oriented activities to broader questions, and the rising interest in *design thinking*.

2.3 Strategy implementation from the design perspective examines how design activity within the firm might relate to theories of strategy implementation.

2.4 Strategy formulation: from 'science' to 'design' explores how design methods and tools may be used to address the shortcomings of a strategy informed only by objective metrics.

In summary, these various aspects of strategic design contributions are collated into key themes which will serve as constructs to be discussed with expert design professionals in phase 2 of the study.

2.2 Design's rising profile

Before strategy theories are explored from a design perspective, the key findings from literature on design management are summarised. There has been increasing recognition that design's role in differentiating products and services is more important than ever in a global market. Where high quality is becoming plentiful and affordable, even commoditised, it is argued that good design is the last remaining competitive differentiator. This is heard increasingly not only from design practitioners (who naturally have an interest), but from commentators in the popular business media [Nussbaum, 2006; Diller *et al.*, 2006; Pink, 2005; Peters, 2005]. Few would now dispute that better designed products and services are good for a business. A subtler view, but also increasingly held, is that the effective use of design beyond 'traditional' conception and form-giving has many long term benefits for the firm. In other words, strategic benefits come not only from *better designed products and services*, but from *better use of design* throughout the firm, as outlined in this section.

2.2.1 Design skills and characteristics

To consider the ways design can be used through the firm, some characteristics of design are outlined. There are certain accepted commonalities which define design services based

on skills and approaches used, and they are outlined here. Lorenz [1994] argued that the training and experience of industrial designers is 'T-shaped', like many other expert professions. Designers' skills are deep and specialised, but also broad and general across the gamut of technology, marketing and strategy, enabling them to make "multidimensional connections".

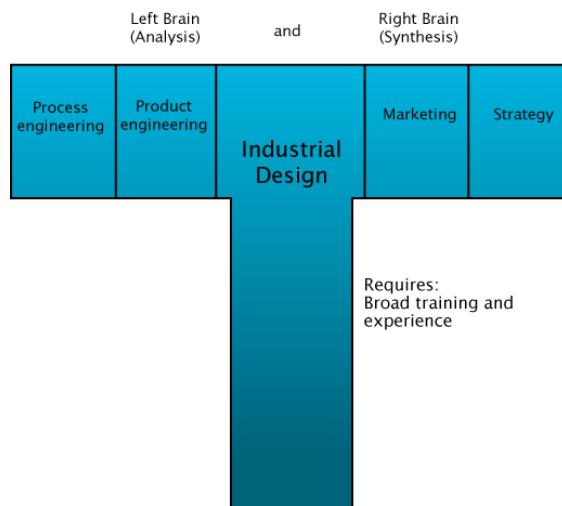


Figure 4: Making multidimensional connections between engineering and marketing (integrative) [Lorenz, 1994]

It is common for design disciplines to be described as ranging from *soft* to *hard* [Lorenz, 1994]; for example, the styling of a car body versus the design of an engine component. In everyday language this dimension might also commonly be termed *technical* to *artistic* or *creative*. Generally designers are skilled at both, as their role is essentially one of mediating the two. According to many managers, the designer's distinguishing capabilities are a combination of 'artistic' (craftsmanship, cultural awareness, imagination and creativity), technical, and interpersonal (or empathic) skills [Borja de Mozota, 2003].

The distinction of decisions based on 'technical' and 'creative' judgement is somewhat unsatisfactory, and Carlisle and Dean [1999] suggest a clearer description. They propose that there are two key types of reasoning in the design process: ideological and technological. "Ideological prescriptions are concerned with what is desirable and technological recommendations with what is possible." The balance varies though, with some individuals primarily dealing with conceptual or stylistic matters – what is desirable – and others, at the opposite end, with what is possible.

Krippendorff's [2005] concepts of first- and second-order understanding provide a similar distinction. He argues that a designer practicing human centred design must have an un-

derstanding of the artefact being designed, and also “an understanding of different users’ understanding” of it. He terms these first-order and second-order understandings, respectively. Carlisle and Dean’s technological reasoning is in the first-order paradigm, founded on logic, analysis, objectivity and consistency. This, Krippendorf argues, is “simply not powerful enough to support user-centered design” [Krippendorf, 2005: 69]. This requires an understanding which “treats humans not as mechanisms but as knowledgeable agents... accountable for their actions” and which does not “presume commonalities and single truths”.

2.2.2 The design-focused enterprise

The value and importance of design to a firm have become more recognised in the past two decades or so. In 1984 Kotler and Rath urged business leaders to revise their view of design as a cosmetic, decorative task applied late in development. Instead they should recognise how design can “optimize customer satisfaction and company profitability and value [and] enhance products, environment, communications and identity” [Kotler & Rath, 1984]. Lorenz [1990, 1994] saw the strategic benefits of industrial (product) design, but didn’t examine the contributions of other design disciplines. Strategic design, he suggests, “integrates industrial design into the company... devoted to such broad activities as lifestyle research, in order to anticipate product concepts ahead of competitors.” Cooper and Press identified design’s capacity to contribute to various strategic goals, such as securing niche markets, speeding up diverse product development or developing distinctive identity [Cooper & Press, 1994: 112]. Firms were beginning to recognise that effective integration of design with marketing, engineering and production would dramatically improve quality and speed to market – in the USA this lesson was driven especially by the flood of superior quality Japanese goods [Hayes, 1990]. So the notion of a design-focused enterprise became more accepted in the early 1990s.

A key role of product designers is as the connector between the end user and the marketing and production staff [Blaich & Blaich, 1993; Lorenz, 1994]. They are the best skilled for spotting “trends in lifestyles and changes in social priorities” and making “the intuitive leap to imagine what consumers need, want, or may enthusiastically accept as a new product” [Blaich & Blaich, 1993]. Trueman and Jobber [1998] propose that design contributes in four realms: value, image, process and production. Assuming design is only about image misses out on the advantages of the other three, and of the further “product integrity” [Fujimoto, 1990] that comes with the integration across all four realms.

As well as conceiving and giving form to products, the other long-accepted contribution of design is to corporate image; design of products and communications strongly influence a firm's visual image and reputation [Olins, 1989].

2.2.3 Beyond designing for manufacture

The academic examination of value added through product design is long-standing and quite comprehensive, but more recent thinking emphasises the contribution design can make to operations outside of manufacturing. Design practice now extends to areas of research and 'customer insight', using such specialists as social psychologists, ethnographers and anthropologists. This was observed in Japanese companies and noted by Blaich & Blaich [1993: 12], who remarked on the high level of sophistication which interdisciplinary teams had reached, all aimed to better understand human problems. This attention on customer insight has been a major development in design practice. Furthermore, design may be applied to aspects where the end users are not the firm's *customers*, but other stakeholders. Cooper and Press [1994] suggest that designers contribute in three key areas, the design of corporate identity, saleable products, and of operating environments [also e.g. Hayes, 1990; Olson *et al.*, 1998; Phillips, 2004]. For example, the personnel (human resources) department may seek to make the employees' workplace more pleasant and productive, or to improve the firm's recruitment literature for attracting new people. The legal department might use design to clearly and simply communicate important messages to other staff. Procurement may commission a well-designed extranet for their suppliers to conduct transactions quickly and simply, perhaps even pleasurably.

So design methods and tools may be applied to conceiving new or improved experiences, not only for the customer, but for others within the firm. Furthermore, there is growing acceptance that design is a valuable tool for conceiving new or improved operations and strategies, as will be discussed shortly.

This extension of practice has in one sense proved problematic, in that to call it 'merely' design is somehow not to do it justice. Several firms previously known as design agencies now claim to provide strategic consulting (see the web sites of IDEO, PDD, Design Continuum, ZIBA), and have reframed their offering, calling themselves innovation or product development consultants. Innovation – the exploitation of new ideas, processes or technologies – is widely regarded as strategically important [Tidd *et al.*, 1997], and although design can play a major part in it, the two are not the same, nor does one necessarily entail the other. Some in the design profession argue that to use the terms interchangeably is to

misunderstand and undervalue design, and an apparent fashion to rename design as innovation has met with derision from some quarters. Michael Bierut, partner at Pentagram, New York, wrote that innovation had become the favourite euphemism of the design industry – “the new black” – being more palatable to business managers:

“Design sounds cosmetic and ephemeral; innovation sounds energetic and essential. Design conjures images of androgynous figures in black turtlenecks wielding clove cigarettes; innovators are forthright fellows with their shirtsleeves rolled up... It's taken for granted that innovation... is always good.” [Bierut, 2005]

If innovation and design are not the same, then strategic exploitation of both would perhaps require a clear understanding of their difference. Still, design and ‘design thinking’ utilised by non-designers can play a significant part in developing innovative products, services or strategies. The ‘softer’ design activities contribute to innovation through insight into unseen or unmet needs of potential customers. However, notwithstanding design’s image as superficial, superfluous or fashion-led, there may be more robust reasons for a change in terminology. It may be that design agencies – at least product design agencies such as those mentioned above – are actually capable of services far beyond what many understand as design. According to Laura Weiss, a senior consultant at IDEO, design is “now firmly part of the lexicon of innovation – the ultimate expression of applied technology, design, and business sensibilities.” Their business has shifted its emphasis to address “much bigger questions” beyond specifying products.

“Instead of asking the consultant to ‘design this new widget for me,’... a client might ask, ‘Should we be designing a new widget, a new widget and service bundle, or something else altogether?’” [Weiss, 2002]

Whereas traditional core services help clients to “do things the right way”, strategic services are more concerned with doing “the right thing in the first place” [Weiss, 2002].

“Rather than asking designers to make an already developed idea more attractive to consumers, companies are [now] asking them to create ideas that better meet consumers’ needs and desires. The former role is tactical, and results in limited value creation; the latter is strategic.” [Brown, 2008a: 86].

Weiss includes the figure reproduced here (figure 5), representing a spread of design service activities, both upstream and downstream of development and production.

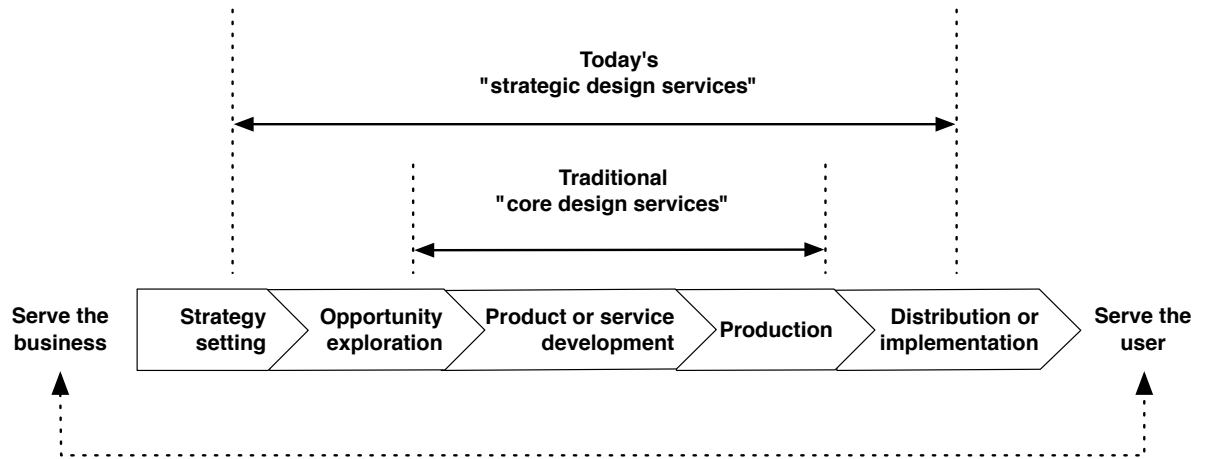


Figure 5: Extending core design services to strengthen the connection between business needs and user needs [Weiss, 2002]

Their approach, drawing on design processes and tools, follows a 3-phase cycle:

- Discovery – identifying users and their motives, and relating them to business strategies.
- Decision – synthesising interdisciplinary information and developing concepts.
- Delivery – visualising and communicating strategic outcomes.

Similarly, but more specifically, Seidel [2000] identifies four key strategic contributions claimed by product design consultancies: visualising and communicating strategy, recognising unseen market opportunities, matching competencies dispersed through the organisation, and providing design process guidance.

Weiss writes as an employee of IDEO with, perhaps, different motives from Seidel's, whose study was an independent empirical investigation based on interviews with five London-based product design consultancies. Still, both papers only present the designers' view. It is part of the aim of this study to explore whether such claims are supported by the clients themselves, so this concept of strategic contribution will be carried through into the second phase of the study.

2.2.4 Service Design

The extension of design activity into what Weiss terms “strategic design services” is represented by IDEO's practice in *service design* [Moggridge, 2006]. The term is used to describe an emerging field of practice in which designers attend to the broader landscape of a firm's offerings; tangible products may be involved, but are likely to be part of a larger system, the total customer experience. Intangible experiences are considered as important as tangible products, and the design of both is addressed holistically. For example, a firm's

web site, call centre, marketing communications and retail experience are all regarded as part of the overall customer experience. Whereas in many organisations these different elements of customer experience are managed by separate operational divisions, a service design approach seeks to unite them [Kimbell, 2009].

In attending to the intangible aspects that characterise services, the emerging practice of service design follows and draws on similar developments in human-computer interaction (HCI) design, which also focuses on intangible experiences. Both use visual methods to make such intangibles visible, through diagrams, conceptual frameworks or visual narratives such as storyboards. They also both use ethnographic research to elicit user (or customer) insights, to inform the design. Such contextual research is adapted from social anthropology to gain insights into customer preferences and explicit and tacit motivations [Segelström *et al.*, 2009].

It is observed that a service design approach is likely to involve discussion of “value, business models and strategy” [Kimbell, 2009], and may indeed provoke a re-examination of the firm’s long-term direction or structure, and stimulate strategic change. The extension of the role of the designer to address strategic problems is closely connected to the growing interest in so-called *design thinking*.

2.2.5 Wicked Problems and Design Thinking

While they cannot claim a monopoly on creativity, designers are well practised in applying creative methods to complex problems framed in real-world constraints. These distinctive methods have an important potential to address complex challenges, as has been recognised and investigated, first by those striving to understand the design process, and the ways individual designers “think” their way through it [Friedman, 2007], and more recently by a wider group in industry and academia. They look to design thinking as a tool to help understand and face the complex challenges where analytical approaches have proved insufficient.

The origins of many modern theories of the design process may be attributed largely to Schön [1983], who argued that design is a thought paradigm in its own right. This was directly contesting those theorists, such as Buckminster Fuller [1969] and Simon [1969], who sought to apply ‘scientific’ standards of objectivity to the design process. Schön preferred to account for the “artistic, intuitive processes... [applied] to situations of uncertainty, instability, uniqueness, and value conflict” where objective approaches had been inadequate

[Cross, 2001]. Buchanan [1992] built on this, (re)introducing the design research readership to Rittel's concept of *wicked problems* in systems and planning theory [Rittel, 1972; Rittel & Webber, 1973].

i. Wicked Problems

Wicked problems are not only complex but, in contrast to 'tame' problems which may be addressed through positivist reasoning, they have no single 'correct' solution, only 'good' (or perhaps more commonly, 'better than...'). They have no stopping rules to define when a solution has been reached – one can always aim for better – and there is no definitive test of a solution, it can only be assessed against its own formulation (the problem statement) and against other possible solutions¹. Rittel, Webber and Buchanan persuasively argue that many design problems are wicked. If design methods and tools are well suited to addressing wicked design problems then these methods and tools may be useful for wicked problems outside the traditional design domain. This fits well with the broader view of designing, that it encompasses many activities and professions. "Everyone designs who devises courses of action aimed at changing existing situations into preferred ones" [Simon, 1969: 111]. It is this element of design practice that is, when separated from the crafting of artefacts and applied to intangible problems, often termed *design thinking*.

ii. Design Thinking

Now reaching a wider audience, many articles about design thinking have appeared in the popular news and business media, and there is much discussion of its potential. It has become such a hot topic in recent years [Martin, 2005] there are concerns that its overuse is causing suspicion and denigration as a cynical bandwagon for designers, or as "another management fad" [reader comments on Brown, 2008b]. "Whether we like it or not, the buzzword of design thinking is everywhere." [Rigau, 2008]

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1. Rittel's 11 characteristics of wicked problems are: (1) Wicked problems have no definitive formulation (2) Every formulation of the wicked problem corresponds to a statement of the solution, understanding the problem is the same as solving it. (3) Wicked problems have no stopping rules. (4) Solutions to wicked problems cannot be true or false, only good or bad. (5) In solving wicked problems there is no exhaustive list of admissible operations. (6) For every wicked problem there is always more than one possible explanation, with explanations depending on the world view of the designer. (7) Every wicked problem is a symptom of another, "higher level," problem. (8) No formulation and solution of a wicked problem has a definitive test. (9) Solving a wicked problem is a "one shot" operation, with no room for trial and error. (10) Every wicked problem is unique. (11) The wicked problem solver has no right to be wrong – they are fully responsible for what they are doing. [Rittel, 1972]

One web article, in somewhat hyperbolic tones, describes design thinking as a “proven and repeatable problem-solving protocol that any business or profession can employ to achieve extraordinary results... employing *unique* and creative techniques which yield *guaranteed* results — usually results that exceed initial expectations. Extraordinary results that leapfrog the expected” [Dziersk, 2008]. Despite the high claims, the essence of design thinking is reduced here to four steps: defining the problem, creating many options, refining selected directions, and picking a winner for execution.

A New York Times article of similar style and depth [Rae-Dupree, 2008] quotes practitioners (such as Tim Brown, CEO of IDEO) and again, a few simple steps of a cycle: field research and observation, idea generation, analysis and filtration, rapid prototyping and testing. Notably, the practitioners are referred to as “design thinkers”, not designers, perhaps to move away from the idea of the designer as merely a graphic visualiser, or indeed to emphasise that neither creativity nor design thinking rest solely in the domain of the designers.

Neither article clearly articulates the distinction between designing and design thinking; both merely describe what is commonly accepted as the design process. Brown discusses the New York Times article on his blog, recognising it is perhaps over-simplified, and also that care should be taken not to claim design thinking “as the perfect and only approach to all problems [Brown, 2008b].” He mentions his own earlier article in the Harvard Business Review which goes into more depth².

Designers are well trained and practised in applying creative methods to complex problems framed in real-world constraints, but design firms and teams are increasingly staffed with diverse interdisciplinary teams (see e.g Design Council, 2007) and academic institutions are providing interdisciplinary design/business graduate programs [Business Week, 2005, 2007].³ Stanford University's Institute of Design attracts graduates from backgrounds as diverse as geology, medical science, engineering, business and fine art [Stanford Institute of Design, 2007].

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2. Brown's eight tips for incorporating design thinking: involve design thinkers at the start; take a human centred approach; experiment and prototype early and often; look to co-create with consumers and customers, exploit web 2.0 networks; manage a portfolio of both smaller, incremental projects and longer-term revolutionary ones; don't constrain the speed of innovation to budgeting cycles; look for talent in other disciplines; plan the process so design thinkers experience all the innovation cycle [Brown, 2008a].
 3. Business Week [2007] listed a 'top 60' of such institutions, of which 42 identified themselves as Art and/or Design schools, 11 as Business and/or Engineering.

Those already in the working world are urged to master the design approach themselves. Management school alumni are advised to be “more widely participative, more dialogue-based, issue-rather-than-calendar-driven, conflict-using rather than conflict-avoiding, all aimed at invention and learning, rather than control... [To] involve more members of the organization in two-way strategic conversations... View the process as one of iteration and experimentation, and pay sequential attention to idea generation and evaluation in a way that attends first to possibilities before moving onto constraints” [Liedtka, 2004].

We see then that design thinking is not only considered the preserve of those qualified or practised in design. It is seen by some as a transferable skill to be acquired and added to the arsenal of thinking tools. The focus of this study is the service provided by designers, so although the concept of design thinking is in a grey area, it needs not be resolved at this point. It is enough that the concept is identified so that it may be discussed more if appropriate in the next phases of the research.

This section has attempted to outline a shift in recognition of design’s relevance and potential at strategic level. There are long-term benefits from the deeper integration of design into the firm, and from the wider application of design methods and tools, to conceive, shape and improve all areas of a firm’s activity, even its strategy itself. Having explored design’s strategic benefits according to design management literature, the next section examines how design services relate to theories and practice of strategy, and how this relationship has strengthened in recent years.

2.3 Strategy implementation from the design perspective

Design’s strategic contributions might be better understood and managed by further exploration of its place in established strategy thinking. This section and the next relate strategy models to the capabilities of design services. Where design may contribute strategic advantage, according to these models, this is highlighted in a short summary (boxed text).

This section examines some of the better known models of strategy implementation found in academic and industry literature: first, Michael Porter’s differentiation and positioning, then the resource-based view and related approaches of learning, knowledge and competence-based views.

2.3.1 Early models of strategy

Since the 1960s, much attention has been paid to developing practical theories of formulating and implementing corporate strategy. Prior to the 1980s, attempts to understand and formalise concepts of business strategy were primarily analytical and prescriptive [e.g. Chandler, 1962; Andrews, 1971]. They held that strategies were first planned based on analysis of measurable factors, then methodically implemented. Put simply, these attempted to match internal capabilities (strengths and weaknesses) with external possibilities (opportunities and threats, hence key success factors). Possible alternative strategies were evaluated for advantage, consistency, consonance with external environment, and feasibility [Mintzberg *et al.*, 1998].

In time the shortcomings of this approach were identified. Firstly, little is understood of what happens between analysis and conception, that is the creation of the strategy itself. The strategy seemingly drops out of the analysis fully formulated – a “Biblical rather than Darwinian” view of formulation [Mintzberg *et al.*, 1998]. Second, opportunity for learning is minimal in detached isolation from the coal face of practice. What about changes over context and time? External factors are analysed but not engaged, and there is little consideration for their unpredictability and instability. Can an organisation know its strengths and weaknesses through analysis, assessment and judgement? Subsequent refinements sought to become more dynamic, recognising the complex interrelations of actions and reactions.

2.3.2 Porter: Differentiation and Positioning

Michael Porter’s system of strategic management was a successor to the established ‘planning’ approach to strategy. Porter’s view maintained strategy is about being and staying different. It introduced concepts of generic strategies, five forces analysis, and the value chain [Porter, 1980]. His frameworks for analysing and planning competitive differentiation have become established textbook tools.

i. Generic strategies

Porter argued there only a few key generic strategy types, “value disciplines” which combine to identify positions in the marketplace; it is important to occupy either cost leadership or differentiation, combined with a market focus (either broad or narrow).

Cost leadership generally requires advantageous access to raw materials, labour, or other significant input. But with an emphasis on efficiency, the technical/engineering end of the design spectrum could offer clear cost-saving benefits in effective process design and in design for manufacture. Emphasising and communicating this position is also a design job, but not always recognised as such. In such a strategy, based on minimising all costs, design might be seen as an unnecessary and unjustifiable expense. Some firms overlook design in their eagerness to keep costs down [Design Council, 2006; Moultrie *et al.*, 2006].

Differentiation protects against competition through a perceived uniqueness of the offering, so design is a key weapon against commodification. Customers come to regard a product or service as unrivalled in value, and show increased loyalty. According to Treacy and Wiersema [1993], such “customer intimacy” is achieved by “segmenting and targeting markets precisely and then tailoring offerings to match exactly the demands of those niches” [Treacy & Wiersema, 1993]. This requires “detailed customer knowledge [and] operational flexibility”, and arguably a proficient design resource to shape the offerings.

Differentiation and customer intimacy provide a rich field in which to leverage design expertise, at both product level and at brand or corporate level. According to some, design services are defined by this very capability: the conception and specification of desirable, useful, usable, affordable products and services are generally perceived as the main competence of designers, and are usually the main reason companies engage external design expertise [Borja de Mozota, 2003].

With a narrow market focus it is easier both to understand and meet the customer’s needs in the product, and to build a strong relationship through focused communication. Design is an essential tool across all these activities.

ii. Five forces analysis

Porter’s five forces analysis identifies the forces shaping the competitive environment:

- Threat of new entrants – how easy it is for new competitors to enter the market; what the barriers are.
- Threat of substitutes – how easily customers can find alternative products or services.
- Buyer bargaining power – how strongly buyers can dictate or influence the prices they pay.

- Supplier bargaining power – how strongly suppliers can dictate or influence the prices they charge.
- Rivalry within the market – how crowded is the market; whether there are dominant players.

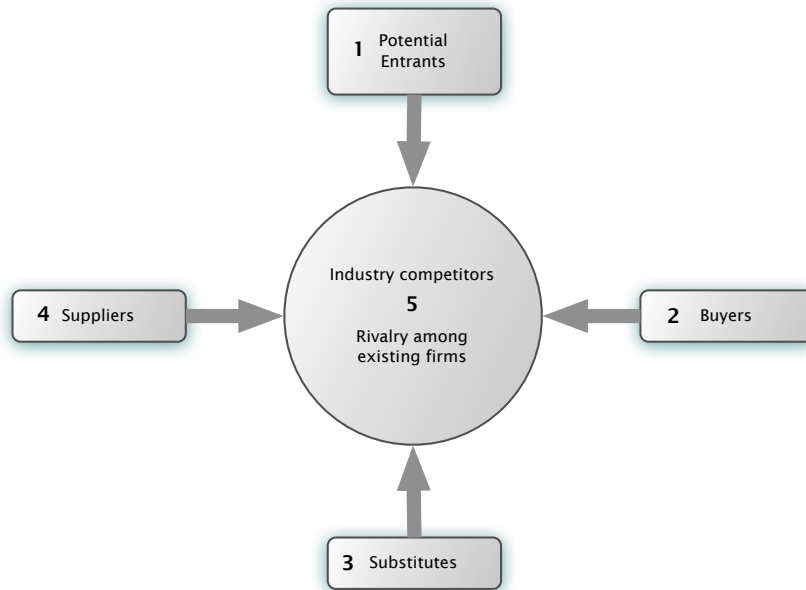


Figure 6: Porter's 5 Forces [Porter, 1980]

As Porter states, “satisfying buyer needs may be a requisite for industry profitability, but in itself is not sufficient. The crucial question is whether this value is competed away to others.” [Porter, 1985: 9]. Exploring the possible changes in all five of these forces provides a snapshot market-based view (MBV, sometimes called outside-in). Considering how these forces might change over time is a useful way of exploring scenarios to shape the strategic plan. Effective design can contribute to the forces at play, strengthening a strategic position, most obviously by building loyalty through differentiation and clear customer focus, on both technological and ideological grounds [e.g. Olins, 1989; Lorenz, 1990; Blaich & Blaich, 1993]. Customers’ tendency to switch allegiance to rivals, new entrants or substitutes can be reduced by establishing brand loyalty through an identity, image and experience which are compelling and appealing. In terms of rivalry within the market, design enables a manufacturer to rise above competitive price wars and other profit-cutting practices.

Of course, design can be also be a strategic weapon for competitors. Many aspects of form and style are difficult to protect legally, and simply part of the pattern of trends. However, some aspects may be so inextricably associated with the original owner that if a new

entrant were to imitate them they would undermine their own image. This can be achieved if a product is seen as definitive in its class: ‘me-too’ followers will be perceived as imitators, and so valued less by some consumers [Kim & Mauborgne, 2004].

Unlike technological design features, the variations available in ‘look and feel’ are practically limitless. For this reason there is always a chance of a radically different newcomer entering a market without necessarily any technological differentiator. A strikingly distinctive and appealing design can elevate a late-comer above its established competitors. An established market of similar products can make the newcomer stand out even more, its difference more pronounced by the sameness of its rivals.

Potential substitutes from other industries (such as, for a car manufacturer, public transport or the bicycle) are inherently different in both positive and negative ways, and the offering must set itself apart with a clear appeal, which is part of successful product performance. Although there may be many substitutes that can perform the same function, design can make the experience feel very different.

Supplier bargaining power is largely defined by operational and strategic factors, such as the size of the operation relative to the supplier, the degree of commodification of materials used, demand from other buyers (direct rivals or otherwise) and on partnerships, vertical integration, logistics and geography. Technological design choices can reduce dependence on particular suppliers or technologies if this force is expected to become a threat. However, there are also more human factors at play here; it might be argued that the supplier relationship is as important as the buyer (or customer) relationship. If so, design can make a significant contribution to understanding and influencing emotional and functional aspects of the relationship, just as with the buyer.

Design can influence forces of competition in the marketplace by differentiating a product or service, by building loyal relationships through useful, relevant, pleasurable experiences, and by influencing dependencies on and of suppliers and buyers.

iii. Design in Porter’s Value Chain

Porter’s generic value chain describes an organisation’s internal environment in terms of primary and support value activities, “the physically and technologically distinct activities a firm performs. They are the building blocks by which a firm creates a product valuable to its buyers.” The value and associated cost of each are assessed with a view to maximising the former and minimising the latter, and recognising any “linkages” whereby one activity

influences the cost of another [Porter, 1985]. Value activities should be consistent, optimised and mutually reinforcing to achieve “strategic fit”.

The value chain is interesting when considering a holistic design ethos; design’s value has been recognised as coming mainly from industrial design practice in operations and product development [Kotler & Rath, 1984; Lorenz, 1990; Lorenz, 1994; Trueman & Jobber, 1998; Gemser & Leenders, 2001]. Lorenz noted that Porter only included design in the value chain in its technological sense, as a primary activity in ‘operations’ and ‘technology development’. This might be extended to include communication design in marketing, represented as separate activities within each of these, in “their traditionally subservient role” [Lorenz, 1994] (see Figure 7, below).

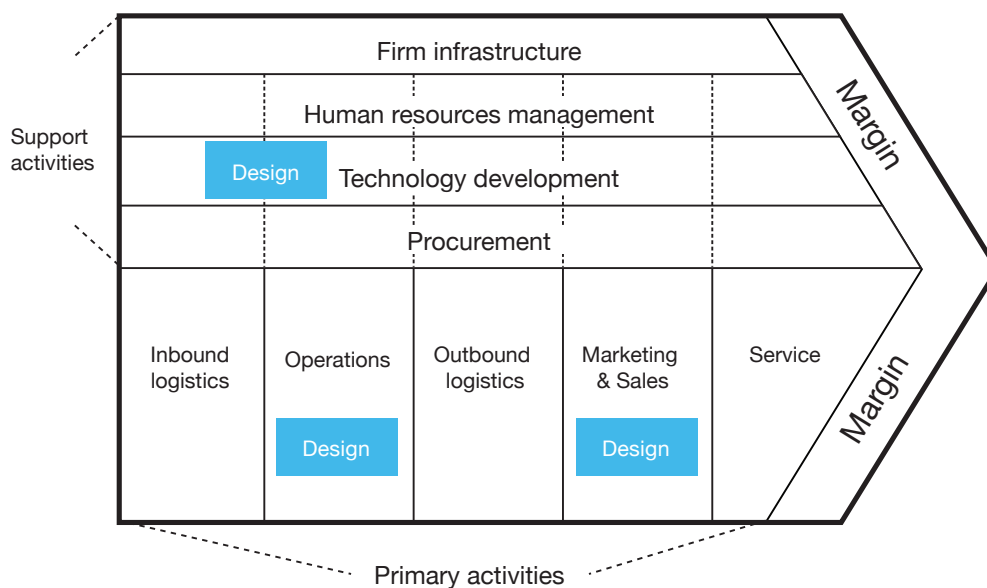


Figure 7: Design Activities in “their traditionally subservient role to Marketing and Engineering” modified after Porter [1985] and Lorenz [1994].

Porter emphasises the importance of the buyer’s perception of value, and describes how this is influenced by “signalling criteria” in the product (e.g. its appearance, packaging, labels, advertising and price) and the company (e.g. reputation, visual image and market presence) [Porter, 1985: 139]. In everyday English usage, ‘value’ and ‘values’ may have quite different meanings, the former relating to cost and benefits, the latter to cultural or ideological standpoints. It is important to note that in Porter’s terms, signalling criteria in-

clude both. Far more than merely the function or price, signals of value collectively embody and influence brand values.

Design can raise customer perception of signalled value.

This complements the view, propounded around the same time, that design's greater value results from an integrated effort of many areas of design specialisation (graphic, interactive, industrial etc.) concerted across operations. After Kotler and Rath [1984], Phatak and Chandron noted that "design permeates all areas of the company activity. It not only includes logos, publications, architecture and the like, but also marketing, structure, products and services". A holistic design strategy is necessary, they argue, because piecemeal responses to major environmental (regulatory, competitive, and consumer) forces are not effective [Phatak & Chandron, 1989]. Design can contribute across communications and identity, products and services, and environments [Cooper & Press, 1994], but to do this effectively designers must work with human resources, marketing, PR, operations, finance, R&D, and IT departments [Olson *et al.*, 1998]. Managers should make a systematic examination of every part of their organisation, and they will find that "design does play a function in each and every function of every business" [Phillips, 2004: 85].

A design-led view argues that design can be applied to the other activities, not just the product, to improve the quality, user satisfaction and even the image of the other value stages. Few academic papers have explicitly considered design's place in Porter's value chain. In one, Borja de Morzota [2003] finds design acts at three levels in the value chain, as simultaneously a differentiator, co-ordinator/mediator, and generator of new industry vision:

- By optimizing the primary activities: design action on the consumer perceived value.
- By optimizing the co-ordination – 'fit' – among functions and the support activities of the firm: design as a new function in the structure that transforms the management process.
- By optimizing the external co-ordination of the firm in its environment: design generating a new vision of the industry. [Borja de Mozota, 2003]

Design can improve strategic fit of value activities by supporting value activities and mediating between professional domains.

Design can serve to mediate with a firm's external environment generating new industry vision.

2.3.3 The Resource-Based View and beyond: Learning, Knowledge and Capabilities

Like Porter's value chain, the resource-based view of strategy [Wernerfelt, 1984; Barney, 1991] also examines the firm's internal environment, but stresses that a firm's competitive strength is determined by its available resources, and by its capabilities for utilising them. Resources such as assets, organisational processes, firm attributes, information, and knowledge are assessed, and those that can be judged valuable, rare, imperfectly imitable and non-substitutable (VRIN) should be nurtured by the firm.

The treatment of knowledge as a generic resource in the resource-based view has been criticised as simplistic. Concepts of knowledge and of a learning organisation emerged to explore and clarify the contribution of this special resource. Accepting that strategy can be a dynamic, emergent process, a firm aims to be receptive and adaptable enough to respond to its environment; the concept of knowledge management becomes a strategic as well as a tactical issue. Senge [1990] popularised the concept of the learning organisation, recognising that in the information age a company must gather, analyse, and use information. He identified five components of a learning organisation: personal responsibility, mental models, shared vision, team learning, and systems thinking. The first four, he argues, are integrated synergistically into a coherent strategy by the 'fifth discipline', systems thinking, which Senge describes explicitly as a design approach. The tools and methods of design may be used to develop and communicate a shared vision [Diller *et al.*, 2006], and to provide holistic frameworks and visual models that become "tools people can think with" [Rhea, 2008].

Design methods and tools can help achieve a holistic view of complex systems and a shared strategic vision.

Core capabilities (or competencies) [Prahalad & Hamel, 1990; Amit & Schoemaker, 1993] define the activities which a firm performs better than any other; they provide potential access to a wide variety of markets, make a significant contribution to perceived customer benefits of the end product, and are difficult for competition to imitate. Emerging from the learning organisation concept, the knowledge-based view sees an enterprise's knowledge (both explicit and tacit) as its most strategically important resource. Grant [1996: 109] views knowledge as "residing within the individual, and the primary role of the organization is knowledge application rather than knowledge creation."

Design can be a critical core capability: it is valuable in creating perceived customer benefits and addressing varied markets [e.g. Lorenz, 1994; Cooper & Press, 1994; Walsh, 1996]. A successful design capability may be difficult to imitate, although the resulting output (such as an elegantly simple electronic device or computer) often belies the complexity of management and systems required behind the scenes:

“A startup could never do the new iMac. Literally 2000 people worked on it... It's not easy at a big company either, but Apple now has the management and systems in place to get things like that done. I can't emphasize how rare that is.” [Jobs, 2000]

Barney [2001] summarises three important characteristics of resources and capabilities than can confer competitive advantage: they are path-dependent, causally ambiguous, or cannot be bought and sold:

“Because some resources and capabilities can only be developed over long periods of time (i.e., path dependence), because it may not always be clear how to develop these capabilities in the short to medium term (i.e., causal ambiguity), and because some resources and capabilities cannot be bought and sold (i.e., social complexity)...[they may] become a source of sustained competitive advantage” [Barney, 2001]

The material and technological resources associated with design, such as CAD systems or prototyping workshops, do not have these characteristics. Nor does explicit ‘factual’ knowledge of, for example, materials, technical standards, best practice methods and processes. They are easily imitated, bought or hired, so their protection requires secrecy or legal measures of intellectual property. Arguably however, the tacit knowledge of designers, and its effective management and integration in a firm might be said to have all three of these valuable characteristics, and therefore contribute to competitive advantage [Borja de Mozota, 2003; Rose *et al.*, 2007].

Much has been written about tacit knowledge since Polanyi's famous statement “we can know more than we can tell” [Polanyi, 1967: 4] and the implications for knowledge management within organisations [e.g. Grant, 1996; Amit & Schoemaker, 1993; Nonaka & Takeuchi, 1995]. By definition, tacit knowledge cannot be codified for capture as information, but systems exist to collate and manage other explicit knowledge. These organisational knowledge management systems (OKMS) may be considered strategic assets, provided they are conceived and implemented accounting for the users and the context of the system.

“...firms need to consider not only the technology but also the organizational infrastructure, the organizational culture and the people who form the OKMS, and the knowledge that is to be processed.” [Meso & Smith, 2000]

In other words, the systems need to be well designed.

Design is a core capability for creating perceived customer benefits and addressing varied markets.

Collective design knowledge may itself be a resource which is tacit, path-dependent and hard to imitate.

Design can improve systems for knowledge management.

Others have argued that “executing a knowledge-based strategy is not about managing knowledge; it’s about nurturing people with knowledge” [Manville & Foote, 1996] and therefore that corporate culture is of fundamental importance. The communication and interpretation of corporate vision⁴, or strategy, occurs through “material artefacts of culture such as products, interiors and buildings” and “through culturally-mediated language such as metaphor, stories and humour” [Hatch & Schultz, 1997]. These material artefacts are the direct result of product design, interior design and architectural design. Communication design and graphic design might be used to provide a medium for the intangible elements of culture embedded in language and stories [Hayes, 1990; Olson *et al.*, 1998]. Design therefore can help develop or reinforce corporate culture – effectively an internal branding exercise – provided the design activity is genuinely reflective of the people involved. The culture is recognised, unified, clarified and strengthened, resulting in a sense of identity, belonging, and above all, a “shared vision”.

Design is a powerful tool to develop or reinforce corporate culture through material artefacts and culturally-mediated language.

4. Hatch and Schultz suggest that corporate identity has three key elements: corporate culture, corporate vision, and corporate image. Respectively, these are: the internal identity felt by employees within the firm, the aspirational intent of the business leaders, and the identity perceived by customers and others outside the firm.

2.4 Strategy formulation: from 'science' to 'design'

There is growing dissatisfaction with a 'strategy-as-science' approach, in which strategy is seen as purely a task of analysis and planning. Hamel and Prahalad [1989] suggest that "concepts such as strategic fit and generic strategies... often abetted the process of competitive decline" and that a higher ambition, a *strategic intent* to a desired leadership position is needed to stretch a company beyond its present capability, and set criteria that chart its success. Porter himself stresses that ultimately it falls to the leader's own judgement to decide what is relevant to the firm's capabilities and ambitions. "[The leader] has to be the guardian of trade-offs. Thousands of ideas pour in every day... and 99% are inconsistent with the organization's strategy." [Hammonds, 2001]. This notion of trade-off, making the tough choices, is essential in Porter's view of strategy.

Mintzberg's *Rise and Fall of Strategic Planning* [1994: 321] methodically and thoroughly takes apart the conception that strategy can be *planned*. He argues there are three fundamental fallacies inherent in the notion:

- *Fallacy of predetermination* – that business conditions can be predicted to any meaningful degree.
- *Fallacy of detachment* – that strategy makers should (or even could) act only on 'hard facts' in objective isolation.
- *Fallacy of formalisation* – that strategy can be made in an imposed formal structure and process, without allowing freedom for creativity.

These are reduced in conclusion to one *Grand fallacy*: "Because analysis is not synthesis, strategic planning is not strategy formation" [Mintzberg, 1994: 321]. Mintzberg's argument has been widely accepted, and ten years later, these flaws in planning approaches are generally recognised but still not satisfactorily replaced:

"They include the attempt to make a 'science' of planning, with its subsequent loss of creativity; the excessive emphasis on numbers; the drive for administrative efficiency at the expense of substance; and the dominance of single techniques, inappropriately applied. Yet, decades later, strategists continue to struggle to propose clear alternatives to traditional processes." [Liedtka, 2004]

This is echoed by Richard Rumelt, professor of strategy at UCLA's Anderson School of Management and an early proponent of the resource-based view. He suggests strategic

plans are not really strategy at all, simply budget plans and market share projections for the next few years:

“[The way to succeed is actually] to exploit some change in your environment – in technology, consumer tastes, laws, resource prices, or competitive behavior – and ride that change with quickness and skill... We create our competencies by making bets and putting the right resources in place to develop those competencies.” [Lovaglio & Mendonca, 2007]

Liedtka suggests that the “clear alternative” is elusive because the typical business leader is uncomfortable making decisions around qualitative factors, working without the metrics to justify a decision. According to Roger Martin, Dean of Rotman School of Management, business managers and designers approach uncertainty in fundamentally different ways [Martin, 2007]. Designers, he says, deal with notions of validity – their output aims to meet an objective which can only be substantiated with future tests. But typical managers and business leaders prefer to work with (and demand) reliability – the production of consistent, replicable outcomes. Martin also claims they tend to focus on that which is readily measurable, even when it is not very useful.

Strategic decisions purport to come out of sophisticated and complex tools based on the objective – measurable, definable and to a degree, predictable – but in practice they also involve a large measure of subjective factors – 'vision', 'inspiration', 'gut-feeling' or 'instinct' [Mintzberg, 1994]. Many of the tools and approaches of design practice are for making safer bets on the future, by identifying needs, and by conceiving and visualising ways to meet those needs. Balancing objective and subjective influences is fundamental to design, and applied to strategy it might mean that less is left to these vague notions or to chance, by understanding what holds meaning (hence value) for customers and anyone else involved. In strategy, trade-off creates the need for decisions, and purposefully limits what a company offers. In the same vein, much of the design process is the act of commitment to one option over all others.

A ‘designerly’ approach to strategy making may help address the shortcomings of a strategy planned by analysis, as summarised in Mintzberg’s three fallacies:

- *Fallacy of predetermination* – design tools and methods can help explore future possibilities and scenarios in an unpredictable world.
- *Fallacy of detachment* – the design approach is informed by hard objective facts as well as by qualitative and intuitive judgements of softer aspects of human nature, such as fashion, personal tastes and non-rational habits.

- *Fallacy of formalisation* – design methods include both formality and freedom: formality to ensure rigorous research and directed, efficient processes, and enough freedom so that creativity is not stifled but encouraged.

Design tools and methods can inform strategy formulation:

- **stimulating creativity and providing fresh, human-centred perspectives in the strategy context**
- **exploring uncertainty and assessing trade-off, through prototyping and visualisation**

2.5 Strategic contributions of design

It can be seen that from many of the various strategy viewpoints design can play a valuable role, with several key themes emerging from this examination which fall into two main groups: design in the firm can help strategy implementation; designers and design methods (so-called ‘design thinking’) can inform strategy formulation.

As noted at the start of this chapter, the purpose of this section is to clarify the conceptual overlap between strategic management and design management (figure 3, page 9). The following tables present each strategic contribution identified, together with its supporting sources in the literature of each field.

2.5.1 Design can help implement strategic positioning, fit, learning, and culture

Design’s broader contribution is relevant to firms pursuing both cost leadership and differentiation (customer intimacy), not necessarily only a strategy of high-value goods. The strategic value of design includes contributions from all design disciplines, beyond just industrial design within production. Successful design-led companies apply and integrate design values to all aspects of the business, internal and external, to really understand their customers, and forge a unique relationship with them. In many firms, creating long-term emotional connections with customers has not been valued as highly as technological innovation or aesthetic design, but in mature markets it is increasingly important. This applies for both ‘high design’ and cost-led brands. An integrated, holistic use of design is valuable in positioning and differentiation, and in shaping competitive forces. Communication design is an aid to learning, to capturing and communicating knowledge, shaping internal culture. Design knowledge itself is tacit: path dependent and hard to imitate, and a

major contributor to successful innovation. These themes and their supporting sources are summarised below, in table 1.

Strategic contribution	Strategic management literature supporting the importance of the contribution	Design management literature supporting design's capacity to contribute
1a) Building product (or brand) differentiation, and customer intimacy and loyalty.	Porter, 1980; Porter, 1985; Treacy & Wiersema, 1993	Blaich & Blaich, 1993; Lorenz, 1990
1b) Raising customer perception of signalled value and addressing varied markets	Prahalad & Hamel, 1990; Porter, 1985	
2) Influencing dependencies on and of suppliers and buyers	Porter, 1980; Porter, 1985; Treacy & Wiersema, 1993	–
3) Integrating and mediating between professional domains, both within the organisation (e.g. marketing, production) and outside (e.g. suppliers, partners)	Porter, 1980; Porter, 1985; Treacy & Wiersema, 1993	Lorenz, 1994; Fujimoto, 1990; Trueman & Jobber, 1998; Walsh, 1996; Seidel, 2000; Hayes, 1990
4) Shaping, communicating and reinforcing an organisation's internal culture	Manville & Foote, 1996; Hatch & Schultz, 1997	Jobs, 2000; Borja de Mozota, 2003; Diller <i>et al.</i> , 2006; Olson <i>et al.</i> , 1998
5) Supporting activities in the value chain	Porter, 1980	Borja de Mozota, 2003; Phillips, 2004; Phatak & Chandron, 1989
6) Improving processes and systems of knowledge management	Grant, 1996; Wernerfelt, 1984; Meso & Smith, 2000; Barney, 1991	Meso & Smith, 2000
7) Being a tacit knowledge resource: path dependent and hard to imitate	Grant, 1996; Barney, 2001; Prahalad & Hamel, 1990	Borja de Mozota, 2003; Rose <i>et al.</i> , 2007

Table 1: Design can help implement strategic positioning, fit, learning, and culture, according to published work on strategic management and design management

Contributions 1a and 1b are conceptually similar enough to be considered together. For the rest of this thesis they are treated together, as *building market differentiation, customer intimacy and perceived value*. Thus, these contributions are collated and represented in figure 8, below.

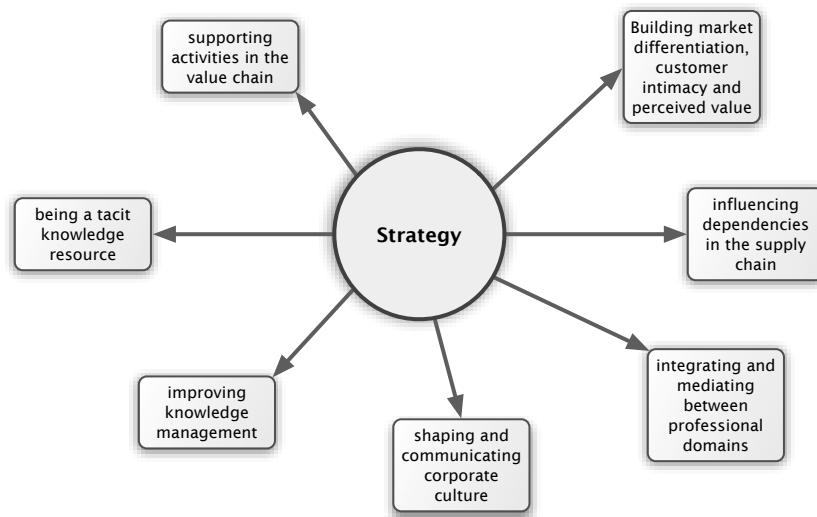


Figure 8: Proposed contributions of design to strategy implementation, based on published empirical literature.

2.5.2 Design tools and methods can inform strategy formulation

It could be said that strategy formulation is about designing an enterprise [Liedtka, 2004]. Like design, “strategies create futures. That is what they are for. Futures cannot be determined by analysis alone” [Francis, 2001]. Predictive tools “are all very valuable but depend on an analysis of the present. What happens if the future is not an extension of the present?” [de Bono, 1992: 27]. The future is unknown territory and design’s methods include ways to explore it safely. Design methods can provide creative tools for exploring possibilities and building a qualitative understanding of what holds meaning, and hence value, for customers, employees, suppliers and other stake holders. These themes are summarised (Table 2) and represented in figure 9.

Strategic contribution	Strategic management literature supporting the importance of the contribution	Design management literature supporting design’s capacity to contribute
1) Exploring uncertainty and assessing trade-off through prototyping and visualisation	Senge, 1990; Hammonds, 2001	Kelley, 2002; Liedtka, 2004; Seidel, 2000
2) Achieving a holistic view of complex systems and a shared strategic vision.	Senge, 1990	Diller <i>et al.</i> , 2006; Rhea, 2008
3) Stimulating creativity and providing fresh perspectives in the strategy context	Mintzberg, 1994: 294; Lovullo & Mendonca, 2007, 2004	Seidel, 2000; Diller <i>et al.</i> , 2006: 59; Borja de Mozota, 2003

Table 2: Design tools and methods can inform strategy formulation, according to published work on strategic management and design management

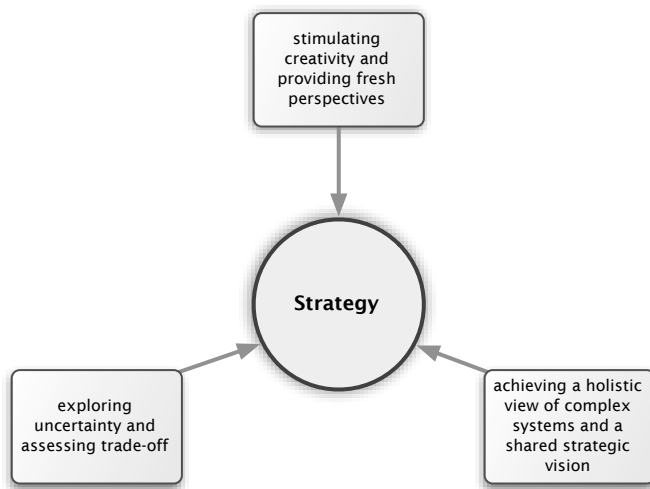


Figure 9: Proposed contributions of design tools and methods to strategy formulation, based on published empirical literature.

2.6 Summary: design's potential contributions, according to literature

Design has been attributed with playing an important role in business, first in terms of conceiving and giving form to products which are desirable in the market. More recently it is seen to be through various, more subtle contributions within and outside the firm. In this chapter these capabilities of design have been related to theories and models of strategy, leading to two sets of proposed strategic design contributions:

Design can help implement strategic positioning, fit, learning, and culture: building market differentiation, customer intimacy and perceived value; influencing dependencies in the supply chain; integrating and mediating between professional domains; supporting value activities; improving knowledge management systems and processes; shaping and communicating corporate culture; being a tacit knowledge resource, path dependent and hard to imitate.

Design tools and methods can inform strategy formulation: exploring uncertainty and assessing trade-off, achieving a holistic view of complex systems and a shared strategic vision, stimulating creativity and providing fresh perspectives.

Whilst these contributions all involve design, in other respects we have seen that the people, skills, objectives, outcomes and methods involved may vary greatly. Therefore to understand and exploit them may involve very different approaches, and may require a clear distinction in order to focus on specific areas. This separation of formulation from

implementation is somewhat artificial and simplistic according to strategy theories [see e.g. Barney & Zajac, 1994], but in design terms it is an important distinction. Using design within value activities to implement a strategy is a fundamentally different activity from the use of design methods to inform a strategy. How these phenomena are regarded in the field of practice is to be explored next, in exploratory interviews with the design professionals themselves.

Chapter 3

Phase 1: Exploratory interviews

3.1 Introduction

Having established key themes from literature around design's *potential* strategic advantage, the next phase of the study sought to establish aspects of practice that might be important requirements for, or enablers of, this contribution. That is, having first identified *what* design may contribute, the next stage asked *how*. To this end, views were sought from experts in the field around the key requirements of achieving design integration. The findings would inform a more focused second phase of the study.

This stage also sought to confirm that the topic is pertinent and relevant in industry, in that design's strategic value may not be well recognised or understood in industrial practice.

As discussed in the Introduction, a flexible research approach [Robson, 2002: 163] using qualitative methods was considered appropriate for such an enquiry, and because of the open-ended nature of these discussions of personal experience and opinions, the chosen method of interrogation was by interview.

Using a semi-structured protocol these topics were raised very broadly, and interviewees were encouraged to speak widely about their experiences. The detail of the constructs arising from literature were not explicitly referred to in these interviews. It might be argued then, that this phase could have been carried out before or during the literature review. However, the foundation of knowledge of concepts and published cases was essential for setting the interview agenda, and to equip the interviewer adequately to conduct the interviews themselves.

In this phase, 11 experienced senior professionals were consulted from 9 organisations: design service providers, firms that use design extensively in-house, and design researchers and advisors. Participants' roles are listed below, in Table 3.

ID code	Role	Activity/industry	Employees (approx)
D-1	Director of Design Strategy	Product Design & Innovation agency	50
D-2	Senior, Marketing and Strategy	Product Design & Innovation agency	2000
D-3	Freelance/contract	Industrial Design	1
D-4	Director / Senior Designer	Product Design agency	3
D-5	Director	Design Strategy agency	4
D-6	Head of Design	International airline	9000
D-7	Senior Designer	International airline	9000
D-8	Head of Consumer Experience Design, EMEA	Global electronic comms (Mobile phones)	40000
D-9	Director of Design	Mobile comms network provider	20000
D-10	Business Development Manager	Product Design & Innovation agency	50
C-1	Deputy Chief Executive	Non-profit design advisory body	40

Table 3: Participants in exploratory phase 1 of the study

Interviews were recorded and transcribed, and notes and transcripts were then coded to identify common themes and concerns. The results were then considered in conjunction with the literature on these themes and concerns, with a view to “surfacing salient concepts or themes” [Yin, 1993: 110] worthy of further investigation. Several simple descriptive diagrams of the phenomena were devised for use in further discussions and deeper case investigations.

3.2 Sampling, selection and recruitment

This preliminary stage in the study sought to identify key concerns and themes in industrial practice, so invited participants were design professionals, judged by their rank or reputation to be senior and highly experienced in the field. Since the study considers design in its broader sense, participants were invited from many design disciplines including product, communications, interactive design and architecture.

Selection of participants was not intended to provide a comprehensive or representative sample, as might be used for large, quantitative studies. Instead, it was enough to seek participants whose views would be relevant to contribute to the emerging focus of study.

Geographically, interviews focused on Southeast England, mostly in London. Although also convenient for the researcher, London and the surrounding counties have many world-class design agencies serving national and multinational companies⁵, and also large (or head) offices of such large firms, who commission design from outside agencies or have in-house teams of their own.

The designers approached for this study either work in firms known by the researcher for their high-profile design output, or work in-house in the design teams of well-known firms, many of them household name consumer brands. Participants received no incentive other than the opportunity to help with research and to discuss a subject important to them. There was, therefore, a degree of self-selection, in that all those participating were willing to take time out of their working day to discuss the topic. Robson warns against “choosing the nearest and most convenient persons to act as respondents.” Such “convenience sampling [is] probably one of the most widely used and least satisfactory methods of sampling” [Robson, 2002: 265]. However, in this study the element of convenience was only secondary to meeting more stringent criteria, namely that the respondents held high-level design-related roles in organisations with a recognisably high standard of design activity, or are held as experts by the industry⁶.

Participants were identified and approached through the existing contact network of the researcher, through introductions at industry events (conferences, seminars, exhibitions and parties), or by speculative e-mails. Participants themselves also gave referrals to associates they thought would be willing and insightful (‘you should talk to so-and-so, she’d be very interested in this’). This snowball sampling approach [Robson, 2002: 265] was found to be very fruitful, and was employed more deliberately in the deeper case studies that followed later in this study.

5. The UK’s Design Business Association directory of design agencies lists 169 member firms in London, of which 80 have over 10 staff, (36 have over 20) [Design Business Association, 2009].

6. Whilst participants were not selected according to a check-list of objective measures, their credibility was assessed by reference to reputation and position.

3.3 Interview procedure

Meetings were agreed with the participants based on a short summary of the area of interest. At their convenience, most interviews were held in the participant's place of work, during working hours. Interviews were requested for around 1 hour, and all were conducted for as long as the participants permitted. Many were willing (or eager) to talk for longer, which was always allowed by the interviewer.

The purpose of these interviews was to elicit views on a broad theme, to follow the conversational thread, guided by whatever the participants felt important. It was essential then that the questions posed were not over-specific, biased, or leading. The interviews were therefore semi-structured, the interviewer using a prepared check list of key topics, but allowing the dialogue to continue as freely and naturally as possible. This list also served to remind the interviewer to open and close the interviews in a consistent way.

Rather than claim that the beginning of the study is a 'blank canvas', free from preconceptions and prior knowledge, the researcher's own constructs are recognised as inevitably and inextricably connected, having both positive and negative contribution. They both inform and bias the study's direction (where we look), the focus (what we look for), and the findings (what we see) [See e.g. Eisenhardt, 1989; Strauss & Corbin, 1990; Yin, 1993; Miles & Huberman, 1994].

3.3.1 Interviewer introduction

Unlike in structured interviews and other more rigid interrogative approaches, an interview in a conversational style must be affected by the participant's relationship with the interviewer him/herself. From the earliest interviews it was clear that the participants respond to the interviewer's own introduction (e.g. his background and interests), and are more likely to moderate their response accordingly.

With this in mind, the interviewer took care to mention his own educational and industrial background as a designer, to ensure participants felt they could 'speak the same language', and pitch their replies at an appropriate level. For some participants this added a conspiratorial bond, e.g. when comparing designers and non-designers, and the interviewer was explicitly included as 'one of us'.

3.3.2 Data capture and transcription

Interviews were recorded using a digital audio recording device, with the participants' permission. To facilitate analysis, the digital files were transferred to computer for transcription by the author, using a text editing application and a sound player.

Transcription is necessary for detailed analysis of the interview, providing textual documents which can be more easily studied, manipulated, coded, quoted, and later easily referred to by the researcher. The process of transcribing – the act of listening closely, often repeatedly, to the recorded dialogue – is also valuable for the researcher to become more familiar with the data. However, the complex interactions involved in interviews are more than the words spoken; the nuances of a conversation, the gestures, emphasis, hesitancy or tone of the speakers may be difficult to capture in the textual transcript. In some studies, such as where respondents may be thought to be hiding something significant (e.g. sensitive personal issues, controversial practice), these nuances would be essential data to record and consider. This requires a thorough verbatim transcript, complete with descriptive notes to capture non-verbal cues, but even then a transcript is “inescapably selective” [Miles & Huberman, 1994: 56]. In this study, though, it was considered acceptable to take at face value the verbal accounts of the respondents. Notes were occasionally made during transcription however, such as “[unsure]” or “[laughs]”, when phrasing was thought to be especially pertinent, or possibly liable to misinterpretation later. Nonetheless, all original audio recordings were kept in the study records for later reference if necessary.

The key themes arising from the interviews informed the secondary constructs outlined in the next section.

3.4 Findings: three additional factors related to design integration

As we have seen from published literature, there is some consensus that the optimum strategic use of design requires, and is defined by, its application to all areas of the business in a holistic, integrated way. There were many observations among respondents about attitudes and practice in this respect, some positive, but others which persist in thwarting this achievement. These attitudes and practices compose the factors summarised in this section, in three groups:

- 1) Design should be applied to different areas of the business with **consistency** and **completeness**;
- 2) Design should be applied with **different stakeholders** of the business in mind;
- 3) Design should be permitted to contribute at a **high level** in the organisational hierarchy.

3.4.1 Integrated design requires consistency and completeness

The first of the three factors described here is the importance of *consistency* and *completeness* of the design effort. Design consistency here means that output from all design disciplines reflects the overall values of the firm, in terms of quality, and of visual and tonal style [see e.g. Blaich & Blaich, 1993; Trueman & Jobber, 1998; Olins, 1989]. Completeness means design application permeating to all areas of business activity, not only those customer-facing elements of the firm but also those *within* the business [e.g. Phatak & Chandron, 1989]. As noted previously, the importance of consistency and completeness is explicitly recognised in the ‘service design’ approach (2.2.4, page 15). Although the respondents did not use the term, nor claim to be followers of such an approach, it is clear that the principles are recognised.

i. Consistent customer experience

In the field of branding it is widely accepted that all points of customer (or client) contact should be consistent in collectively communicating a unified message, the firm’s brand [Olins, 1989]. These points of contact, or touchpoints, range beyond the product or service delivered, and might include marketing and advertising materials, packaging, web sites, customer service call centres, retail stores and showrooms, office buildings, receptions and meeting rooms. All these points of contact contribute to the firm’s external image, and therefore its reputation. An integrated design approach ensures all such touchpoints are designed to communicate a consistent quality, style and tone, collectively as an overall experience.

“Experience is the thing, not just pictures, not just words, but things: connections with stuff. And that’s the way the messages are getting through. Everything communicates. So [agencies] need to understand how to get communication into everything that a company does.” [D-5]

“[The firm] should be communicating those values, defining those values, helping that to communicate all those through the visual language, the terminology, all the different ways we touch consumers. But design should be putting those design values into the different parts of the journey, and we should have an experienced design team to do that.”

[D-9]

ii. Complete design permeation

In addition to the design of customer touch-points, complete integrated design includes those elements of organisation which are not experienced directly by the customer or end user. Design can be applied, for example, to improve staff safety, efficiency and job satisfaction. Firms which provide an intangible service may use many designed tangible artefacts to do so.

One such firm employs a mobile workforce with vans and specialist tools to repair customers' cars, and employed a design agency to examine its operations holistically. The respondent, from the agency, emphasises that the customer's experience is central to the success of the repair company but that this depends, sometimes indirectly, on designing the means of delivering this experience. The designers' work resulted in an improved working environment for the firm's field workers and a change to their employment policy. As well as increasing reliability and speed of the job it has allowed the firm to employ from the wider population, rather than depend on physically strong males:

“[The repair company] really understand [the customer's] viewpoint, but they need tools and products to do that, so we've been working with them looking at, for instance, how we create a better working environment for their workers, a van that is easier for them when they go on the road, it's easier to use... You can create tools that make the whole process easier, so that you could hire an 18 year old girl who doesn't have to be very strong.” [D-10]

Having high level access in the client firm, the design agency discovered an important link between service quality and the employment model used, finding that full-time employees carried out work to a far higher standard than those paid per hour or per job.

“That's the type of thing we can come up with when we do the research. And if we're talking to the right level people, these things can have a really high impact on the company, hiring or HR policies, for example.” [D-10]

In some firms, design effort might be *consistent* but is not *complete*; although used extensively and expertly, design services may be applied in some operational areas only. For

example, a firm may use packaging and product design to a great effect, while omitting or under-utilising design in other areas, such as its advertising or web site, or workplace design. In one case a service for mobile phones was carefully designed, but the necessary web-based registration system was built without any apparent design attention:

“We had a fantastic [mobile] e-mail service, that took eighteen separate web pages for anyone to register for. So no one ever did! What was the point of developing this brilliant service?” [D-9]

More seriously, a firm may fail to properly connect customer needs with its own technologies or capabilities. This may be a costly mistake, resulting in a functional product, nicely styled but lacking value in the eyes of the consumer: “it’s putting lipstick on a pig” [D-9].

There may be instances where design effort is complete but not consistent; design is applied appropriately in the whole operation chain, in keeping with an ambition towards integrated design. However, this is without full co-ordination and integration with other operational areas, or indeed between these design activities. This may be because design activities and expertise reside in silos in the organisation, or because the organisation lacks an overseeing authority with a holistic overview to co-ordinate design efforts:

“No one takes responsibility, in Marketing or anywhere, for actually stitching things together. Everybody is working vertically on their own little bit... and certainly not incentivised to create a holistic, horizontally flowing, wonderfully satisfying experience.” [D-9]

Inconsistency may also be due to design decisions being made by people ill-qualified to do so, perhaps due to budget constraints, a lack of managerial control, or simply because the need for design expertise is not recognised.

“We’re always accused of being control freaks but you do need to control it very tightly. It is very good within the UK because people know who we [the design team] are, respect us, understand it’s not their remit... So, although it’s political, people do understand and have an awareness of whose role it is to do the design within all areas of the company.” [D-6]

Control and reduction of unskilled design may have to be sensitively balanced against decentralised decision-making and an empowered workforce.

3.4.2 **Beyond customer-centric: accounting for the many stakeholders of design**

So design integration is about design being applied *within* all areas of business activity consistently and completely, and ensuring a consistent, joined-up experience for the end-user. A related factor suggests design decisions should account for the needs of stakeholders other than the end user⁷.

“Particularly in the world of products... the marketing people have got to interact and interface with someone from their technology departments. And that usually involves creative designers, engineers, technologists in the feasibility assessment and strategy and the definition of whatever the trade-offs are to make something feasible and exciting in terms of the marketplace, and bring those together.” [D-1]

The design of the firm’s offering (i.e. the main products and/or services sold to its customers) primarily aims to meet the needs of the end user or customer, and of the paying client. It is suggested that design should also consider those of other stakeholders who may be within the firm, such as in manufacturing, marketing, or logistics, or outside it, such as retailers, distributors, suppliers, or maintenance partners. Is the legal department worried about protecting intellectual property rights? Will distributors find the product easy to transport? Interviewees cited examples where the design process considered others who hold a stake in the firm’s product or service, such as support staff and maintenance engineers, who are also in a sense consumers, or users.

“We were looking at the maintenance side to the new product, to see how much hassle it gave our engineers [to fit and maintain], and we did change some aspects of the design as a result. So we do not only our passenger consumer research, but also our engineering and own personnel’s ‘consumer’ research quite thoroughly.” [D6]

Design might also consider other stakeholders outside the firm, up and down the supply chain, as an important opportunity for improving business performance.

7. In some usage, the term stakeholder refers to someone having only a *financial* interest, but the broader meaning used here is anyone who has an interest of any kind in a situation. “It is a valuable idea in design because it reminds us to look at the interests of all parties – those who produce, service and use the things we design but also everybody else whose life is affected.” [Rust *et al.*, 2007]

3.4.3 Design is permitted to influence at a high level

The third factor identified from interviews suggests that design's contribution depends on a high level of influence within the organisation. Respondents from design agencies and in-house teams mention how their work has increasingly involved higher level engagements, where they have been permitted to address broader questions for their client around their services or product, such as "What are the underlying problems that need addressing?" "What other opportunities are available?"

This might happen through the design agency or team attempting to address the bigger questions that lie behind a given design task. But an attempt to constructively challenge a design brief may not be well received, however well-intentioned. It might be seen as obstructive – over-complicating matters with time-consuming speculation – or, more cynically, as an attempt to 'upsell' the work for a higher fee.

"Design is important but you wouldn't go to a design agency to talk about [e.g. employee retention], you'd go to management consultants. Design really only comes in in terms of the environment, which would be architecture and interior design, or internal brand, internal communications." [C-1]

A client's willingness to involve design services with higher level questions is only likely to be built over a long period of time, where trust is achieved through exposure to demonstrable benefits. For designers to sell it explicitly as a service would be to struggle against generally-held expectations of what designers can really do. There is already scepticism around design's contribution, and such claims may not be taken seriously.

"People are not going to listen to that. There's very little credibility in the designer's argument for being able to create a new culture in the company. It happens though, and I think designers are incredibly well placed to do it, because of the way they think, and use their tools and methodologies. But it's a very hard sell, and not the first thing you're going to try to sell as a designer." [D-5]

But designers may successfully extend their influence, when they believe they understand the problem better than their client. They need to be sensitive to the risks, and demonstrate a deep understanding of the broader issues at play.

“Designers need to be cognisant of that totality of offer, and build it into the proposals, see the proposals in the context of something bigger. But needs to be done very carefully as well, because it’ll be very off-putting if [the client] is just saying ‘listen, I just want a website!’” [D-5]

“So you give [the client] what they asked for, understand why they asked for it, then maybe give them some alternatives that might be even better. [Provided we] speak with authority and confidence, we’re not just going to annoy them. We always try to understand as much as possible about why they’re doing their thing.” [D-4]

In-house teams may be better placed than external agencies to explore these higher-level questions, being less constrained by confidentiality concerns, and having freer access to the informal and formal networks of influence.

“The difference, working in house, is you really do see the bigger picture... We have agencies come in to us... [but] they are not always aware of everything that is going on, what we’re challenging, and what issues we have.” [D-7]

i. Design can influence a shift in perspective

As a result of this recognition of design’s potential to address high-level, far-reaching issues, firms may change the way they work. One agency’s tendency to challenge a client’s brief was initially unwelcome, but over several years the client came to recognise that designers could make valuable contributions at a more strategic level if brought in early to the process. Where previously the marketing team would issue a prescriptive brief to the designers, the process was changed to permit input from design agencies which could feed in to the marketing plan:

“It happens very rarely, but you can [change the way clients work]. Now they hire a bunch of creative agencies, give them a fairly open brief... and that feeds into the marketing plan. They give them marketing ideas, key directions... [which] define the strategy. Which is much smarter because they get this whole range of ideas, much broader than two people in the marketing department could come up with just because they’re so stuck in their own stuff.” [D-2]

The same respondent describes another client, a managing director with a background in management consulting, newly appointed to turn around a struggling home-ware business.

“He realised that of 15 or 20 years’ consulting, a lot of what he did was rubbish! He only produced paper. He never produced anything tangible, anything you could stick in front of peoples’ noses saying ‘do you want this or do you want that?’ ... By having something prototyped, a test model, it’s fast, relatively cheap – much cheaper than the average business consultant, and you can act on it, you can take decisions.” [D-2]

In another example, the head of an in-house team designing mobile phones describes how the runaway success of a stylish new phone was the “tipping point”, forcing a re-evaluation of the firm’s predominant reliance on technology. A respondent D-5, in another company, described this firm as “enamoured with technology...it's driven everything they've done, and it's got them in trouble more than once⁸.” Where before the technological features of the device came first, and its look and feel second, now these features were traded off against other aspects of the design (such as lightness and thinness) resulting in a bold, iconic and commercially very successful product. Handset market share rose from 13.5%, when the phone was introduced, to nearly 19% a year later [source: Business Week].

“We’d crossed that line where [the new phone]... was improving the bottom line and paying people’s salaries. People started to say ‘okay, it’s clear that consumers are looking for style.’ When we launched [it], it wasn’t that great in terms of features... So people [in the firm] were starting to realise that features were not as important as they thought, that actually design and style were much more important, and that changed the game... I think it’s getting to the point where it’s becoming easier to do what we want to do.” [D8]

So client firms may make a shift in perspective, influenced by the activities of the design teams. For example, they might change from being primarily technology driven to being more user-centric. They may shift from a marketing-led approach, in which a design brief is handed down to designers from the marketing department, to involving designers in early concept exploration. They may discover value in using design methods such as visualisation and prototyping to aid strategic decision making.

8. Recent company performance has again been poor, especially in the Handset division, where the successor to this product hasn’t had the same impact. In hindsight, the change in perspective may not have been as far-reaching as suggested by the interviewee, and might merit further investigation. However, for the purpose of this study, the identification of a possible phenomenon is sufficient to take to the next phase for discussion.

ii. Designers broker partnerships

Design teams whose services extend into overseeing or arranging production find that their connections with other firms are often very valuable to their clients.

“[New clients] mostly come from the aesthetics viewpoint before understanding the other capabilities that we have, and the other benefits of using design as a process. Then we can start looking at usability, user research, can start talking about technical problem solving... and people who know our history would come for more of an engineering viewpoint. And then we can talk to them about how we can set up manufacturing lines for them, find them an outsourcing partner, things like that, in the Far East, for instance.”

[D-10]

These partnerships might be protected by cautious design agencies, yet other agencies may make introductions to useful third party firms, such as suppliers, manufacturers, or distributors, some of whom form strategic partnerships with the client. Although not explicitly referred to in this case, the phenomenon is thought to be worthy of discussion in phase 2.

As noted previously (page 15), Seidel [2000] finds four key strategic contributions that arise through engaging product design consultants, which he terms Strategic Visualiser, Competency Prospector, Market Exploiter, and Process Provider. Based on these findings in interviews, we might add a fifth and sixth role for discussion, those of Partnership Broker and Perspective Shifter.

3.5 Themes for exploration in Phase 2

To recap, the key potential strategic contributions of design were identified based on strategy and design literature in chapter 2 (see p.34), and grouped thus:

- 1) **Design can help implement strategic positioning, fit, learning, and culture:** building market differentiation, customer intimacy and perceived value; influencing dependencies in the supply chain; integrating and mediating between professional domains; supporting value activities; improving knowledge management systems and processes; shaping and communicating corporate culture; being a tacit knowledge resource;
- 2) **Design tools and methods can inform strategy formulation:** exploring uncertainty and assessing trade-off, achieving a holistic view of complex systems and a shared strategic vision, stimulating creativity and providing fresh perspectives.

Exploratory interviews in phase 1 suggested three additional factors which are important for successful, optimal design integration:

- 1) Design should be applied to different areas of the business with **consistency** and **completeness**;
- 2) Design should be applied with **different stakeholders** of the business in mind;
- 3) Design should be permitted to contribute at a **high level** in the organisational hierarchy.

Although design is best recognised as shaping the customer offering and corporate image, activities that face outward from the the firm, it is noteworthy that many of these contributions act internally, and some both internally and externally. For clarity in this thesis, these potential strategic contributions and contributing factors are collated into a diagram, shown below (figure 10).

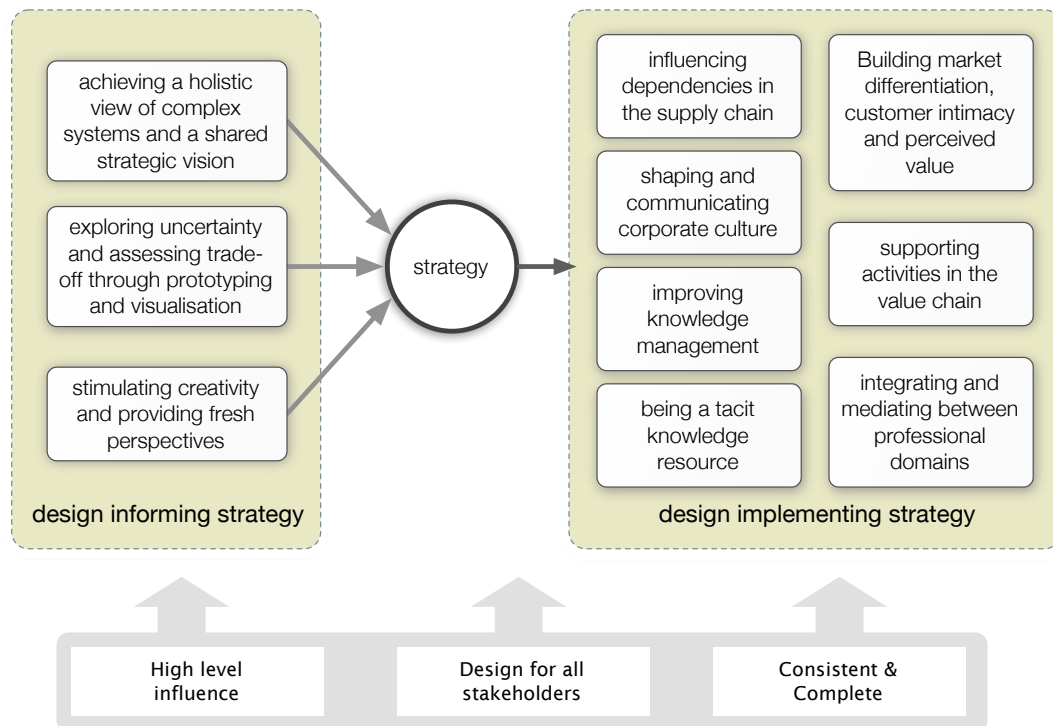


Figure 10: Collated diagram showing design's potential contributions to strategy formulation (left) and implementation (right), and additional factors based on exploratory interviews.

3.5.1 Diagrams for graphic elicitation in interviews

The next phase of this study sought to explore these phenomena further, to clarify the concepts in this simple framework, and to examine whether design is thought to be making such contributions in real firms. Interviews in the first phase showed this subject to be

complex to articulate and discuss; because the proposed contributions were *not* to be made known to the participants, a set of four representative diagrams was developed to assist in the next stage of interviews. The diagrams were intended to be read quickly with just a simple explanation, and then to facilitate open-ended questioning and discussion. Also, if desired, they might be marked with writing or sketches by the participants. This use of diagrams as interview stimuli is termed graphic elicitation [Crilly *et al.*, 2006]. The purpose of the diagrams was twofold: first, they were to assist explanation of the concepts by the interviewer; second, they were expressly intended to be drawn on by the interviewees to complement or clarify their verbal responses. It was considered especially suitable for discussions with interviewees of high “visual literacy” as many designers have [Crilly *et al.*, 2006].

i. Implementing strategic positioning, fit, learning, and culture

Design integration within the firm

To represent the concept of design integration in the organisation, a diagram was sought to permit the discussion of the following broad questions:

- Is design used to support, optimise and improve all business functions in order to implement strategic positioning, fit, learning, and culture?
- Is design applied to different areas of the business with consistency and completeness?

For the diagram, Porter’s value chain was chosen, as it provides a simple model of a firm’s primary value-adding activities and its support activities (figure 11). This discussion could be prompted in a neutral, non-leading way using the opening question:

- Where does design belong in this representation?

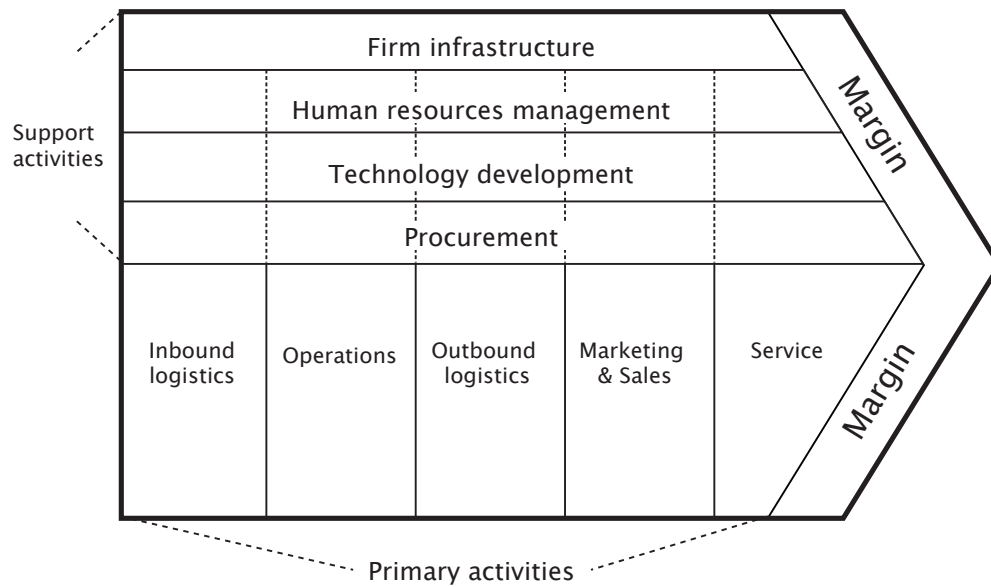


Figure 11: Porter's Value Chain [Porter, 1985]

Design for all stakeholders

To prompt discussion around stakeholders in the wider picture of the firm a simple representation was devised as shown (figure 12), emphasising the end user or customer, and the client firm, but with other possible stakeholders (supplier, employee, consultant, shareholder, buyer) shown more faintly. There is space on the diagram for the addition of others if suggested by the participants. This diagram would be introduced as follows:

- Design is generally recognised as important in shaping the experience of the end user (or customer), but is it applied to the experience of any of these other stakeholders? Are any stakeholders missing?

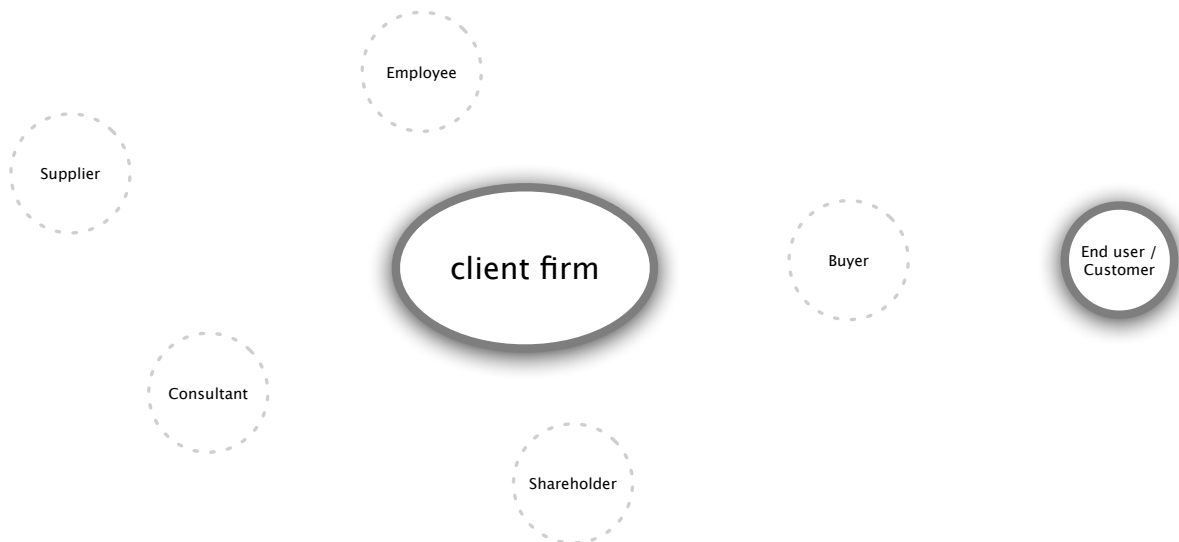


Figure 12: Design for all stakeholders

ii. Informing strategy formulation

Roles from Strategy to Market

This diagram (figure 13, Roles of design from strategy to market) represents the notional process from high-level strategic decisions, such as developing a new product line, through conception and planning, design detail, production (or realisation) and delivery to market. The line is a simplification of the representation used by Weiss [2002], referred to previously (figure 5, page 15). The vertical divisions mark the design detail stage of developing a product, the traditional field of expertise for many design agencies. A more strategic contribution from design services would take place more broadly, both upstream and downstream. Participants would be asked:

- Are the design services mainly in the *design detail* stage?
Might they be anywhere else?

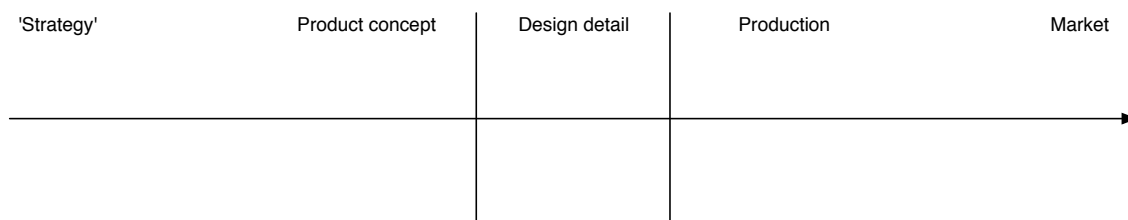


Figure 13: Roles of design from strategy to market

Evolving strategic contributions of design

As outlined above (page 48), we find that the four strategic roles identified by Seidel [2000] might be complemented with two additional roles. The six roles then are termed Strategic Visualiser, Competency Prospector, Market Exploiter, Process Provider, Partnership Broker and Perspective Shifter. Seidel's original paper and the findings here all suggest that this is often an evolution of a relationship over time, and that these strategic contributions may not have been anticipated at the outset when the design services are first commissioned, but are secondary to the 'traditional' design services that might be commissioned at the beginning of an engagement.

A diagram was conceived to represent how a tactical role of design might evolve over time to include some or all of these six roles, which might ultimately be commissioned separately from the 'conventional' product design work. This is shown below in figure 14, Evolving strategic input from design services. This diagram would be used to ask:

- Does engaging design services bring about any of these 6 types of input?

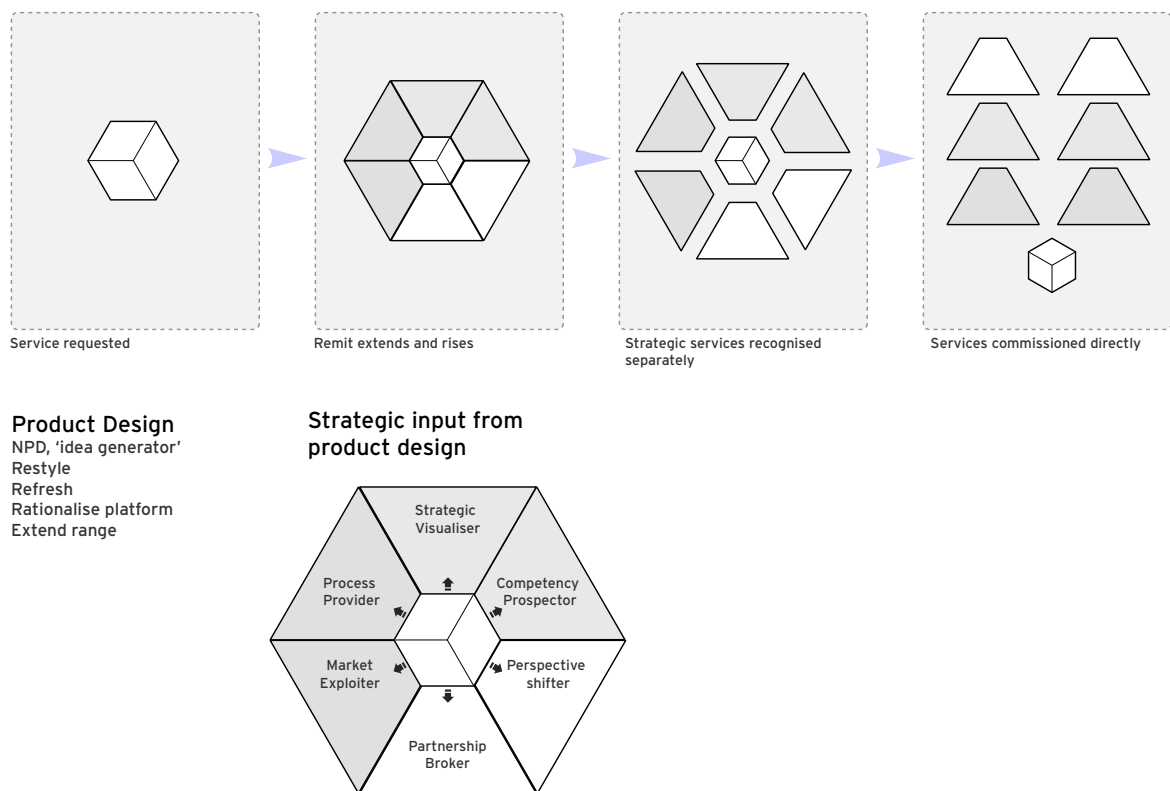


Figure 14: Evolving strategic input from design services

3.6 Summary of phase 1

During this phase of the study, views were sought from design professionals and associated experts around what it means for design to make strategic-level contributions. The interviews suggested that there may be an ambition towards an integrated, holistic design approach, but there are still many challenges to achieving this. Several themes emerged around these concerns, which were collated into three general imperatives:

- Design should be applied to different areas of the business with consistency and completeness;
- Design should be applied with different stakeholders of the business in mind;
- Design should be permitted to contribute above the operational level, at a high level in the hierarchy of organisational authority.

These imperatives are to be explored in phase 2 in conjunction with the potential strategic contributions of design established from literature in chapter 2. To facilitate the next phase of the study a set of four diagrams was developed to be used as interview stimuli:

- Porter's Value Chain
- Design for all stakeholders
- Roles of design from strategy to market
- Evolving strategic input from design services

Collectively, these themes and diagrams provide a means with which to consider attitudes and practice of designers and related roles within firms. The interviews in phase 2 sought to confirm the relevance of the constructs, to refine them if appropriate, and to derive insightful descriptions of practice in real firms. The procedures and cases are described in the next chapter.

Chapter 4

Methods and rationale of phase 2

4.1 Introduction

This chapter briefly introduces the second phase of the study, outlining the case selection, participant sampling, and procedures undertaken. The findings are discussed in depth in the three chapters that follow.

By using the diagrams and questions derived in phase 1, it was hoped both to validate the theoretical categories and to use them to derive insightful descriptions of practice in firms. 32 more semi-structured interviews were carried out using the four representative diagrams outlined in the previous section.

4.1.1 Objectives of this phase

The first phase derived a set of key themes around design's strategic contributions to a firm, and also some related contributing factors to explore, and a set of visual representations with which to discuss them. These themes were collated and consolidated from diverse literature, and the second phase of the study aimed to validate this new integrated view, to provide some empirical evidence that such strategic contributions are recognised and practised by firms. To this end, the themes were discussed with three groups of participants, outlined below.

1) Case 1

Twelve design-related personnel in 'Alpha Structures,' a global firm of designers, engineers and business consultants

2) Case 2

Eleven design-related personnel in a large UK-based telecom firm 'Beta Telco'.

3) Corroboration group

Nine senior design professionals, working in or for large design-capable firms.

4.2 Case selection

Since the aim of this study was not to make generalisable claims about the design contributions but merely to verify their recognition and use in firms, the two firms did not need to be selected according to any stringent criteria. Firms were judged suitable based on being accessible and willing participants, and having some visible design activity. Details of participants are given in the chapter introductions for each group.

Case 1: Designers and related personnel in Alpha Structures

Alpha Structures is a large global design and engineering firm with headquarters in London. It was identified as a suitable case for this deeper investigation phase as it is large, geographically accessible, and willing to participate. It is also interesting in that it has a long-standing reputation for design excellence. This might suggest a greater awareness of design's strategic impact than many other firms, as well as a better understanding and greater capability of managing design.

Case 2: Designers and related personnel in Beta Telco

Beta Telco is also a large, accessible, UK-based firm, but founded primarily on communications technology and service delivery. Identification and recruitment of participants was heavily dependent on suggestions and introductions.

Corroboration group Delta: Design service providers in multiple firms

Selection and recruitment of participants in this group was essentially a continuation of that of phase 1, building on the convenience sampling and 'snowball' approach, through further introductions and referrals, and by speculative contacts (3.1.2, page 37). Again, this was according to the same criteria, i.e. that the participants hold high-level, design-related roles in organisations with a high standard of design activity, or are considered experts by their peers in industry.

A study of just one firm would be unlikely to yield meaningful insights, and the scope of the study did not permit further deep case studies. Therefore two firms were chosen, and to add further breadth and corroboration, a group of designers from various firms and agencies was also consulted (figure 15).

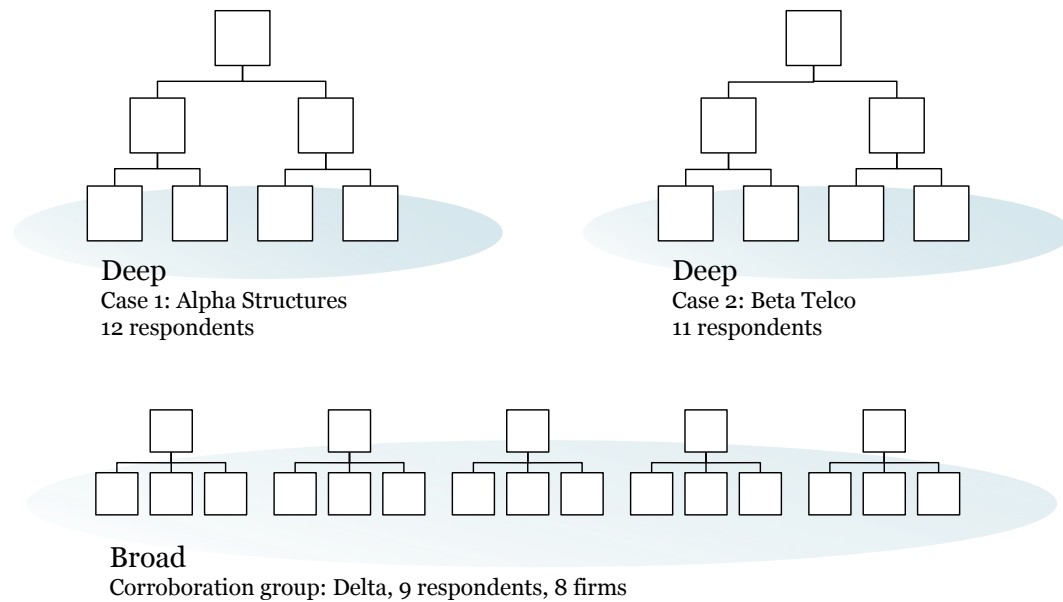


Figure 15: Three interview groups for phase 2: Alpha Structures (12 participants), Beta Telco (11) and Delta (9).

In order to bring depth of insight into both firms, Alpha and Beta were investigated as small case studies, exploring the views of designers but also of others connected to the design role. This included others working directly with designers, and also senior managers and directors, with a view to reducing ‘design-centric’ bias in the findings. The further aim of these two case studies was to derive insightful descriptions of the firms’ own practices, based on the phenomena identified in phase 1 as conducive to, or indicative of, a strategic exploitation of design capabilities.

The third group, Delta, comprised nine senior design professionals, working in or for large design-capable firms. Interviews with this group sought to elicit a broad variety of views from multiple companies, albeit with less depth than Alpha and Beta. Roughly half the participants in this group work in design agencies, and so have experience of many client firms, often in different industry sectors, with a variety of strategies, management styles, personalities and project successes and failures. The others work in-house for multi-billion dollar firms known internationally for excellence in design and innovation. Some working in-house for these larger firms have previously worked in agencies, so can offer even broader insights. The participation of this group could therefore provide a breadth of perspectives into the topic across multiple firms.

Interviews in all three groups were carried out concurrently. For clarity, the procedures and findings of cases 1 and 2 are presented separately in the following two chapters. They are then considered together with the third set of interview data in chapter 7. Some con-

clusions are then drawn regarding the themes previously identified, their importance to strategic design in general, and their relation to practice within the two case firms. The firms Alpha and Beta were not assumed to be representative or typical in any generalisable sense, but there is an opportunity to make some comparison of the responses within the two firms.

No attempt is made to judge the quality of the design output in an empirical way; any statements of strengths, weaknesses or problems are those expressed by the respondents themselves, unless explicitly stated.

4.3 Interview procedure

As with interviews in phase 1, each meeting was held at the participant's workplace during working hours, lasting approximately an hour, but longer if the participant wished. Again, they were semi-structured, but with a more specific agenda than in phase 1.

4.3.1 Protocol

The interviewer began with a personal introduction where necessary, though in some cases this was not the first meeting. The subject was then introduced at a very general level, permitting the interviewer to speak freely and naturally. As each discussion moved toward the specific themes of the diagrams, these were shown and the participant encouraged to mark it as s/he spoke, to clarify or elaborate his/her answer. Care was taken to ensure, as much as possible, that all diagrams were shown and discussed. In a few cases this was not possible as the meetings were cut short. All marked pages were filed for reference during transcription and analysis.

4.3.2 Data capture and transcription

As in the exploratory interviews, a digital voice recorder was used initially, but although the device is inconspicuous, the recordings were poor quality and difficult to transcribe. Later, a small digital video (DV) camera was used, providing far better audio quality. Although larger than an audio recorder, the interviewees were not sensitive to its presence once assured that the lens cap would not be removed. In some cases the camera was used to capture rough footage as diagrams were discussed.

4.3.3 Coding

Transcripts were analysed according the themes derived from literature and from interviews in phase 1, referring to modified diagrams where appropriate (and rarely, to the video footage if available). These themes provide the structure in which the findings are presented in the following three chapters.

Chapter 5

Case 1: Alpha Structures

5.1 Introduction

This chapter details the findings from interviews and observations in the first company case, referred to as Alpha Structures. Alpha gave access to the researcher, as the firm has partly funded the study.

Alpha provides design, engineering and business consulting for the built environment. It has around 9000 staff in 100 offices worldwide, and headquarters in London. Its annual turnover is approximately £700 M (2008). Alpha is active in many industry sectors, grouped generally into transport, energy, property and social infrastructure.

Design activities in the firm are primarily in the services they offer their clients: engineering design, architecture and industrial design. Internal design activities also include web and interaction design, and print and communications design.

5.1.1 Participants

Identification and recruitment of participants was partly initiated by the researcher and partly by onward referrals to other relevant or interested people. The scope of the samples did not include respondents from all operational divisions, and therefore could not be considered typical or representative of such a large firm. However, their seniority and experience in the firm suggest that their views will provide relevant, if not comprehensive, insights. Once an introduction had been made to one senior director of the firm with an interest in the research topic, identification and recruitment of participants was partly initiated by the researcher, and partly through ‘snowballing’ a network of contacts.

The participants were mostly based in or near the firm’s headquarters, and include specialist designers, researchers, managers, support staff and senior leaders. The roles of interview participants cited are listed below, in Table 4.

ID code	Role
A-1	Skills Network Leader, Structural Engineer
A-2	Researcher, Foresight
A-3	Director, Civil & Structural Engineer
A-4	Director, Global Leader, Lighting
A-5	Product Designer, Lighting
A-6	Leader, global facade engineering
A-7	Associate Director, Foresight
A-8	Associate Director, Structural Engineer
A-9	Knowledge officer, Information Management
A-10	Associate Director, Human Factors specialist
A-11	Head of Web technology, Information Management
A-12	Associate Director, Materials / Facades Engineer

Table 4: Interview participants from Alpha company

5.1.2 Findings

The findings set out next are collated from the views expressed in interviews. Where explicitly stated, they may also include the researcher's own observations of the workplace, internal documents and other artefacts, or other publicly available material. Citations of public sources are omitted for anonymity.

The following sections examine design's contribution to strategy implementation and to strategy formulation in Alpha, identified in chapter 2 (summary, page 34):

- 1) **Design can help implement strategic positioning, fit, learning, and culture:** building market differentiation, customer intimacy and perceived value, integrating and mediating between professional domains, supporting value activities, improving knowledge management, shaping and communicating corporate culture, being a tacit knowledge resource;
- 2) **Design tools and methods can inform strategy formulation:** exploring uncertainty and assessing trade-off, achieving a holistic view of complex systems and a shared strategic vision, stimulating creativity and providing fresh perspectives.

Additionally, Alpha's design activity contributes to strategy implementation and formulation for Alpha's *clients*. Some of these contributions were identified in the course of the interviews, and are included here.

5.2 Implementing strategic positioning, fit, learning, and culture with design

According to the seven phenomena determined through the literature survey and the subsequent interpretation in chapter 2, design can contribute to strategy implementation by:

- 1) building market differentiation, customer intimacy and perceived value
- 2) influencing dependencies in the supply chain
- 3) integrating and mediating between professional domains
- 4) shaping and communicating corporate culture
- 5) supporting activities in the value chain
- 6) improving knowledge management processes and systems
- 7) being a tacit knowledge resource

This section considers Alpha's use of design and design methods in the implementation of strategy, and whether there is evidence that it contributes in these seven ways.

5.2.1 Design used to build market differentiation, customer intimacy and perceived value

Alpha's website currently lists 18 areas of specialist market expertise, sectors as diverse as mining, aviation, residential, retail, government, healthcare and energy. Their clients range from property developers and private firms to much larger conglomerates or public bodies, right up to national government.

It is found that design is used to build market differentiation, customer intimacy and perceived value, both for Alpha directly, and for its clients. Clients commissioning such projects as property developments, retail sites or corporate headquarters need to stand out in their market, to produce developments of high perceived value and to differentiate themselves from their competitors. They use Alpha's design expertise to do so, albeit often with architects outside the firm. Public bodies commission large scale work including transport termini, military facilities, Olympic stadia and compounds, and high speed rail links. At such large scale, concepts such as customer value and market differentiation might seem

less relevant than in consumer-facing activities, yet these are considered important elements of Alpha's offering, whatever the scale of the work. The firm is known for technical excellence and innovative attitude, which have given them a high standing among their peers. Consequently Alpha have been associated with many of the world's biggest projects and most iconic buildings of the past 50 years.

"[We like] to say 'look at us, aren't we brilliant! Next time you need a mile high building come here!'" [A-11]

i. Clients use Alpha's design to increase customer perceived value and market differentiation

Discussing customer value and market differentiation, two respondents mentioned an example of a client, a luxury fashion brand, whose expensive flagship store was not attracting customers. The client's marketing department had suggested a €20M advertising campaign to boost footfall in the building. When Alpha were consulted, they advised that advertising would not address the root cause of the problem, namely that the design of the building was unappealing and incongruent with the brand values. They proposed that through the design of an iconic facade, the building could be used as an expression of their brand position.

"The marketing department had suggested a €20M ad campaign. We said pay us the €20M to fix it! We used design to improve their business, to connect with their target group very precisely." [A-4]

The client wanted to add an element of technical performance to their brand image, and Alpha's lighting designers and engineers created a radical facade design to achieve this.

"[The building] takes the the brand and adds 'performance' to it... It enhances their brand as the facade has performance, and therefore it shows they are not just about style." [A-6]

By accounting for the behaviour and tastes of the target market and desired brand image of the client, the designers and engineers were able to dramatically improve customers' perception of the store and the brand, which carried through into profits for the client. Such considerations of perceptions, value and experience are a constant concern for some of the respondents, and these considerations extend to the client's staff as well as customers, to equipment and systems as well as the building:

“What are the tools and equipment and systems that are being used? How well designed are they to make sure that everybody gets a good experience? We’re kind of working in that area all the time, I think.” [A-12]

As well as this broad range of concerns, Alpha is also giving more attention to the lifetime use of the structures they build:

“There is always a discussion about the breadth of the offer, and increasingly about the length of the offer... How can we help the owner of the bridge or building get the most out of it during its life?” [A-3]

ii. Design activity includes challenging the client

Sometimes the client’s instructions seem at odds with the priorities of the end users (the occupants, passengers, service users etc.). Whether the client is a developer, a building owner or an architect, respondents speak of having to “think beyond” what they want [A-12], and to “go through the buyer” to give due consideration to the end users, which might be “a bit of a game” [A-10].

“We can’t get user input when we design these spaces because there is always too many other clients in between.” [A-7]

The success of the building might be compromised in such a case. A preferable relationship would be for the client to regard Alpha as an expert partner or trusted advisor.

“We’re trying to position ourselves as design collaborators much more than service providers... almost alongside [the client] rather than ‘you set the brief and we’ll tell you what the answer is’.” [A-6]

This would allow Alpha to forge longer term partnerships and to offer high-level consulting, which might include asking challenging questions about the client’s strategic directions. This happens to some degree, but requires a “much more proactive, opinionated approach to the market” which is not the “innate mode of operating” in Alpha [A-12]. At a project level though, such a challenging approach is already strongly present. Designers and engineers seem proud of the confidence it demonstrates to question the wisdom of the paying client. Speaking collectively they imply this attitude is shared through the firm.

“When the client [first] gives you a brief you say ‘okay, so what you are trying to do?’ to get a deep understanding as what they’re *actually* wanting, because we assume that the brief is wrong.” [A-7]

“That’s something that we really like to celebrate. We’re all about that: challenge the brief. ‘Are you asking the right questions?’” [A-11].

“We like to think we have a reputation for doing it. We see it as a positive thing... part of a designer’s job is to help people get to clarity about what it is they actually need.” [A-12]

In their view, challenging the client’s brief is part of a good, holistic design approach. Some clients don’t respond well to this though, and it requires some tact, so as not to appear arrogant.

iii. Alpha differentiates itself through its high-profile projects and design culture

Although large, Alpha is smaller than many of its competitors, and its own differentiation is achieved through its reputation for technical excellence, design and innovation, embodied in the iconic structures they help their clients build.

“Broadly, people identify firms with their products... My kids like that I work [on well-known buildings] because they can tell their friends. I think that’s about our product, which is design.” [A-3]

There is a sense among respondents that the firm’s core essence is design, and this is deeply seated in the firm’s culture. If this is maintained then so will be its reputation and strong market differentiation.

“[Reputation] is a precious thing to look after, I don’t know exactly how you do it other than just by carrying on doing the right thing in the right way and sticking to our core values.” [A-12]

This cultural element also has an important influence on the client’s experience at a personal level. Clients’ engagements with Alpha can last months or years, and they choose Alpha partly because they believe this time will be enjoyable and rewarding.

“Consultancy is about relationship. People will generally work with people they want to work with, not just because the end product is what they want but actually the process of getting there is enjoyable too.” [A-6]

“Why do people come back to us? I think a lot of times it’s because they had a good experience... I think that’s influenced by what we deliver to them and how we respond to them, and what they see us do in the public realm as well, and whether we are the kind of firm that they’d like to be associated with.” [A-12]

The culture of design in the firm is a recurring theme, and is discussed in more depth later in this section.

Summary

Alpha helps its clients differentiate themselves through design, adding value in a variety of markets, but in doing so is shaping its own perceived value and differentiation in its market.

Alpha builds customer intimacy with its clients by pushing for a deeper understanding of their motives and needs, which is considered a designerly approach. There is an ambition to do more of this at a high level with clients, in order to become trusted advisors with strategic influence.

5.2.2 Design influencing dependencies in the supply chain

Alpha works with many manufacturers and suppliers of components, assemblies and materials that are used in the structures they build. These relationships are considered influential on Alpha's own performance. Having many different suppliers can be disadvantageous, making the supply chain inefficient and difficult to manage. Design decisions and supplier choice directly influence one another, so design practice should account for this:

“We've done a lot of work in the last 3 or 4 years to rationalise our suppliers... When you have too many you don't receive much respect from any of them... It is important to us that we develop relationships where we're preferred. If you don't do anything you end up with a very fragmented supply chain.” [A-3]

Respondents agree that being the preferred buyer is desirable, but are not sure if this can be influenced by design or if there is any attention given to the possibility within Alpha.

“It's really important to be preferred by suppliers, but I'm not sure if our own design skills are applied to accomplish that.” [A-4]

“I think if you asked people here if they want to improve the relationship with their supplier they would definitely want to. I don't think we have thought about this approach though, thinking about how they experience their contact with us.” [A-5]

The explicit design of the supplier experience suggested in chapter 2 (page 23) was not said to be happening in Alpha. Indirectly though, supplier preference may be influenced by the connection with high-profile projects. Being able to say that their product (paint, glass etc.) has been chosen for world-famous structures is useful marketing capital for

raising the supplier's own credibility and reputation. At a more personal level, it may also give personal pride, by association:

“A widget maker might prefer supplying widgets to Apple than to Dell. People like to supply things to us because we did [these iconic buildings].” [A-3]

In some cases Alpha has formed alliances with suppliers which provide strategic advantage; two examples were mentioned which directly resulted from design collaborations. In one case, LED lighting components from a large supplier were being adapted by Alpha's designers for use on their projects. The firms agreed for the modified designs to be 'bought back' and sold on by the supplier to other firms, including Alpha's clients: the supplier has also become a buyer. This has strengthened Alpha's relationship with this world-leading manufacturer, which may give preferential access to new technologies or industry insights.

In the second example, Alpha's designers collaborated with an office furniture manufacturer to produce special systems for designers and engineers, for use in Alpha's own offices. The result was thought to be a viable product, and the firms have formed a spin-off division to sell the systems to the wider market.

Summary

Design choices deliberately consider the suppliers, with a view to reducing supply chain complexity and improving supplier relations.

Design activities in the firm have aided strategic alliances in the supply chain, possibly reducing supplier bargaining power.

Design is not seen to be explicitly applied to the experiences of external suppliers. However, supplier preferences may be influenced by the credibility and pride to be gained by association with well-known projects.

5.2.3 Design integrating and mediating between professional domains

A multidisciplinary (or cross-functional) approach is a style of team working that recognises and manages the various skills, perspectives and working methods of team members. Such an approach to project work is seen as vital within Alpha, and considered one of the core strengths in their provision of design services for complex structures, which involves specialists from many fields. Respondents view this approach as characteristic of the way designers work, and suggest it might be valuably used elsewhere in the organisation, especially for its capacity to mediate between professional domains. However, understanding

the value of this approach, and acquiring the visual skills necessary may be difficult for those involved, preventing its widespread adoption.

Project managers and lead engineers in Alpha generally have a design training, and often play the role of mediator between the multiple disciplines involved, such as engineers and designers on a project team, clients commissioning the work, and specialist contractors from outside the firm. “Solutions come from a multidisciplinary view, and we pride ourselves in saying we can do that” [A-9]. This mediating role is recognised and encouraged in fee-earning projects. It is also suggested it would be valuable in internal work, often referred to in Alpha as ‘corporate’ activities, but it is less evident here.

i. Designers and design tools help to mediate on primary (‘project’) activities

The complexity of large projects requires a special way of working to create a holistic “anatomy” of assemblies and sub-assemblies, addressing such questions as how they will fit together, who will design and provide them, when they will be available and needed. In project work the designer is often a mediator between experts. At an early stage, each project establishes its own communication language and an understanding of how different disciplines play and interact.

“On the whole we have drawings, or sketches or models... There's a clear model of what the team is trying to deliver. It might be [visually] unrealistic – bent perspex or something – but there's a visible, tangible goal.” [A-1]

The use of design to communicate is considered a valuable skill in Alpha; the firm runs a course on this, Communicating Ideas, for staff who are a few years in to their career. Alpha's design staff have developed the use of project sketchbooks as a common reference between different professions. It might include sketches, charts, numbers, pasted photos and text. Also physical models are vital in exploring and communicating ideas, even simple sketch models in Plasticine, photographed and added to the sketchbooks. This approach provides an “interactive team process” [A-12] of problem finding and solving, thought to be very helpful in facilitating communication between team members, clients, suppliers and contractors, who may all have different preferences and affinities for the various forms of representation.

“Because everybody tends to receive information in different modes, some will respond to the pictures, some will read the text, some will read and remember the numbers.” [A-12]

These visual tools for sharing and exploring ideas between professional domains, and the multidisciplinary approach in general, are far less evident in internal activities.

Despite Alpha's emphasis on multidisciplinary team working, to those outside the firm its organisation is presented according to separate disciplines (e.g. acoustics, lighting). Their explicit separation affects perceptions of potential clients, attracting business *within* those divisions. Alpha needs to emphasise its unity as an organisation in order to attract complex, multidisciplinary design challenges. Such work, in turn, improves the way these disciplines work together.

"We communicate the way Alpha is organised based on our disciplines, but that makes sure you get assignments that fit in those practices. But if you're able to communicate that you are one big group of designers that can solve any problem, that changes the questions that come to you and helps you to become integrated." [A-5]

ii. A designerly approach to internal projects is desirable but not widespread

Although recognised and valued in the context of fee-paying design projects, such a multidisciplinary approach is applied less in internal 'corporate' projects and in consulting work. One respondent, A-1, is a senior engineer with many years' experience on project work but has more recently been involved with such internal projects, and expressed that it would be very valuable to apply these skills to organisational challenges. In a multidisciplinary project there is a controlled approach, a design process, for tackling complex problems which is often missing from other activities in the firm.

"When it comes to things that are not the project work, there could be more thought given to how those other parts are tackled from a design perspective. It's almost as if people switch off their engineering brain when it comes to management. It is a different environment, not a design environment... it would benefit from some of those things that are part of good design... recognising there is that synthesis of variables, creativity having an impact, some of that coming into the more organisational issues would be very beneficial." [A-1]

This may be due firstly to a lack of fluency in communication by visual methods, and secondly to a lack of recognition that such a multidisciplinary approach would be advantageous on internal projects.

It is suggested that articulating and exploring ideas through visual means such as sketches and models, not just words or reports, is an essential part of this mediating role. Such an

approach may be natural for designers but not for others, and the required ease and skill in visual communication are much less common among staff outside the design project teams, such as in human resources, management, marketing or sales teams. Visual methods are not generally used for communication then, although the use of some sketches and diagrams, such as flow charts, suggest that it might be happening to a small extent.

In contrast to the visual language fundamental to design projects, a reliance on verbal language may limit the exploration of complex concepts. There is also an emphasis on delivery of solutions, whereas in the design team delivery is seen as a natural consequence of exploring concepts to find a solution. These two factors can force the process along a linear path, rather than permitting iterations and convergent-divergent phases. Such a process is less tolerant of complexity and ambiguity, and often leads to fixing on details at inappropriate stages in the process. This in turn causes wasted effort and unsatisfactory results.

“There isn't that cascade of interaction and language that allows [freedom] enough to discuss concepts. There's a mismatch of trying to work with something fluid whilst having experts, detail deliverers, participate in that discussion... You get a slowness, repetition, bureaucracy, aborted work, because there isn't a project language, and I'd call it a design language actually.” [A-1]

Besides a lack of design skills, a second factor hindering a design approach is that internal projects are not generally recognised as multidisciplinary or cross-functional, despite the involvement of many disciplines with very different priorities, perspectives and skills. For example, development of an IT system to manage staff appraisals is ‘owned’ by human resources, but other stakeholders include the IT developers, the information management team, the staff who will operate the system and those who will be appraised with it. These stakeholders are all important, but such a project is treated as “just a uni-disciplinary effort with various stakeholders” [A-1]. That is, the HR team runs the project in a fundamentally different and, it is implied, less successful way from the multidisciplinary approach of design projects. Individuals from the different disciplines work in a more isolated, less integrated way. As on a paid project such as designing a building, stakeholders “need to be brought into your story, but they don’t do the creative work to get the story right.” Yet this is what happens on internal projects, where stakeholders define their own needs and solutions in isolation.

A multidisciplinary approach may be difficult to adopt, requiring skills and methods not easily acquired or imposed by those in support roles in corporate activities:

“[The design approach] has to be incubated in the professional training of people in other disciplines. If it's HR or information management, it's hard to impose on them 'this is how we're going to run everything,' done in this language that they don't understand.”
[A-1]

iii. Co-ordinating value activities

Design is viewed as running right through the primary activities, from Inbound Logistics, through Operations to Outbound project delivery, Sales and Marketing and Service. Design in these primary activities also joins up with secondary design activity in Technology Development, which is viewed as a background, support activity to be deployed ad hoc, as client projects require (see ‘flywheel’ analogy, page 79). In this sense, design bridges these primary and secondary activities. According to one senior respondent, design in the firm is a marriage of technological skill, business acumen, and creativity and insight, which together form the heart of the firm’s activities. Design creates and optimises their linkages (a linkage is a relationships between value activities whereby one activity influences the cost of another – see 2.3.2.iii, page 23).

“[These are] the three axes of our operations, beyond the support activities... All three are interrelated. [They] all come together to design the business model, the procurement strategy, the output product. Design is actually *the integration of all those activities*.”
[A-6]

Summary

Design serves to mediate and integrate both for Alpha and its clients. Designers and design tools facilitate a multidisciplinary approach, to mediate on complex fee-earning project work for Alpha’s clients. Sales messages focus on communicating this approach, rather than emphasising separate expert disciplines.

A multidisciplinary approach is also desirable but less frequent on internal projects, which might be due to lack of recognition of the benefits, and a lack of necessary skills outside the design teams. Design is the integration of technological skill, business acumen, and creativity; this defines the core of Alpha’s primary activities and shapes linkage between them.

5.2.4 Design shaping and communicating corporate culture

Corporate culture can be thought of as the internal image of a business, as perceived by its staff (see page 28). Much of a firm's culture is formed by the complex and subtle interrelations of the people working in it, rather than by designed artefacts. However, design is used to shape, communicate and reinforce the culture in Alpha, drawing on the disciplines of graphics and communications, digital interaction design, and interiors and architecture.

This section examines the contribution made by design activity to shaping corporate culture; it is not an attempt to comprehensively describe the culture itself. However, it may be relevant to identify several themes which emerge: pride in and passion for design and technical excellence; social responsibility; openness of communication and low hierarchy; freedom to pursue interesting work. Alpha's culture celebrates excellence in design and technology, and encourages personal learning, initiative and creative thinking. Design is therefore also important as *part of* the culture itself; the firm's design activities – projects, methods, innovations, mistakes and lessons – constitute a large part of the subject matter of internal communications.

The culture within Alpha is influenced and reinforced by deliberate use of design. Some of the designed elements are primarily aimed at shaping its *external* corporate image to clients, recruits and the general public, yet they also serve as important signifiers of the firm's own culture to an *internal* audience, the staff in the firm (see page 28). Other elements are designed for internal use only: graphics and communications include policy documents, manuals, directories, posters, newsletters and project casebooks; interactive systems facilitate knowledge management and personal networking, both professional and social; interior design and architecture shape the workplace ambience and amenities.

i. Graphic design and communication design

Printed materials for both internal and external use are produced by designers in the central Corporate Communications team, and also locally in other departments. Care and effort are taken to ensure a high standard of design and production, considered very important for expressing and reinforcing the corporate values of professional excellence and innovation.

“We publish and celebrate our work in printed form ... showing off, actually... There may be an element [of arrogance] to it, I suspect the majority is actually a genuine celebration of the passion for design.” [A-11]

Design is used to communicate interesting projects, especially those which might have won awards or competitions, or which demonstrate an innovation or a challenge overcome. They are publicised and celebrated throughout the organisation in high-quality printed brochures, on the intranet and also possibly in physical form, as models:

“We are trying to provide models of our design highlights to each of our offices, replacing them every 3 months. I believe it will foster and facilitate the role of design excellence within the firm.” [A-4]

Cultural influence also comes from internal awareness campaigns, disseminated in the form of printed posters and flyers, often designed by Corporate Communications. An example is the ‘Getting it Wrong’ series, produced by one of the skills networks, which aims to encourage the sharing of lessons learned through mistakes. A series of cartoon-like illustrations describe mistakes made on real projects.

“This is a lovely initiative because it’s always easy to talk about things that you’ve got right. It’s more difficult to talk about stuff where you get it wrong, and when you’re doing it in a cartoon it’s somehow easier to communicate, and people can engage with it.” [A-9]

Each lesson is described in general, anonymous terms. This and the light-hearted visual style are thought to reduce the stigma of error and to reinforce the core cultural values of learning from mistakes and of sharing experience. These cartoons appear in printed form on notice boards, in coffee areas and other prominent places, and also on the skills network intranet site.

ii. Interactive systems

Although established for over fifty years, the firm has grown very rapidly recently, doubling its staff numbers in less than five years. The size of the organisation and the presence of so many newer personnel mean that informal social conversations are no longer sufficient for the transmission of company stories, histories or mythology, which are important contributors to corporate culture and loyalty.

“Suddenly there are [relatively] fewer and fewer people maintaining the culture and the history, the stories you tell in the lift. They have limited loyalty to an organisation. I think it is hard in such a fast growing firm to maintain some of the cultural issues.” [A-6]

As a deliberate measure to counter this, the casual social network is now supplemented with a more structured framework. The intranet permits and encourages the sharing of experiences among peers wherever they are located.

“My role is to sustain and encourage the design culture... A component of that is around wise investment in our skills networks, the prime vehicle for developing and sharing skills and knowledge.” [A-3]

Over 50 skills networks have been set up to connect communities of interest groups, by technical skills (e.g. structural engineering) or market focus (e.g. healthcare). This facilitates professional connections which may become social too, and reinforces the corporate values of shared learning, collaboration and openness.

It is widely regarded as a successful application of design, although there are some concerns over how design expertise is not being applied to some of the internal systems (see page 78).

iii. Architecture and interiors

Alpha cultivates a reputation for design excellence in structures, including buildings, and recognises the influence on this reputation by the firm's own buildings. Hence, workplace design is regarded in Alpha as an important external expression of corporate culture (i.e. their corporate image). Some office buildings are regarded as ‘flagship’ sites which successfully express a culture of design excellence externally to clients and the public, but also to employees themselves. An example in London has a glass-walled reception and meeting area on the ground floor on a busy street. The space, easily visible to passers by, contains a café and a display space for models, sculpture and other artworks.

The design of the workplace beyond the publicly visible is also regarded as an important internal expression of, and influence on, corporate culture. A pleasant working environment is seen as a positive influence on corporate culture and on productivity, and this is increasingly recognised by Facilities Management. Newer buildings are comfortable, naturally lit, conducive to social interactions, and well appointed with amenities such as showers and refreshments. Lighting specialists have created a system which changes during the working day according to circadian rhythms, to be installed in their workplace and possibly sold externally.

“It's a considerable investment, but will be appreciated by staff which is really important, and will ultimately improve their performance.” [A-4]

However, some respondents say Alpha's design capabilities are not used to their full potential within the firm. They note that most employees work in the older buildings and overseas offices, which are less pleasant.

"How much are we doing? Not enough. We are busy with our clients and we forget about ourselves. The head office shows we have made an effort there, but it is not represented around the world." [A-4]

This is echoed more specifically by an ergonomist from Alpha's Human Factors team. The team provides specialist design guidance on workplace safety, efficiency and comfort, but this is almost entirely applied on fee-earning projects, not internally to Alpha's own workplaces, "which is again that common 'physician heal thyself' thing" [A-10].

Summary

Cultural values, histories and knowledge are communicated and reinforced, both publicly and internally, through graphics and communications, digital interaction design, and interiors and architecture.

Alpha's design capabilities are not applied internally to their full potential, and although newer workplaces are well designed, only a small minority of staff work in them. Nonetheless, Alpha is found to have a strong and distinctive corporate culture.

5.2.5 Design supporting activities in the value chain

As discussed in the previous section, the use of design within the firm can have an influence on corporate culture, through communications, interactions, and places and spaces. As well as this cultural influence, design contributes more directly to primary and secondary value activities in the organisation.

i. Design in primary value activities

Design is one of Alpha's core capabilities and is a fundamental part of its primary activities – planning, designing and building structures. Several respondents present the view that there is a higher level of 'design awareness' throughout the firm than in others where they have worked, or in other comparable organisations. As already noted, this is regarded as an important part of Alpha culture, both in terms of the firm's performance and also as a source of pride and reward among the staff.

Inbound–Operations–Outbound

As noted previously, design influence is thought to run right through Alpha's primary activities, optimising linkages between them, and also linking with Technology Development. Designers' mediating role also aids communication across professional disciplines (see page 67). In its primary role though, design is a fundamental part of Alpha's operations and cannot be considered a *supporting* role.

Design also acts within Technology Development, which is seen as a support resource available for deployment when the primary activities require it.

Sales & Marketing

The external corporate image of the firm is an important consideration for those who generate new business in the firm. This is shaped deliberately by various design activities, many of which overlap with the internal corporate culture as already discussed (5.2.4, page 72). Those elements which are externally visible contribute to the public corporate image, including Alpha's buildings and those it builds for its clients, which serve as a powerful means of differentiating the firm from its competition (5.2.1 iii, page 65).

"There's an element of marketing to [having an impressive office]." [A-11]

More directly, the Sales and Marketing teams commission design work of their own, in the form of web sites, advertising and other publicity materials, such as promotional brochures and magazines. Some is bought in from design agencies, which are also used in creating visual identities for sub-divisions in the firm. Much though is created in-house, by the designers in the Corporate Communications team. They also work with other designers on project tender teams, producing models, sketches and renderings to support bids for new business. Generally, Alpha works on multi-million pound projects, so bid documentation and presentations are designed to a high standard.

As discussed in the next section (5.2.6.iv, page 84), the Information Management team are not as supportive of the bid process as they would like to be. If the IM systems are extended, as hoped, it is possible there will be more design involvement here.

There were few explicit references by the respondents interviewed to the design quality of the firm's marketing materials. Because members of the Marketing team were not consulted in the study, a comprehensive analysis is not attempted here. However, in the opinion of the author, himself a professional designer, the design output is of a high standard, and reflective of the pride in design excellence that is felt within the firm.

Service

As part of any building project, Alpha will have specific, detailed contractual obligations for support once the building is complete by attending to maintenance, both foreseen and unforeseen. By extending its involvement further down (and up) the life-span of the structure, Alpha hopes to strengthen its position as a partner to its clients.

“Rather than simply be involved in a set of services, and once it's finished walk away... we're trying to get involved upstream and downstream so we are closer to [the client] in the board room, maybe thinking about his property portfolio rather than a particular project.” [A-3]

Hence the service role in Alpha is performed by the same (or similar) teams as the core operations; here design is a core activity, but there is no evident *support* role for design.

In manufacturing firms, after-sales service provides valuable feedback for product improvement. Such iterative improvements cannot happen on one-off projects, as Alpha's usually are, but feedback can inform the firm's knowledge base for future projects. Systems for knowledge management, and design knowledge from project experience are discussed further in sections 5.2.6 and 5.2.7 respectively.

ii. Design in secondary activities

Design is also used as a support resource in secondary activities, though to a lesser degree than in the 'line groups' whose primary activities serve external projects.

“In corporate services... I work with people who haven't perhaps had that [design] experience in line groups. There's not quite that appreciation of design that other bits of the firm strive for and achieve.” [A-11]

As also discussed in section 5.2.3, the value of design is thought to be less recognised in the secondary activities, and there is little evidence seen of a 'design approach'.

“The design process... is a very valuable background that is missing in some of the more corporate functions: HR, Management, in-house technology development (if it's not part of project delivery), Marketing, Sales, all these things.” [A-1]

While some areas may have design applied effectively these efforts may be isolated in pockets, not well integrated, despite effort and intention to do so.

“Design is applied, and we try to join it up... They may not be very well joined up; sort of micro views of design going on.” [A-1]

Several areas were mentioned specifically by respondents, as outlined below.

Infrastructure

Infrastructure includes the physical and virtual amenities that enable the other value activities of the firm. The planning and management of these elements constitute the value activities in infrastructure. These include finance and legal support, as well as provision of workplace facilities such as equipment, IT systems and buildings.

Facilities Management

Use of design in Facilities Management has been discussed previously (5.2.4.iii, page 74) regarding the influence of architecture and interiors on corporate culture, but the observations may be extended to its general influence on productivity, i.e. that design is increasingly used to shape and improve the workplace.

Knowledge management

Knowledge management might be considered an infrastructure activity. In Alpha there is a strong awareness of design's importance here, both in shaping effective systems to manage knowledge, and also as an important type of knowledge. These two roles are discussed separately below (see sections 5.2.6 and 5.2.7).

IT systems

Some participants, whose own expertise lies in the design of interactive systems, have expressed frustration at the process for commissioning web-based systems, which they feel is not conducive to effective design. There is an approved procedure throughout the firm for commissioning IT systems produced both internally and externally: a 'client body' procurement committee draws up the requirements of the new system, which are then implemented by developers. Some respondents find the system flawed, and blame it for the poor design of internal, web-based systems.

"I think we're superb at [design] externally, I think that we're superbly *bad* at it internally... We seem to trip over quite a lot in this committee procurement process internally, and we quite often design the camel⁹ then have to retro fit it into what we wanted. Externally we just seem to be smarter." [A-11]

9. This refers to the maxim that 'the camel is a horse designed by committee' (origin uncertain).

The committee is made up of users of the current system, but not specialist interaction designers. Without any designers' input the specifications are made with little understanding of what is possible or desirable, and with poor leadership. The results are mediocre in comparison with web-based projects in small, agile firms, largely because they are being treated as traditional IT projects. The resulting system might take a year or so to complete, and lag behind the current best practice.

“[It's] a classic example of design gone wrong. [The result has] been designed by a client body who knows nothing about web design or anything about what can and can't be done, or anything about any emerging trends... so you've got these people that are not qualified to design something, designing it by committee, which to me is just absolutely painful... This bureaucratic approach means that they tend to be lowest common denominator, rather than best in class.” [A-7]

There is no clear advocate of end users to ensure usability or design quality of internal systems. One respondent suggests that, informally such a role is “probably me, where I am invited to interfere... it would be by luck or invitation that I would be aware of [the need]” [A-11]. An ergonomist from the Human Factors team [A-10] suggests that his team could contribute to improving the internal systems, but they are a small, busy team. They do little internal work for Alpha, and their existence is not well known in the firm.

“I didn't know we had a Human Factors team!” [A-11]

These expressions of frustration contrast with those of other respondents, who have described many of the internal IT and intranet systems as successful and well-designed (see discussions on interactive systems in corporate culture, page 73, and knowledge management, page 81).

Technology Development

In Alpha, technology development is identified as including both the development and sharing of skills, and of the research activities that generate new knowledge. Since the appointment of a Research Director around 2003, the research agenda has become wider and more important to the firm, and design is viewed as a key part of the process.

In some firms this technology development activity might best be described as the process by which they revise their product, and as such it might be regarded as an iterative loop, with phases of updates. In Alpha, knowledge and skills (particularly design and engineering knowledge and skills) play the equivalent role, but are described as a continuous activ-

ity. It runs in the background and is a resource available for deployment when the client engagement requires it “like a flywheel that spins all the time.” [A-6]. The ‘flywheel’ is kept spinning by the input from research activities, strategy road maps and design activities.

The firm aims to develop new knowledge and skills, not only to assist with particular client-funded projects, but speculating in a more proactive, preemptive way, into areas which may be important in the future rather than rooted in present-day issues.

“It's primarily about thinking further forward than we have done. If research is always a response to a project issue then it's always a response to today's problems.” [A-3]

This is quite a new approach for the firm, and so far has been tentative. It is expected to become less so as the firm becomes accustomed to it, and “braver” in its style. It is suggested that this caution might be attributed to designers’ being “rooted in a degree of pragmatism”. [A-3], contrary perhaps to the stereotype .

“It's always going to be tied back to reality. I think we will always find it difficult to really commit to something where we won't understand the outcome and how we would apply it.” [A-3]

Still, design is regarded as essential in this research activity, for taking the inventive step that leads from data to knowledge.

“Everyone can gather the same data set. It's what you make of it, isn't it? That's where intelligence and creativity come in.” [A-3]

Some of this knowledge will become protected intellectual property. It is in this inventive step that the organisation can gain strategic advantage.

Human Resources Management

Several respondents express concern with the Human Resources (HR) department, whose activities affect most if not all of the firm's staff. There is frustration that their efforts seem to lack consideration for the experience of those staff at the receiving end. One respondent notes, with some irony, that HR staff are supposed to be empathetic and people-focused:

“God, wouldn't it be fantastic to have some designers in Human Resources! These are the people who are creating the interfaces to people. Imagine if that was designed!” [A-7]

Yet this lack of user empathy suggests the ‘design culture’ felt in the rest of the firm does not seem to exist in HR; to one respondent the department doesn't feel like part of Alpha at all, but more like an outsourced service. Another refers particularly to the interactive

systems they implement, expressing frustration and even anger. These systems include a time-sheet system for managing allocation of personnel and tracking the time they spend on each project. It is recognised that the ‘information gatherers’ have their priorities, but the users’ perspective is very different and their own convenience and reward are often neglected:

“Those things have just got to be made convenient. They’ve got to be made rewarding in some way to the people with a completely different mindset, priority, attitude and allocation of time and working style from the people whose job it is to gather the information.”

[A-12]

Others, involved with designing a similar system for HR, found that their attempts at user advocacy were frustrated by concerns over employees’ legal rights to privacy. In the respondent’s view, HR were quite resistant to user-focused design input, obstructing measures that would benefit the users; they were more concerned with suiting their own needs than those of the staff who would use the system. Problems here may also be compounded by the client body committee already mentioned (see page 78).

Summary

Design plays a fundamental role in Operations and across all primary activities, driving and co-ordinating the process, and mediating between value activities.

Design contributes significantly in Technology Development, where design’s importance is recognised, but contributes less successfully in HR and Infrastructure.

Client body committees are thought to inadequately exploit design expertise in procuring new systems. Human Resources seems excluded from the firm’s design culture, and deploys systems that lack appeal and usability.

5.2.6 Design in processes and systems of knowledge management

We have already seen that design activity is thought to play a key role in mediating between professions, (5.2.3, page 67). Sharing knowledge actively across the organisation is closely related to this concept. The capturing and sharing of knowledge may be important in many firms, but in Alpha it is considered key to the successful design of large-scale projects, and of the highest strategic importance. This was expressed by several respondents, and is explicitly stated in internal documents. The firm’s knowledge management

capabilities are referred to when bidding for work, and are seen as a major differentiator from the competition.

“As a firm we can offer a client that additional value because we’re tapped in to the knowledge of all the people that we have here and because... knowledge is not perceived as something that you need to hold on to. It’s seen as something that you pass on [to the client].” [A-11]

Dedicated to providing knowledge management support is the Information Management group, comprising several specialist teams to manage libraries of project records and archives, photographs, books and materials. There are also several intranet systems, to store and share technical knowledge and practical project experiences (Alpha Projects), as well as to enable staff to find experts in relevant fields around the firm, connecting through networks based on technical skills (e.g. structural engineering) or market focus (e.g. healthcare). Every employee has a profile page on the directory system, Alpha People. These systems are collectively regarded as a core resource of the firm:

“When new staff come here from other companies they look at this and think it's absolutely brilliant. They think 'Jesus! We had nothing like this where we came from!'... This is what makes the place tick really.” [A-3]

i. Rapid growth and global scale make knowledge management critical

As the firm grows at a fast rate, formal provision for managing knowledge and connecting experts becomes more critical. Although personal networks are still important, the system’s development has been driven by a recognition that the firm is too large to operate effectively without one.

“Our big challenges are keeping everyone informed, sharing knowledge and continuing building the culture. We’re in a big change. The growth is incredible. It’s also one of the core values of Alpha. It’s super-important. Remember, half the 10 000 employees have been here less than 3 years.” [A-4]

“With 10,000 people worldwide in 60 offices, it’s very easy to just keep things to yourself... The mechanisms for sharing used to be who you knew, so it was all personal networks which are still very strong.” [A-7]

The importance of knowledge management to corporate culture is also discussed in 5.2.4 (page 72).

ii. Information Management Group prefers to be human-centred, not technology-centred

The Information Management (IM) group used to work together with the IT systems team in one of the firm's main offices. They were physically located together and known as the Knowledge and IT Group, or KITG. One team member of the IM group relates that their human-centred approach did not sit comfortably with the technological focus of the IT team.

“We sit on the side of, not how do we make it work, but how do we make it work for people who have to use it. We felt very uncomfortable being in there. Although we worked very closely with them, we believed that we should sit much closer to the business.” [A-9]

They prefer their location now, among the project teams.

“Just coming at it from that different angle makes it a completely different perspective. So we felt it was very important for us to sit here.” [A-9]

Working among designers and engineers who are the users of the expertise they provide, they feel their role and identity are now more accurately reflected.

iii. Knowledge Management integrates multiple design disciplines

Alpha's approach to knowledge management is regarded internally as a good example of design applied to produce a system integrated fully into the business, involving physical spaces and objects, printed matter, and interactive digital systems and interfaces.

“We have a very deliberate system to make design expertise available through the firm, and actually the system itself was also designed... I think we're doing really well there. It's about as good as it gets. It's easy to find people and to find knowledge.” [A-4]

It therefore effectively combines and exploits many design disciplines, such as graphic, interior, architecture and interaction design. Support material encouraging use of the system includes a colour printed booklet, the Knowledge Book, which is given to all new staff. The handbook is mentioned with some pride by several respondents, who see it as a successful example of well designed corporate communication, and an integral part of the whole knowledge management system.

“The Knowledge Book talks about the network, the processes, the tools available to people when they join the firm. It's quite a good little handbook of how it's all structured.” [A-6]

The booklet is produced by the IM team with the input from the graphic designers in the Corporate Communications team. Some in the IM team feel the house style used by the Corporate Communications team is a little too restrictive, and prefer the materials they design themselves before it is produced by Corporate Communications.

The intranet system itself has evolved from a variety of disparate, visually and structurally inconsistent sites grown locally out of groups of subject experts (such as Acoustics, Bridges or Materials), and from a Skills Directory of personal profile web pages. There has been an effort to consolidate and integrate these systems, drawing on recent major advances in data management practice and in social networking tools such as Facebook.

“We did have an intranet that was real hodge-podge of everybody doing their own thing... but there has been a lot of effort made... to get them to look the same. It’s more than just obviously the way it looks. It’s about enabling people to find the right information when they need it.” [A-9]

A growing need to share knowledge between functional groups has increased the importance of a consistent experience for users from all parts of the organisation:

“More and more we’re needing to link people between different disciplines and across different skills... Thankfully now with our more cohesive view, the idea is that you will be able to go to a network site and find what you are looking for.” [A-9]

It is acknowledged that the system is by no means perfect, and work continues to improve the search function and the organisation of the site to ensure knowledge and information can be found easily and quickly. This is primarily in the remit of the IT team. As noted above, there are some concerns over the procurement committee process for intranet projects (see page 78) and the lack of design input there. Intranet projects for knowledge management “seem to be IT-led rather than information design-led” [A-11]. Perhaps this is a legacy of IM’s closer connection with IT in the past. There is some hope though that the process will improve under new guidance from the Global IT Executive, the body overseeing all IT strategy and procurement in the firm.

iv. IM group focuses on project-based knowledge

Although the provision of knowledge management support is considered among staff to be well designed and implemented, it is not applied throughout the firm’s activities. Similar to the mediation role of design (5.2.3, page 67), it is primarily focused on supporting project-based work, not on knowledge for secondary support activities. It is acknowledged

that it might be a shortcoming, and that the knowledge management system and the expertise behind it might be extended to support other activities in the firm, such as marketing and bid preparation.

“One of the things on our agenda for this year is to improve the knowledge sharing that happens around bidding and around getting work because I think there is an opportunity to improve that.” [A-9]

Questioned about supporting other parts of the business, the respondent was thoughtful and seemed intrigued by the idea.

“Hmm, that’s a good point. ... You’ve made me wonder now!” [A-9]

But the answer was “no”, they do not. Perhaps this will be possible in future, but their main focus will always be to support knowledge sharing and interpersonal networking among the primary activities – those working on fee-earning projects.

Summary

Knowledge Management is critical to Alpha’s performance and sustainable advantage. Design is used by the Information Management group to provide a core resource to the primary activities in the firm, combining interactive systems, physical places, graphic and communications design. Although most are to a high standard of design, some intranet applications are considered problematic, due to the commissioning process. Knowledge management for secondary activities (e.g. Legal, HR) is not supported.

5.2.7 Design as a tacit knowledge resource: path dependent and hard to imitate

A firm’s collective design capability may itself be a resource which is tacit, path-dependent and hard to imitate (2.3.2, page 26). As discussed in the previous section, the collective knowledge of the firm in Alpha is considered of utmost strategic importance, and there are sophisticated systems in place to capture, store and share it. However, they recognise that much of their core design capability, on which their competitive position depends, is founded on *tacit* knowledge. This has the positive benefit of being difficult for competitors to imitate; being path dependent, it can only be developed over a long period. On the other hand, tacit design knowledge is difficult to manage as a resource. Personal interactions are therefore seen as an important complement to the formal knowledge management systems discussed above.

“In the realm of the more hard-to-capture stuff... definitely in terms of our knowledge strategy we try to encourage connection between people... because how else are you going to derive that more tacit knowledge than through a person? Because some things can’t necessarily be codified or written down or easily communicated in a paper form, or even electronically.” [A-9]

The design and engineering activities in the firm use digital technologies extensively which, when combined with other systems of knowledge management, enable collaborations between individuals in different offices and countries. Within and across projects “there are conversations running between like-minded practitioners around the world.” [A-3]. It is suggested though that this comes at a cost, trading off the benefits of face-to-face interactions which would have been necessary in the pre-internet world:

“When design was more paper based and people were just standing around a drawing in an office discussing something there was lots of collaboration, which making everything electronic has in a sense eliminated, but we have to find other ways to make that happen because it’s still necessary.” [A-9]

These other ways include fostering the culture of design in the firm, which encourages the sharing of knowledge by example or demonstration (stories, models) and by participation. This culture is discussed more in the next section. Still, one of the main challenges for the firm appears to be the management of ideas and knowledge which depend so heavily on direct human contact, through showing and doing.

Summary

The tacit, path-dependent nature of design knowledge is recognised, and is critical to the firm. It is difficult for competitors to imitate yet difficult to manage as a resource. To help sharing of tacit knowledge, Alpha’s design culture encourages personal interactions, and learning by example, demonstration and participation.

5.3 Design informing strategy formulation

According to the three phenomena determined through the literature survey and the subsequent interpretation in chapter 2 (summary, page 34), design can inform strategy by:

- stimulating creativity and providing fresh perspectives;
- exploring uncertainty and assessing trade-off through prototyping and visualisation;

- achieving a holistic view of complex systems and a shared strategic vision.

This section considers Alpha's use of design and design methods in the formulation of strategy, both its own and its clients', and whether there is evidence that it contributes in these three ways.

As the firm has grown, Alpha's capabilities in strategy and management for the built environment have developed into a saleable capability. Although still mostly active in designing and building large structures, its consulting activity is increasing in scale and value to the firm. Now consulting in design, management and strategy amount to around a third of its revenue.

"We were mostly active in [design and execution] but there is a strong move into consultancy, which naturally takes you upstream, and hopefully brings in everything else behind it." [A-3]

But consultancy alone is not the desired revenue model, as it is low-volume and unpredictable.

"You get the big fees for the strategy work, but not a big volume. If you want to make a lot of money, do a lot of detailing. It's less risky, predictable, it's easier to plan, easy to make it efficient, it replicates... The fees might be higher in concept or strategy, but the volume is too small. We are interested in both." [A-4]

An important contribution to Alpha's strategic decisions comes from its Foresight team, dedicated to understanding possible futures and to bringing these scenarios into the firm's research and strategy consulting activities, as well as to design projects. This foresight activity includes not only analysis and research, drawing on social and physical sciences, but also art and design. Their use of design methods to share and explore ideas is an important differentiator for Alpha from other management and strategy consultants. The foresight stage is considered a valuable precursor to strategy formulation, exploring possible future scenarios in which any strategic plan will exist.

5.3.1 Stimulating creativity and providing fresh perspectives

Alpha's designers and design methods are used by their clients to provide new ideas about what design can do for their business, and to explore new possibilities by challenging the *status quo*.

Many business leaders among Alpha's clients are genuinely interested in understanding what design can contribute to their organisation. Once they are trusted by their clients, senior designers in Alpha might be asked to share their perspective on broad, often ill-defined strategic questions.

"They often don't know what design can do for them... We build a relationship of trust, become a trusted advisor¹⁰. They phone me and say 'why don't you come over for a chat?' I say 'about what?', they say 'we don't know, we just want to reflect a bit'." [A-4]

Sometimes the designers relate their knowledge of new technical possibilities to a firm's objectives, challenging their preconceived ideas of what is possible or not.

"[We are] helping identify opportunity from a different perspective. Because one of the things that limits you... is an assumption that [something] is impossible. And sometimes an engineering or design view might be... 'that's no longer impossible, so do you want to consider that again because it would transform your industry?'" [A-12]

"Yes, perspective shifting [happens] through challenging the brief and improving a process." [A-11]

The willingness of Alpha staff to challenge preconceptions is thought to be a significant company trait, and part of their 'design culture' (see also 5.2.1.ii, page 64).

Summary

Alpha's Foresight team uses design methods to bring creativity to the firm's strategy-making. Designers from Alpha are invited by clients to offer ideas and challenging views on strategic-level questions.

5.3.2 Exploring uncertainty and assessing trade-off through prototyping and visualisation

The use of sketches and drawings, models and prototypes is a key aspect of design practice and related disciplines [see e.g. Schön, 1983]. It is regarded in Alpha as a vital skill on project work, and also in strategy consulting. These methods help clients explore possible future scenarios, often specific to their industry sector, e.g. healthcare or the hotel industry.

10. This reference to 'the trusted advisor' may allude to the book of the same name, on the consultant-client relationship [Maister *et al.*, 2000].

“We’ve got people... talking with clients and client associations at quite a high level about where is their industry going, where is their business going, what opportunities are there, which is bringing this [role of] helping visualise things strategically.” [A-12]

A member of the Foresight team recounts how, during strategy workshops, client participants explore ideas by making physical models, which are then used to communicate concepts to their own design teams:

“[There were] physical deliverables, it wasn’t just bullet-point lists of recommendations... Only we could do that compared to other consultants. So that was a differentiator: we are designers.” [A-7]

The Foresight team used to be thought of in the firm as dealing only in “blue sky thinking” [A-7], with little grounding in the realities of business. Just using the word ‘strategic’ would have been met with scepticism a few years ago, when the team had yet to establish credibility in that realm. It seems perceptions have changed, both within and outside the firm, and there is increasing recognition that understanding possible scenarios is highly valuable for strategy makers.

“What did we know about strategy and business? They are the business leaders, what would we know about their business? People [in Alpha] now are coming to us saying, ‘can you help us with some strategic thinking [for a client project]?’” [A-7]

It is suggested this change reflects a growing awareness of ‘design thinking’ and its application to the complex problems of strategy (2.2.5, page 16), due partly to media interest (e.g. Business Week, BBC) and campaigning from bodies such as the (UK) Design Council.

Summary

Clients make and share physical models to explore possible future scenarios. Visual methods are increasingly valued in understanding scenarios and hence in strategy formulation, both for Alpha and its clients.

5.3.3 Achieving a holistic view of complex systems and a shared strategic vision

Respondents suggest that a holistic view is necessary for complex strategic visions to survive the translation process into concepts which can be then executed, and that design plays an important role here.

“We are interested in both [strategy and delivery]. We have to understand that step from scenario thinking to strategy, then deliver a concept based on those strategies. That's how we are trying to work, and we are doing it better and better.” [A-4]

In strategic consulting services for its clients it is here, in translating strategic visions into concepts, that Alpha's strength is said to lie. It is key in differentiating them from other management consultants, and also other engineering firms. In Alpha, conceptual thinking is said to flourish at operational level, that is, on the design projects themselves, and also at the senior and Board level. Again, the Foresight team provide a visible example:

“[Our Foresight workshop] has really helped just to get people thinking about some of the bigger issues, and think about how you can innovate around that... it gives people more of a handle to tackle them” [A-7]

However, there is a danger that high-level concepts passed down for implementation outside of the project groups can be stifled; they are ‘locked down’ too early by a pragmatic focus on detail and delivery.

“You can have a Board-level visionary concept, that's fine, and it's owned by Board directors, but as soon as it hits the delivery teams there's a mismatch of trying to work with something fluid whilst having experts, i.e. detail deliverers, participate in that discussion.” [A-1]

It is suggested that such visionary concepts would have a better chance of successful implementation if design methods were practised more than they are presently in support (not client-facing) activities.

Design methods play an important role in certain strategy consulting activities, then, but also in Alpha's own strategy thinking. The Foresight team was originally set up as an internal research resource, to inform design projects and Alpha's own strategic decisions, and it still plays an important part here. Several respondents emphasised that design and design methods are integral to the holistic ethos in the philosophy of the firm's founder, which is still strongly present in the company culture. Inevitably, it is argued, it will play a role in strategy making, although it might not be well understood or explicitly recognised.

“Can design techniques be used by a business to develop strategy? That to me is a complete no-brainer.” [A-7]

Summary

Foresight designers help represent and communicate complex systems to aid strategy making. Senior designers in Alpha help translate a strategic plan into a shared vision, a concept which can be executed, both in Alpha and for clients.

5.4 Key contributors to strategic design

Sections 5.2 and 5.3 have sought to identify the ways in which design may contribute to strategy implementation and formulation in Alpha. This section refers in summary to these findings, to relate them to the three contributing factors for successful, optimal design integration identified in phase 1 (chapter 3, page 36):

- Is design applied to different areas of the business with consistency and completeness?
- Is design applied with different stakeholders of the business in mind?
- Is design permitted to contribute at a high level in the organisational hierarchy?

5.4.1 Design applied to different areas of the business with consistency and completeness

As noted in chapter 3 (page 36), design consistency here means that output from all design disciplines recognisably reflects the overall values of the firm. Completeness means that design is used in all areas of company activity.

i. Design consistency in conveying corporate values

Design of the product

Producers of consumer goods attend to the signals of value that contribute to their brand image and reputation, embodied in the design of their product. Similarly, Alpha's products – the structures it helps to build – carry signals of value to their market. The design of these structures is a primary manifestation of the firm's corporate values of excellence and innovation in design and technology (5.2.1.iii, page 65).

Sales and Marketing

Supporting this primary output are secondary signals of value which reinforce these. These are found to be generally consistent in quality, style and tone with one another, and with Alpha's brand image. These include the various materials produced by Sales and

Marketing staff. The materials designed for Marketing and Sales include web sites, advertising, promotional brochures and magazines, and supporting documents and presentations for project bids. The design of these is regarded as successful and of a high standard (5.2.5 i, page 76).

Client experience

Clients are likely to visit Alpha's offices for sales meetings and presentations, and then during the length of the project. The buildings and interiors are important influences on Alpha's image, and include architectural, interior, graphic and communication design. While some 'flagship' offices reflect the desired values of the firm, many are less attractive. (5.2.4 iii, page 74)

Once engaged on a project, they will also experience the internal systems and documents for project management and information management. The design of these systems, as noted, is generally well-regarded, excepting certain intranet applications (5.2.1, page 78).

Sponsorship and Public Relations

The firm also provides sponsorship for study scholarships and for events, such as exhibitions and conferences on science, art, architecture and design. These all serve to reinforce Alpha's external image; those that involve designed elements do so to a high standard, including design of interiors and displays, printed matter and web sites (5.2.2, page 76).

ii. Completeness of design supporting and integrating within the business

Integrating multiple design disciplines

According to the views and observations collated, Alpha is judged to use multiple design disciplines in a co-ordinated way, bringing architecture, interiors, and graphic and communications design together to form cohesive wholes for their clients, and internally for their own staff. However, notable exceptions are the application of user-centred design expertise to interactive systems and to workplaces.

Usability of interactive systems

Some interactive systems for internal use are considered problematic, but are likely to improve when they move from proprietary platforms to being web-based. This will allow them to come closer to users' expectations, which are much higher, based on their experiences of sophisticated external web applications such as Facebook. Increased involvement

of interaction designers in the procurement process is also hoped to improve new commissions (5.2.5 ii, page 77).

Usability of workplace interiors and systems

In external project work, the user-centred design expertise of the Human Factors is engaged ‘too little too late.’ The team is too small to be involved with every project, and many people in Alpha are unaware the team exists, according to a senior member.

Some engineers focus too readily on complying with established standards, rather than accounting for user needs.

“There’s a view that if you design things to standards [they] incorporate the user necessity... There’s an assumption by engineers... You tick the box and you say that’s compliant, therefore it will work.” [A-10]

Consequently they are involved late in the process, as a formality “so we don’t get sued”, but their contribution is most significant and cost-effective when made early. They also carry out post-occupancy evaluations, to refine a design once it is in use. These can be informative and valuable but, again, are not done for many projects.

Design supporting and integrating all business activities

Design is a key primary activity in Alpha but also is a resource used to support secondary activities. More broadly, design defines the core of Alpha’s primary activities and shapes linkage between them.

It is recognised that design contribution to IT infrastructure could be improved, particularly in replacing legacy systems, such as are deployed by Human Resources. HR seems to be excluded (or to exclude itself) from the firm’s design culture, and to be less willing or able to engage design support. Client body committees are thought to inadequately exploit design expertise in procuring new systems. (5.2.5, page 75)

Designers and design tools facilitate a multidisciplinary approach, to mediate on complex fee-earning project work. A multidisciplinary approach is also desirable but less frequent on internal projects, which might be due to lack of recognition of the benefits, and a lack of necessary skills outside the design teams (5.2.3, page 67).

General culture of design through the firm

Respondents have indicated that Alpha culture celebrates excellence in design and technology, and encourages personal learning, initiative and creative thinking. The primary

activities of the firm are design and engineering, and these cultural values have shaped the firm since its founding. This design culture is thought to permeate most of the firm; the Human Resources team is a notable exception, and there may be others that were not mentioned by the respondents.

The culture of design is also thought to be related somehow to management's attitude to control and freedom, which is considered more relaxed in Alpha than in most firms. To one senior director the connection is strong but hard to articulate, and is an area he seeks to understand more.

“What are the softer things beyond the processes that may be more design things? The culture of the organisation, the nature at which we control, or manage, or herd cats, or allow general anarchy within... We are not a shareholder driven firm, we can choose what work we want to do, so there's this softer issue of people doing what they enjoy.” [A-6]

He suggests a causal connection: a culture that celebrates and nurtures creativity is perhaps only possible due to this “softer issue” of freedom from control by shareholders and higher management. The culture in the firm is cited as a source of competitive advantage, in that clients enjoy working within Alpha (5.2.1 iii, page 65).

Summary

Corporate values are represented publicly in Alpha's projects, their marketing communications and in PR.

Multiple design disciplines are co-ordinated cohesively in their client work and internally, though user-centred design expertise may be lacking in interactive systems and workplace design.

Co-ordination and integration of business activities benefit greatly from the multi-disciplinary design culture which encourages initiative and learning. This culture permeates most of the firm (less so in HR).

5.4.2 Design applied with different stakeholders in mind

Although detailed analysis of the firm's design process was not attempted, interviews and observations provide some insight into how stakeholders influence design in Alpha, and how their priorities may conflict.

Alpha designs and builds large structures as its primary activity, and the main stakeholders in such projects are suppliers, the buyer or client, the construction firm(s) and the end users. There are many other groups to consider though, and Alpha's own published cases

describe consultations with such stakeholders as local community and special interest groups, planning and other government authorities, and corporate consortia. Most of these were not specifically mentioned by interview participants, so are neither supported or contradicted, but end users and project managers were both discussed.

i. End users

It is sometimes difficult for designers in Alpha to give due attention to the needs of end users, as clients may have their own conflicting priorities. Designers sometimes have to “go through the buyer” and “think beyond” the client’s explicit instructions (5.2.1 ii, page 64). Yet, even when this is difficult there is “a natural tendency in the firm” [A-7] to relate designs to observations and knowledge of how people interact with their environment.

The Human Factors team has a user advocacy role, and can be involved both before and after the build. As noted above, their skills are not applied on every project, and when they are it is often too late in the process to be effective.

ii. Project managers’ priorities may conflict with designers’

On large building projects it is common for the paying clients, such as developers, to engage a third party firm to manage the build process. Commonly such contract project managers are rewarded for keeping costs down and meeting deadlines. Some aspects of the building design may be seen as expendable, even those that have been approved by the client. One respondent expressed great frustration at how design decisions may be overruled by the contractor, and the original ‘design vision’ lost.

Summary

Designing for end users may be difficult when client priorities differ, and Human Factors involvement may be too little too late.

Contract project managers outside Alpha may override design decisions to save time and money.

5.4.3 Design contributing at a high level

i. Design in the client’s boardroom

Interviews in phase 1 suggested that an important factor in successful, strategic use of design is that design services are allowed to contribute at a high level in the firm, where strategic decisions are made.

Alpha's core activities are in detailed design work for production, though there is involvement with the client at Board level. Alpha contributes by providing new ideas about design's role and capabilities in their business, asking challenging questions about their strategic direction, and helping to visualise strategic plans and translate them to executable concepts. Alpha is acquiring this role of trusted advisor for more of its clients, and there is a clearly stated ambition to continue this increase (5.3, page 86).

ii. Design in Alpha's boardroom

Most if not all of Alpha's own Board and senior staff are designers or engineers so, arguably, the Board is more receptive than most to design's contribution. The Foresight team contributes to Alpha's strategy thinking, using design methods to share and explore ideas around future scenarios (5.3, page 86).

Summary

As a trusted advisor, Alpha increasingly uses design as part of its Board-level influence in client firms. Alpha's own Board includes many designers, receptive to applying design to strategy.

5.5 Case 1 summary

The following is a summary of how the proposed contributions of design are:

- Recognised by the firm – i.e. whether there is evidence that the firm recognises that design can make such a contribution and that it is strategically important; and
- Practised in the firm – i.e. whether there is evidence that the firm implements design in such a way.

Alpha shows evidence of recognising almost all strategic contributions of design, as categorised for this study. Recognition of design by the firm was strongly evident in technology management and most primary activities. Several of these were evidently being practised in the firm. Findings are summarised in table 5, below.

The implications of these findings for this study are discussed in chapter 7 (page 137). The next chapter details the findings from the second case, Beta Telco.

	Recognised	Practised
Design in implementing strategic positioning, fit, learning & culture		
Design used to build market differentiation, customer intimacy & perceived value*	◆	◆
Design influencing dependencies in the supply chain	◆	◇
Design integrating and mediating between professional domains*	◆	◆
Design shaping and communicating corporate culture	◆	◆
Design supporting activities in the value chain		
Design in primary value activities		
Inbound logistics	◆	◇
Operations	◆	◆◆
Outbound logistics	◆	◇
Marketing /sales & communication	◆	◆
Service	◇	◇
Design in secondary (support) value activities		
HR Management	◆	◇
Technology development	◆◆	◆
Firm infrastructure	◆	◇
Procurement	◇	◇
Design in processes and systems of knowledge management	◆◆	◆◆
Design as a tacit knowledge resource: path dependent and hard to imitate	◆◆	◆
Design in informing strategy formulation		
Stimulating creativity and providing fresh perspectives in the strategy context*	◆	◆
Exploring uncertainty and assessing trade-off – prototyping & visualisation*	◆	◆
Achieving a holistic view of complex systems and a shared strategic vision*	◆	◆
Additional factors influencing strategic design		
Design applied to different areas of the business with consistency & completeness	◆	◇
Design applied with different stakeholders in mind	◆	◆
Design contributing at a high level	◆	◆

◆◆ strongly evident

◆ evident

◇ not evident

* also evident for Alpha's client firm(s)

Table 5: Summary of findings from case study 1: Alpha Structures

Chapter 6

Case 2: Beta Telco

6.1 Introduction

This chapter details the findings from interviews and observations for the second case, referred to as Beta Telco.

Beta has around 100 000 staff worldwide, and headquarters in London. Its annual turnover is approximately £21 000 M (2008). Beta's primary activity is the provision of communications network services and technology to domestic consumer, corporate and public sectors. The firm is divided into several business divisions, including Consumer, Business, Wholesale, Operations and Research. Subsidiaries within the Consumer, Business and Wholesale are referred to collectively as Market-Facing Units, or MFUs.

In contrast to case 1, design is not a core activity in Beta: it occurs mainly in three proportionally small areas of the firm, in Technology Development, the Consumer division, and in the group-wide Brand department.

Technology Development

Designers in Technology Development work mostly within a sub-division, Research & Ventures (R&V). Designers in R&V come from a variety of backgrounds, including interactive media design and industrial (or product) design, and the team also works with outside agencies in these disciplines. They work with technologists and scientists to come up with commercial applications of technologies. The prototypes or concepts they produce are then fed out to various business divisions within Beta according to their market focus, or they may be spun off in to new ventures. Concepts judged suitable for further exploration are passed to propositions managers, who develop them further with external designers before seeking approval for commercialisation. When this involves products, development and manufacture are overseen by product managers.

The Insights Research Centre, also in Technology Development, conducts customer and foresight research. Their output is used by the R&V team, Sales and Marketing, and by the MFUs.

Consumer Division

Design activity in the MFUs is most evident in the Consumer division. This includes the creation of tangible products for the consumer and SME market, such as telephone handsets, fax machines and broadband routers, and services such as internet and video on demand. Associated with both products and services are a range of market communications, packaging and web sites.

Brand

The Brand department is part of the Group Marketing and Brand, and oversees all aspects of the Beta brand identity.

Of these three groups, Consumer is the only direct revenue earner, and R&V is the only group with dedicated design staff (in Consumer and Brand, design work is almost entirely bought in from outside agencies).

These three areas of activity are proportionally small, in terms of staff and costs to the firm. Although the firm as a whole is discussed, this study focuses on Technology Development and Consumer.

6.1.1 Participants

As in Case 1, identification and recruitment of participants was partly initiated directly by the researcher and partly by onward referrals to other relevant or interested people. The scope of the sample did not include respondents from all operational divisions, but sought to capture a range of relevant views.

The participants were mostly based in or near the firm's headquarters or research facility, and include designers (including inclusivity and ergonomics specialists), researchers, product managers, support staff and senior managers and one Board officer.

Notably, B-1, is *not* a Beta employee but an experienced product designer working outside the firm, running a small, well-regarded product design agency. Because all Beta's retail products are designed outside the firm by agencies, it was hoped that B-1 would provide a useful perspective from outside the firm. B-1 has designed devices for Beta for over 20

years, working with propositions managers from various divisions in the firm, depending on the product being designed. The roles of interview participants cited are listed below, in Table 6.

ID code	Role
B-1	Industrial designer and Chairman, external agency
B-2	Industrial Designer, Research & Development, Technology Development
B-3	Media interfaces designer, Research & Development, Technology Development
B-4	Usability manager
B-5	Propositions manager, Consumer products – Handsets, Consumer Division
B-6	Research manager, Human Factors specialist, Technology Development
B-7	Group Chief Technical Officer
B-8	Propositions manager, Consumer products – Broadband, Consumer Division
B-9	Product Manager, Head of Fixed Line Devices; Strategy, Convergence & Products
B-10	Head of Consumer Affairs and Inclusion, Consumer Division
B-11	Head, Insights Research Centre, Technology Development

Table 6: Interview participants from Beta Telco

6.1.2 Findings

As in the previous chapter, findings set out for Case 2 are collated from the views expressed in interviews. They may also include the researcher's own observations of the workplace, internal documents and other artefacts. It also includes other publicly available material where explicitly stated.

The following sections examine design's contributions to strategy implementation and to strategy formulation in Beta, as identified in chapter 2 (page 34), then relates them in summary to the three contributing factors for successful, optimal design integration identified in phase 1.

6.2 Design implementing strategic positioning, fit, learning, and culture

As in Case 1, this section considers Beta's use of design and design methods in the implementation of strategy in the seven ways previously identified:

- 1) building market differentiation, customer intimacy and perceived value;
- 2) influencing dependencies in the supply chain;
- 3) integrating and mediating between professional domains;
- 4) shaping and communicating corporate culture;
- 5) supporting activities in the value chain;
- 6) improving knowledge management processes and systems;
- 7) being a tacit knowledge resource.

6.2.1 Design used to build market differentiation, customer intimacy and perceived value

Beta shapes its corporate image through both its visual identity and through its products and services. It uses design to differentiate itself from its competitors, and its product ranges from one another, according to their markets. Beta pays close attention to the design of its identity, products and services, recognising their importance to the way the firm is perceived and valued by customers.

“Design is effectively the point of experience delivery of the network – we call it the last millimetre. It's the interface... to your fingertips, to your ears, to your eyes, and that's where opinions are formed and that's why it's important.” [B-1]

This is especially important for a telecom and networks provider, because most of what they do is intangible; the visible elements are manifestations of the invisible.

i. Design shaping corporate image through visual identity

Brand presence and brand recognition are seen as crucial elements of differentiation and signals of value in both consumer and corporate markets. Together with tangible products, they provide a surface representation of the intangible communication service provided and the invisible networks and technologies this is built on. The firm's logo is visible on all Beta's products, contributing to brand reinforcement and recognition, and is considered vital for positioning in the market.

“Looking at strategic positioning from a corporate point of view, the senior managing directors within Beta want to see that presence, the Beta brand on Beta-designed products. They use products to have the brand in the homes, to remind people of the network service and the communications company that Beta is.” [B-9]

The logo also appears on communications (advertising, brochures, and customer bills), buildings, sponsor placements, vehicle livery and field workforce uniforms. Managing the visual identity is a major concern for Beta’s central Brand team, whose remit spans the whole organisation. They work with many external design and branding agencies to ensure consistent use of the brand identity by Sales & Marketing and by partner firms, and to maintain association of the Beta name with its corporate values. Referred to by some as the ‘brand police’, the Brand team has to balance control of corporate image with autonomy within the MFUs. Keeping tight control over all output in the business would be extremely time-consuming, and some degree of independence is needed to permit staff to get on with their jobs.

“You can’t ‘legislate’ in a disparate organisation the size of Beta. It’s hard to get everyone to buy in to that... How do you ensure [everything] is in line with the brand? You can’t go right up the line every time to say ‘this is what we’re doing’, you’d never get anything done! You have to give people a level of autonomy in any company to make those decisions.” [B-5]

Their authority extends across the commercial divisions, where design awareness is varied; staff in roles more concerned with customer experience and branding may be frustrated, for example, by inconsistencies in public-facing communications.

“I believe that design makes a difference... I don’t think [awareness] has spread. It’s a shame. I get frustrated, but it’s very difficult to explain the value of design. If you get it right, get a consistency, like fonts, presentation layouts, there are benefits to the business. But people like to put their own signature on e-mails, use a weird font that is ‘fun’, it’s difficult to get everyone to buy in to it.” [B-5]

Internal communications are also carefully branded under their guidelines, but the Brand team does not regard these as influential on corporate culture or behaviour.

ii. Communicating the brand through useful, pleasurable products and services

The design and manufacture of hardware products is ancillary to Beta’s core activity, the provision of telecom and network services. As tangible representations of these services

they are more like marketing or advertising media for the core service. But unlike the branding of livery, buildings etc, consumer products are bought by the public, so their design must account for the complexities of the retail market.

“[They] buy us like advertising, so we're an out-sourced brand expression medium... But the difference between what we do and what Central Design control is our stuff has to be bought, so it's an independent decision [from] the vans, the uniforms, the carpets.” [B-1]

In the corporate market, a stylish physical embodiment is less important than reliability, service, support and cost. In this market, design is restrained; the aim is for Beta's systems “to ‘just work’ – they have got to get a dial tone.” [B-4]. They should be inconspicuous, consistent and recognisably Beta's. Sufficient brand identification is achieved simply with a logo on the device.

B1 was hired by Beta soon after the firm was privatised in the mid-1980s, because the firm recognised the strategic importance of its customers' experience. Their products and services then lacked consistency and usability, and the recently deregulated market would soon become very competitive. Yet most of the firm's activity was, as now, in technology development and deployment, so this remained the focus for most of the workforce. Beta recognised that, like many technology-focused firms, they were not considering their customers enough, and that there was deep-seated cynicism in the firm towards such a notion.

“They have undergone a hugely impressive transformation in my time. When I first started I was working for virtual civil servants. Now we're working for some quite sharp people.” [B-1]

For several years Beta paid little attention to product design, as it is not their core offering. Meanwhile, other firms set higher standards, showing that consumer electronic products can be made relevant, useful, pleasurable and even beautiful through good design. The recently appointed Head of Brand has raised ambition to match the precedent set by these firms.

“We have changed who we want to be like. We used to do rather leaden, grey products, not very exciting. It's more likely to appear in Stuff Magazine or T3¹¹ now. Brands like Apple and Sony have raised the game.” [B-6]

11. Stuff (Haymarket Media Group) and T3 (Future Publishing) are UK-based consumer magazines devoted to “technology and gadgets”.

This change in approach is said to be exemplified in Beta's new wireless broadband router. It uses well-established technology, and is designed to be simple to set up and attractive enough to sit on a shelf in plain view.

"Apple broke the mould because they don't deliver new technology. They make old technology work... When we did the BetaBox¹² we put in a lot of effort to ensure it is a product that people will want to have in their homes." [B-4]

Consistency in Consumer Product design

Consistency of consumer products is overseen less closely by the Brand team than are external communications. Product teams – designers and propositions managers – report to the Device Propositions heads for approval of new product designs, not to the Head of Brand.

"The Head of Design [in Brand]... has a very strong passion for design and he cares for it, he's quite influential, but ultimately he's not the client... We report into whoever is controlling Device Propositions. We have the same aims, basically, but we [my agency] have to deliver achievability, we have to deliver saleability." [B-1]

But not all Beta's consumer products are designed specifically for them; many devices are bought off-the-shelf from other manufacturers and customised with Beta branding – a practice known as 'buy-and-badge'. Consistency of the product range is difficult to maintain if many are bought in. For example, in the mid-90s, when digital cordless telephones were emerging, Beta chose to buy-and-badge many generic devices, so their range of phones included a variety of styles.

"They bought a lot [in] because they didn't have the core technology... It's difficult to manage an identity when occasionally [they] buy in products from outside... They do 'buy-and-badge' a lot so that is a complication. There's this other stuff happening that hasn't got the look." [B-1]

Customer intimacy

In consumer product development, designers work to create perceived value in the eyes of the consumer. This is based on an understanding of customers' values and behaviour, and

12. The BetaBox (not its real name) is a domestic broadband router and wi-fi base with a digital cordless phone, recently launched at the time of this study.

an ability to translate that understanding into a useful, relevant, desirable product, strengthening customer intimacy and loyalty.

“[Designers] have to think pragmatically about the outcome. [Our] job is to understand how people will behave, not how [we] hope they will behave.” [B-1]

While industrial designers may see themselves as having the deepest understanding of the customer, Beta’s propositions managers make similar claims.

“In terms of designing it, or at least making the case for it, we [the propositions managers] are the people who understand the current market... and are probably closest to the customer in terms of understanding their needs and how those needs might evolve.” [B-8]

Propositions managers propose new products to the leaders within the MFUs; they set the marketing requirements and technical specifications, deciding where it will be sold and for how much, based on market research. All these requirements are passed to the designers in their brief. Propositions managers recognise that many ideas for new concepts or features come from the designers, not just from them. Good ideas can come from anywhere, especially for novel products which do not yet have a market. Customer research methods such as focus groups are not always fruitful for idea generation.

“It doesn’t matter how you decide [what to make]. James Dyson didn’t listen to his customers, he didn’t bloody have any! You can focus-group things to death.” [B-5]

But designers’ attempts to broaden or challenge the brief are not usually welcome when decisions have already been made within Beta.

“If [a designer] says ‘what can we do to lift the brand?’... that can be quite annoying, because a lot of the time that’s what you’re trying to sell. My job is to sell telephones, so design me a telephone, don’t piss around wasting my money trying to think up some great new idea... Stick to making telephones.” [B-5]

Human Factors and Usability

Beta’s Chief Technology Officer states that, whatever technical accomplishments are behind a service, it is the customer’s experience of it that defines how they value it. A good experience raises perceived value and creates “natural barriers to exit” [B-7]; genuine loyalty to a brand must come willingly, not through being ‘locked in’ by contract or by lack of choice.

Beta's Human Factors (HF) specialists are increasingly involved with designing products and services, to improve usability. Design agencies are expected to apply user research and usability expertise to all Beta products and services. As with Beta's customer awareness in general, awareness of HF's value has increased steadily in the past two decades. Even in recent years, HF experts were only involved in designing a few projects, those run by managers who valued their service, but not usually important projects.

"[HF] wasn't being looked at high up enough in the company to make sure [we] were on the right projects. We'd just be working with people who valued what we do, but might not be on an important product... You should be working with the people who've never heard of you, who are working on the big ticket items." [B-6]

A recent initiative aims to introduce a consistent set of graphic icons across all Beta's product lines, including mobile phone screens, domestic phone handsets and TV interfaces. Known internally as Touch, the initiative was started by B-4's team of designers and usability specialists. This began as a measure to improve usability, because consistency across different interfaces makes them easier to learn and remember. Yet, in order to gain uptake in the various divisions, B-4 instead emphasised the benefit to branding and marketing, i.e. that it significantly strengthens Beta's brand consistency and recognition.

"I have no background in user interface design or human factors, I'm from Marketing, but as a marketer I can see the absolute sense of doing it [consistently], and I have the experts [designers] to do it." [B-4]

Existing products will not be re-skinned with the new graphics, as the cost would be too high, but the scheme will be rolled out gradually on all new products. The initiative has been well-received and is now supported at Board level, and by the propositions managers, who oversee the design of new devices.

"It is very important that consumers feel consistency whenever they use a Beta product. When these things are done well they work. It really does make a difference." [B-5]

Awareness of the Touch initiative is increasing, although there are still parts of the firm where the principles of Touch have yet to be instilled, due partly to changes in personnel.

"We have that [Touch] philosophy, but it's such a big company, sometimes it's hard [to maintain]... You communicate it to some people then someone changes their role, and it gets lost somewhere. It's not as coherent as it ought to be, but more recently it's definitely got better." [B-2]

iii. Design in Research & Ventures

Design activity in R&V is not focused on consumer products: “it creates prototypes, it creates ideas, it creates capacity but not the product” [B-11]. Designers in R&V regard their strength to be in conceptual innovation, that is conceiving new, useful applications of technology. Their output helps the senior leaders of the commercial divisions to imagine ways of offering value and differentiation. Any concepts from R&V that are taken up for development will be redesigned by agencies, such as B-1’s.

Most design from R&V is not visible to consumers but some prototypes and ideas are published in mainstream media; the team is rewarded for publicity coverage they receive. R&V designers also influence the reputation of Beta in the corporate market. For example, projects exploring industry futures help maintain the firm’s image as a forward-thinking technology provider, which is important for winning and keeping corporate business.

“Business customers [are] interested in the factory of the future, the office of the future, ‘What does my business of the future look like?’... So it’s almost a marketing tool to give confidence to our big customers to show we’re looking after their future.” [B-2]

Corporate clients make large investments in Beta systems, and are reassured if they feel they can rely on Beta still to be in business in 10 or 20 years.

Summary

Perceptions of value and differentiation are influenced by the design of Beta’s identity, products and services. These visible and tangible brand expressions are important for representing Beta’s primary activities.

Propositions managers and industrial designers together bring customer insight into new product development. Customer focus and design awareness were minimal but are now high throughout the firm, and contribute to Beta’s value and reputation in the consumer and corporate markets.

Human Factors expertise is increasingly valued and recognised for improving the customer experience. Visual consistency across product lines improves usability and strengthens brand image.

Future concepts from designers in Research & Ventures help maintain Beta’s image as innovative, forward-thinking and dependable.

6.2.2 Design influencing dependencies in the supply chain

i. Bespoke versus Buy-and-Badge

The Consumer Products team commissions the design of products from agencies, to be manufactured mostly in East Asia. Compared to off-the-shelf products, such bespoke design enables greater differentiation and control of the customer experience, and requires Beta to give up less of its value margin to a manufacturer.

However, many other devices are bought and customised with Beta branding. Beta generally employs a ‘fast follower’ strategy rather than ‘first to market’¹³, and this buy-and-badge approach is regarded as low-risk. Once existing products have proven there is demand, Beta can enter the market quickly with less risk.

Special requirements on bought-in products increase supplier bargaining power

The degree of customisation varies with the product, but might include a new software user interface (UI), a new casing, different colour finish or simply a Beta logo.

“We [might] put the cover on some things. We may have an influence slightly on the UI, often not, because we’re trying to get things quickly to market. So often a lot of our things are procured in... We’re fast followers, we’re not first to market. If we see an opportunity... then we’ll jump on the bandwagon and follow suit quite quickly.” [B-3]

Despite Beta’s size, the scale of orders for such devices is small compared to other rival buyers¹⁴, in Asia for example. Consequently, Beta has less bargaining power over the manufacturer than do these rivals. This is diminished further if special demands are made to customise products or software, and the cost of the device to Beta will increase. Any special requirements in buy-and-badge products must therefore be backed by the divisions controlling the budget and the supplier relationship. The Touch initiative required new icons to be applied consistently across all devices, and this was supported by the Devices teams.

13. B-3 refers to the ‘Fast Second’ approach, i.e. that “creating radical new markets is not where the money is.” [Markides & Geroski, 2004: 10]

14. They are rival buyers but not usually rival sellers; they compete for favourable terms with the same supplier.

“They was very supportive [of Touch], they went to their suppliers and said ‘this is the icon set you’ll use for all devices we ship’.” [B-4]

But such support may be limited as the expense becomes prohibitive; the costs involved would be passed on to the customer, raising the price unacceptably. For example, a phone handset interface has Touch icons at its top menu level, but the lower-level menus are standard.

“We can’t overlay the whole interface, but the top-level [menu icons] have the Beta look... We can’t afford to change the whole thing, the customer wouldn’t pay for that. You have to make a decision about how deep you can go.” [B-4]

Indistinct bought-in products increase buyer bargaining power

If Beta products are too similar to generic buy-and-badge products, their buyers (retailers) will have more bargaining power, and they will drive down Beta’s margin. Beta must differentiate and add value through design, otherwise retailers will threaten to buy and sell other unbranded phones instead.

“Beta is a distributor [of the devices we design], then there are the retailers at the end of the chain. Beta needs to add value to survive. [But a big retailer can] buy directly from an Asian manufacturer: ‘Why pay this middleman?’... Beta, by adding value by design maintain their place in the chain.” [B-1]

Some large retailers may attempt to shift the balance of power in their favour by persuading Beta to buy-and-badge more products.

“The retailers keep testing Beta’s nerve, saying ‘sure, just import something, just bring it in, we’ll sell it!’ But then after while they can say ‘well, you don’t have an identity anymore, why should we buy from you?’” [B-1]

ii. Complex procurement formalities can deter small suppliers, including design agencies

Beta has many large-scale supplier relationships with other global technology firms, which may be for millions or even billions of dollars, so formal legal control is important. For small suppliers the complexities of Beta’s procurement process and contracts can be prohibitive.

“[Procurement] have a standard contract with about ten clauses, it's *this* long. A small company will immediately have to employ a lawyer. So Beta is not an easy company to do business with. It tends to take a long time to write a contract, by which time a small supplier could be out of business.” [B-4]

Although not a typical design problem, the interviewee regards it as a lack of user empathy; design and legal expertise could be applied together to improve this process. This would ease procurement of services from SMEs, including design services commissioned by B-4's usability team, allowing Beta to be more agile, engaging small firms as soon as they are needed.

“Our CEO says we should be agile, but... we need to be able to write contracts more easily... It's not particularly easy to do business with Beta, and that's not how we want it to be... I think we could do it better.” [B-4]

Summary

‘Buy-and-badge’ consumer products may be customised to differentiate and add value, but greater customisation increases supplier bargaining power. Generic, indistinct products increase buyer bargaining power. Customisations requested by design therefore need budgetary support. Gains in usability and brand consistency might not justify their cost.

Access to Beta by SME suppliers is hindered by a complex formal procurement process, which might be better designed with SMEs in mind.

6.2.3 Design integrating and mediating between professional domains

i. Designers mediate between specialists on consumer product development

Designers such as B-1 work on consumer products in external agencies, using expertise in design of software interfaces, products (hardware), packaging and web. Other technical and marketing input comes from within Beta and from outside the firm (e.g. technical advisors from suppliers of materials and components). All this specialist input may be needed on a single project, and their co-ordination and integration is a key activity of the designers. This activity extends to mediating between divisions within Beta, such as between technical and marketing specialists.

“[What we offer Beta] is experience platform design and co-ordination... Silos are the enemy of innovation. So a lot of what we do is help companies correct their dysfunctional behaviour relating to poor or distant connections between the marketing and the technical.” [B-1]

This co-ordination role includes the use of drawings, renderings, test prototypes and appearance models to convey ideas, among the specialists involved and also between product managers and their senior managers. B-1 claims that without his agency’s leadership, co-ordination of product development across the “silos” in Beta would be problematic, although they have tried formalising the process to help Beta manage it themselves.

“We’ve tried via guidelines to do it. We still find that the best way to co-ordinate things is through us. It’s a very self-interested message but it works. We’re a great short-cut to co-ordination.” [B-1]

This capability is partly due to B-1’s long-standing relationship with Beta; he has designed products for them for over 20 years, far longer than most of Beta’s product managers have worked there. Other designers in other agencies also have a valuable understanding of the firm, more than many of its employees.

“A design agency has value to add in such a big organisation in understanding the cosmos that the individual [like me] is working in. Many of the agencies have worked with Beta longer than I have, they know it better than me.” [B-4]

With such a deep understanding of the company structure and workings, designers in external agencies can connect people they know in Beta who may not know one another. This mediation can help locate useful skills in other divisions, but also may identify interested parties whose support might be needed before a project can progress.

“It’s also about recognising champions... [An agency designer realised that] to be successful we’d need to engage with [certain people in Beta]. They recognised that if we don’t have their backing it won’t go anywhere... there are key people in specific areas who need to be brought in before something can change.” [B-4]

Design also plays a co-ordination role in Operations as a whole, as part of the Right First Time initiative, discussed shortly (6.2.5 i, page 116).

ii. Designers and design tools help to mediate within and from Research & Ventures

Most activity in R&V is carried out by scientists and technologists. Designers in the division are a small minority, but play a mediating role among other researchers, between researchers and Beta's commercial divisions (or market-facing units, MFUs), and also between external organisations and the MFUs.

Mediating between other researchers within R&V

The main role of designers in R&V is to conceive, explore and visualise new applications of communications technology. In this role they advocate innovations relevant to their end users, rather than the pursuit of technology for its own sake.

“You get people refining the technology, making it better and better. But designers are useful for reminding people what their technology is for, and what real people will do with it.” [B-6]

Visual devices and user-empathy tools such as personas and ‘day-in-the-life’ scenario storyboards¹⁵ are used to convey possible applications of technologies. They are also helpful in conveying “the essence of the problem” [B-6] when a team is dispersed geographically, as is often the case with technology specialists working on contract. The visual format conveys rich information which would be difficult to articulate in words.

“[It is] like a visual brief, a brief that everyone can understand. You don't have to read a big thick document to get it.” [B-6]

Mediating between researchers and Beta's MFUs

Market-facing units look to R&V for potential products and services to offer customers, and designers in R&V feel they are more able than technologists to communicate their group's work. Again, visual devices such as storyboards help to articulate customer needs and technological solutions.

15. A persona is a short description of a fictional person, which includes personal details such as preferences and habits. It serves as a reminder of the real people who will ultimately use a designed product or service. Personas are used in the design process to consider various scenarios in which users might interact with a product, service or system. These scenarios might include special tasks, but often represent a typical day, or a ‘day in the life’ of the persona. Storyboards are simple sequential illustrations that visually convey the scenario.

“[Visual tools make it] much easier for people to get. ... ‘This is a day in their life, *these* are the problems. The technology fixes *this*.’ Then you get their interest, you give them a set of hooks to understand the technology with.” [B-6]

In contrast, when technologists present their work to the MFUs they may focus on the technical complexities and challenges they have overcome, rather than on benefits to the customer and to the firm.

“The traditional way is to blind them, to show how clever we are. ‘Look what difficult stuff we are doing!’ They have to leave on stretchers, go in a dark room and lie down!... It’s really back to this communication thing. Designers help the Research part to communicate with the rest of the organisation.” [B-6]

Mediating partnerships between external organisations and Beta’s MFUs

A key role of designers in R&V is to collaborate with outside firms and academic institutions which share a common interest in future applications of communication technologies. Sometimes these organisations have technical expertise relevant to internal projects running in the commercial divisions, or they may be interested in a commercial partnership with Beta.

“We put them in touch with other group[s] internally, to see whether there is anything we could do collaboratively together as a new venture” [B-3].

This is contrary to the reputation they may have in Beta for disregarding ideas that come from outside the firm.

“Actually a lot of the work we do is looking at what everybody else is doing and making those links... making sure the lines of business know about what the other companies are actually doing out there.” [B-3]

Designers also mediate academic research findings from universities, making them accessible to the commercial divisions in Beta through visual devices such as storyboards and concept models. For example, a design workshop was run based on some academic research, to “bring them to life”.

“[We used a designer] to turn this sociology stuff, to translate the graphs and stuff, into something more accessible to Beta, making tangible some quite abstruse and theoretical ideas.” [B-6]

iii. Co-ordinating value activities

Design can shape and improve linkages, or strategic fit, between value activities in the firm [Borja de Mozota, 2003]. Beta's Group CTO, B-7, uses the term 'architecture' to describe the co-ordination of value activities.

"Design in each one of these things I think is of great importance. I am swapping in my mind the [word] design for *architecture*, the architecture for my operation, for my in-bound, out-bound logistics, my process, my technology, my built environment." [B-7]

In its broader sense, 'design' is essential in co-ordinating the structure of the value chain, but professional designers or design methods do not contribute to this. B-7 prefers to use the terms "innovation" and "architecture", rather than design, when talking about organisational and functional linkages. Management of innovation might be expressed as a secondary value activity that runs through the value chain.

"Innovating within and throughout [the organisation] is where you get [good] results... [You could add] a layer that you call Innovation Management, on top of infrastructure and human resources and technology development and procurement." [B-7]

Summary

Agency designers of consumer products mediate between marketing and technical specialists inside and outside Beta (including suppliers), and between project managers and their senior managers. They may also recognise and connect people in the firm with relevant skills and agendas who may not know one another.

Designers in R&V use visual methods and models to communicate real life applications of novel research and technologies, among other researchers, between researchers and MFUs, and also between the MFUs and external firms and universities.

Professional designers are not involved in co-ordinating the structure of the value chain (the business architecture).

6.2.4 Design shaping and communicating corporate culture

A firm's identity is perceived externally as corporate image, and internally as corporate culture (see page 28). Design's role in Beta is fundamentally strategic, according to B-1, in that this identity is expressed through design, thus shaping image and culture. The design of services and products communicates the firm's "brand essence:... a crystallisation of

your narrative, your purpose, why you exist” [B-1]. Such crystallisation, B-1 suggests, serves to unite and direct individuals and groups, and gives personality to a large company.

“Design helps these large organisations to have soul. That's what we do. By connecting all these elements in these really complex organisations, we help these huge sausage machines to behave with the intuition of the human being, to have common sense, to empathise, to address the [customer]. We convert humanistic insight into instructions for others to follow... That's what designers do, with just enough knowledge to be able to formulate the right kind of plan.” [B-1]

As in the previous section, B-1 restates the importance of design's role as co-ordinator. Here though it is not through the activities of the design process, but through its end results, the subtle articulation of the brand, which itself unifies perceptions of the firm.

More overtly and explicitly, design is used to express and reinforce culture by communicating the firm's values and purpose. Awareness campaigns produced by Corporate Communications teams are run throughout the organisation, via intranet, posters and presentations.

“The values and strategy type stuff, ‘this is what we do as a business’, is built around a perspective that's been worked through with [Marketing and Sales], it's part of the architecture of the business... Walk round the building you'll see all kinds of stuff that relates back to that.” [B-11]

Design is used to communicate and strengthen Beta's commitment to corporate social responsibility (CSR). Although directed by senior management, it is apparently embraced by employees.

“CSR-type messages are also part of this picture. I think employees see that as being a good part of working for the organisation, so there's a positive reinforcement... And that's all helping to build this picture that's being put together by the business. We really do think this is important.” [B-11]

CSR themes such as inclusion and ethical sourcing are conveyed to employees through posters in Beta's offices, but also demonstrated through some of the design projects in R&V. Here devices have been designed to explore social issues such as exclusion through disability, or community networks. These devices were publicised within Beta, and also featured in the shareholders' magazine to communicate Beta's commitment to social responsibility, as well as the breadth of its research activity.

Notably, according to a published interview with Beta's Head of Brand Design¹⁶, the Brand department does not regard the corporate culture as their responsibility. It is considered beyond their remit to influence behaviour and culture, and beyond the capabilities of design agencies; instead this role belongs to HR and Operations.

Summary

The design of Beta's products and services expresses and reinforces corporate culture by communicating the firm's values and purpose. Important elements of the strategic vision, such as CSR, are introduced and reinforced in corporate culture through graphic and communications design. They are also demonstrated through R&V prototypes, publicised among employees and shareholders. Cultural influence of corporate communications is not in the remit of Beta's Brand department.

6.2.5 Design supporting activities in the value chain

Design is not a primary value activity for Beta, but is an external resource that can be bought in, as it is by Consumer Products. It is also a secondary resource, as in Research & Ventures where it supports technology research and development.

Design activity is recognised as being crucial in creating tangible brand expression of a mostly intangible service, but is concentrated in the development of consumer products and in exploring new technology applications.

i. Design in primary value activities

Operations and Service

In Beta, operations and service are difficult to distinguish, as most operations involve the provision of services for corporate networks and household telecommunications, and include the deployment and maintenance of large and costly infrastructure.

Corporate Branding and Operations

Development of consumer products also constitutes an activity within operations, though a small part of the total. As discussed previously (6.2.1 ii, page 102), design expertise plays a key role in the development of pleasurable, useful consumer products and services,

16. For anonymity reasons a full citation cannot be given. The quote appears in a 2003 survey of senior brand directors and designers, and their views on brand and identity design.

which serve as visible and tangible expressions of the Beta brand. However, the group Brand team is not often involved directly in consumer product design; propositions managers do not report to Brand for design approval. Nonetheless, decisions about company identity impact their designs. Some product designers in R&V and outside the firm are dismissive of the authority of the 'brand police'. While accepting the importance of consistency, the designers believe they themselves are more in touch with the practicalities of production and with Beta's long-term direction.

"They've got the grand idea of where the brand should be, but they don't really have a view of the strategy... They may think they're strategic but I think they're more tactical. A little bit of strategy – it's right to have a philosophy that we want everything to look and feel like it belongs to the same company, which is kind of strategic." [B-2]

This distrust is based partly on the two occasions Beta has commissioned a redesign of its identity by a major branding agency. Pragmatic considerations for manufacture were disregarded (or overruled) by Beta's Brand team, resulting in costly and complex changes to the processes, materials, moulds and tools for many of the existing Beta products.

"Every time [the brand agency] has done any rebranding for Beta, they have completely failed to address the issue of marque on the device. We [my agency] have quietly in the trenches, *twice*, had to do the most amazing R&D stuff, involving global procurement and all kinds of really weirdo things, to execute these graphical symbols... [The last new logo] didn't fit, couldn't be tooled, couldn't be printed." [B-1]

"A lot of the advice [from senior designers] on what parameters to follow were completely ignored by the decision makers and the agents... It cost us many thousands of pounds to retool all those products so we could fit the logo on, or just put in a blanking plate so we could put the logo somewhere else." [B-2]

This is an example of poor co-ordination between design in Operations and the higher-level leadership of the firm.

Right First Time

Design co-ordination *across* Operations is meant to be improved as part of the Right First Time program – a drive for the whole firm to take a holistic view of its activities "end-to-end" in order to improve all services and products.

It was recognised that products and services that are seemingly profitable for one part of Beta may actually be losing money for the firm, as costs from customer service exceed

their margin. Beta employs around 15 000 call centre and customer service staff. Right First Time is a scoring system applied to all processes, to find weaknesses which are driving calls and complaints.

“On some products the profit gets lost on call centre costs or home visits in supporting the product. One part of Beta may be very happy, but overall it might be a very costly product, causing collateral damage to Beta after it’s sold.” [B-6]

The initiative aims mainly to reduce losses through product returns and calls to customer care for services that are *not* faulty. According to quality control, such a product or service is deemed fault-free, yet something is wrong or difficult in the instructions, the set-up, the packaging etc. Co-ordinated design decisions can remove these weaknesses.

Right First Time is driven throughout the firm, and responsibility for its deployment goes to Board-level. It is seen as a major step towards bringing design into the heart of the firm.

“The way to fix things is to have design at Board level... That’s where we’re getting to with Right First Time. It’s about Board-level responsibility for delivering [co-ordinated design]. One thing Beta is really, really good at is putting things into action if it’s decided at the top.” [B-6]

The Human Factors team anticipates that Right First Time will give them more opportunity for making improvements throughout operations and service.

“[We] are looking at the design of the customer support and operations, making sense of the experience from an end-customer’s point of view... That provides a route for designers to get involved. But I think it is not done enough [yet].” [B-6]

One criticism of the program is that the scoring system is too rigid, “very numerically based” [B-10] and inadequate for capturing important but subtle elements of the customer experience. Also, although it includes scores for usability, it does not include inclusion and accessibility, which are part of Beta’s social responsibility objectives. A revision of the scoring is expected to address these.

As a result of the Right First Time program, designers have improved Beta’s interactive systems, used by customer care teams and by consumers themselves. Help desk advisors in call centres use such a system for diagnosing faults and providing advice, and there is also a self-service web site where consumers can find help and advice. Inconsistencies were identified and corrected, with input from interaction designers and from the respective product managers. Enabling consumers to ‘self-serve’ reduces demand on call centres,

so it is important that the web system is accurate, intelligible and accessible. As it is used by non-experts, it relies heavily on visual instructions.

Customer feedback

Customer contact through web sites and call centres is a valuable source of design feedback for all products and services, as well as for the customer care service. More attention is now paid to capturing this feedback and passing it on to the relevant design teams. These may call for small changes, making subtle improvements which often go unnoticed, but designers must attend to them, although they might find newer projects more exciting and interesting.

“Although you want to work on the latest generation [technologies], there are fundamental things in the Service area that you still have to pay attention to... It seems trivial once it's deployed, but it has to be done. You have to focus on core service details. No one notice[s], but that's a good thing.” [B-6]

Call centre staff within Beta also provide important feedback for improving systems supplied to corporate clients.

“It's not about designing for the employees, it's about employees influencing what we provide to end customers”. [B-10]

Sales & Marketing

Sales and Marketing teams collectively use the services of many design agencies and specialists. They address corporate, SME and consumer markets with diverse offerings, from IT networks to office phone systems to baby monitors. They communicate via many media channels including press, web, TV, public relations, direct mail.

“All print work that goes out is designed; marketing collateral, television advertisements, building refurbishment, that all has a design aspect.” [B-5]

Sales and Marketing decisions direct the design of consumer products which, as already noted, are regarded as communication channels for the brand. Output from designers in Research & Ventures also contributes to promoting the firm. The designers' performance is measured against several targets, including the publication of academic papers and the winning of awards for projects. There is also recognition for having projects publicised in mainstream and technology media, for which the designers' visual output is well suited.

“We’re relatively good at getting publicity because a lot of the stuff we generate is very visual so we get [TV] slots on The Gadget Show, things like that.” [B-3]

Such publicity helps maintain Beta’s image in the corporate market as innovative, forward-thinking and dependable (see also 6.2.1 iii, page 107). R&V’s design output is also used directly in sales proposals, to emphasise the benefits of having a research facility, which most competitors do not.

“We are frequently asked to do presentations about some of the future things that we’re thinking of... So some of our work does help market Beta... and win multimillion, multi-billion pound bids for five or ten year contracts.” [B-3]

B-11, a senior researcher, recognises that visual representations can be very helpful in communicating research findings, future scenarios and complex systems to potential clients. The concept-level communications they produce for corporate sales teams are well-suited to being represented visually. Having worked with external designers in this way, B-11 finds visual representation very effective, and believes Sales & Marketing would benefit by using it more.

“[Graphic] approaches that I have seen that I think are very effective are based around... linking into real stuff that is happening but also projecting into the future... I think a lot of the marketing community here would really love to take that kind of approach with some of the ideas that we have.” [B-11]

Large design-based collaborations are presently too expensive for Research, but Sales & Marketing have a higher budget for communications material and might use this approach more.

ii. Design in secondary (support) activities

Technology Development

Beta’s Technology Development division is dedicated to developing network and communications technologies, and to technology strategy and research. Design activity within the division is concentrated in the Research & Ventures (R&V) department.

Technology Development is perceived by some others in the firm as detached from commercial reality, an “ivory tower... coming up with great ideas that cost too much or take 10 years to implement” [B-2]. But speculative design and research does not always produce

commercial applications, and it is important that this is understood in the firm, and that there is sufficient freedom for creative exploration.

“We need a mature view of what research is. It might not necessarily lead directly to a product [but] we’re changing the way the company thinks about things.” [B-6]

Designers in R&V act as a bridge between the researchers and the rest of the business, and hence the customer, to whom technological possibilities are not always relevant.

“Technology for its own sake is for scientists isn’t it? That doesn’t affect most of us.” [B-2]

“[One of our] 10 principles of design: ‘just because you can do that doesn’t mean that it helps the customer’.” [B-4]

This ethos is directly in accord with one of the key objectives of the firm, which is to deliver simple products from complex technology. The Group CTO, B-7, claims there has been a shift to drive innovation less by technology and more by the experiences that technology can enable; Beta aims to do this more openly, through collaboration with partner firms, universities and customers.

“It used to be technology driven, and it’s much more experience driven now, working on the end-to-end customers’ experience, from the smell of the packaging, to the positioning on the shelf or on the web site, to how it works.” [B-7]

This claim is also endorsed by B-1 who has witnessed the change from outside Beta (6.2.1 ii, page 102).

R&V design work encompasses both application design and product design. Applications are considered closer to the core activity of Beta, but new physical interfaces provide opportunities for new types of applications and services. Staff are rewarded for patent applications, academic publications, and for media publicity gained for prototypes and research findings, all based on their design work. B-3 jokes that none of the formal objectives are for design itself, implying that senior managers prioritise results that are easily measurable over design’s more subtle contributions. B-3 also expresses, with some resignation, that recognition of the activities and contributions of R&V designers seems to rise and fall over the years (see also 6.2.7 ii, page 125).

Human Resources Management

HR runs employee surveys which inform action plans to improve morale and well-being. These plans may involve design, such as to improve workplaces or accommodation. High-

er employee morale and job satisfaction have a direct positive impact on productivity, so there is a business incentive to use design where possible.

“If we design people’s jobs to be rewarding and satisfying, there is a payoff in terms of turnover... It’s not a ‘policy’, but designers get involved in that.” [B-6]

The complexity of the HR systems may be daunting for new employees, and these could perhaps be improved with design input.

“As an employee, what’s the experience of being brought in to the company, working with HR, getting on to all the systems? We could definitely design that better. There is a ‘cobbler’s children’ effect¹⁷, where we focus more on our customers than our staff.” [B-4]

HR management in Beta is largely outsourced to a major management consultancy; there are relatively few HR staff and most of these are not Beta employees. This may limit opportunities for design improvements, either through contractual restrictions or a lack of direct access to the systems. Longer-term conceptual design work from the researchers in Technology Development continues, and could inform such improvements. An example is the development of a ‘motivational user interface’ for call centre staff, based on a benchmarking study of customer services in exemplary firms. This examines their working environment, beyond merely the software and telephony systems they use.

Infrastructure

Corporate Communications

Output from the Corporate Communications includes training material, company news, policy and practice documents and publicity (such as Beta Values, Touch, and Right First Time, as noted previously). Graphic designers and interactions designers are employed in-house and in agencies to ensure this material communicates effectively with impact, and is visually in keeping with Beta brand image and values.

Knowledge management

Knowledge management systems within Beta were not discussed in depth, though one interviewee expressed distrust and dissatisfaction in such systems; they require too much

17. “The cobbler’s children wear no shoes.” This Old English proverb suggests that providers of a service for others may neglect the same for themselves.

time and effort to learn, and are changed too frequently to be worth the investment. This may be due to poor design of the system interface.

“I’ve never really found a knowledge management system that really shared its knowledge with me... We seem to change knowledge management systems very regularly in Beta... Often they are unwieldy crappy systems... so maybe it is all down to design and... usability.” [B-10]

IT systems

As a provider of network and telecom services, Beta has many complex systems within its infrastructure. Provision of telephone call centre technology is a major part of Beta’s large corporate contracts, and the firm invests heavily in technical advancements to reduce the costs of running a service. These advancements include improving usability, but do not extend explicitly to visual design or to making systems more pleasurable to use. Notably, Beta’s own call centre employees use Beta systems, some of which are seen as better designed than those supplied to corporate clients, but others are still quite poor.

“On some things we’ve done more for [Beta] employees than we have for customers... gosh it just must be awful being an employee out there on some of them, because they’re really not that great.” [B-10]

Although public-facing web sites are designed and produced by external agencies, internal web-based systems (intranets) are generally produced in-house, without designers’ input, and some may be “pretty appalling” [B-3].

Summary

Designers conceive and improve products and services and internal systems, marketing and internal communications. Some HR systems are complex and daunting, but are outsourced so may not be amenable to design improvements.

Beta’s Right First Time program rewards holistic design, identifying linkages and improving fit between value activities, reducing hidden costs. Diagnostic systems for customers and staff have been improved by designers, but other systems need refinement.

Prototype designs and research papers gain positive publicity, and help sell corporate contracts, although Marketing staff might like to use designers more.

Designers help deliver simple products from complex technology, making Beta more experience-driven.

6.2.6 Design in processes and systems of knowledge management

Knowledge management systems within Beta were not discussed in depth, though as already noted, one interviewee suggested Beta's system might be poorly designed (6.2.5 ii, page 122).

6.2.7 Design as a tacit knowledge resource: path dependent and hard to imitate

As noted previously, design activity in Beta is mainly a support activity, as in Research & Ventures where it supports technology development. Otherwise external design services are bought in, as is industrial design by Consumer Products.

i. Consumer products

Beta performs little or none of the design of its consumer products, preferring to either buy complete products 'off the shelf' or to commission design agencies (6.2.2, page 108). Design knowledge (and its inherent strategic value) therefore resides outside the firm's ownership, and there is a risk it may be lost or passed to competitors if the agency relationship breaks down. However, buying in design services obviates the difficulty of managing tacit knowledge as an internal resource; that responsibility stays with the agencies.

With a few designers and agencies Beta has maintained long relationships, ensuring that acquired tacit knowledge remains available to the firm (and not its competitors). One of these is B-1, who has worked for Beta for over 20 years, designing all but one of their consumer devices.

"I did my first Beta phone in 1985, and I've led their teams delivering probably about six to seven hundred since... The only Beta-designed product we haven't designed is the BetaBox." [B-1]

Beta's highest-profile consumer product, the BetaBox, was designed by another agency, for both its first and second generation models. Notably though, the third generation model is being designed by B-1.

ii. Research & Ventures

Design activity in R&V plays a role in exploring and translating technology applications, and design knowledge within the group could be described as a tacit resource, with strategic value. Yet this value is not always recognised within the firm. One designer suggests that the value of their activity, as perceived by senior management, can diminish so far that it is almost ignored, or has to be hidden.

“We go through periods when design within research is not valued in any respect at all and you’re hiding it away... claiming you don’t do design, but you do some other thing... It’s not regarded that highly [and some senior managers] would much prefer if it wasn’t here. They don’t see the major value that we actually add.” [B-3]

Summary

For Consumer Products, tacit design knowledge resides with the design agencies commissioned by Beta, so does not provide strategic advantage. Long-standing relationships with agencies may provide a compromise between knowledge ownership and the burden of management.

In Research & Ventures, tacit design knowledge may be a source of strategic advantage, but is not always valued highly as a resource.

6.3 Design informing strategy formulation

As in case 1, this section considers Beta’s use of design and design methods in the formulation of strategy, and whether there is evidence that it contributes in the three ways identified in chapter 2 (page 34):

- stimulating creativity and providing fresh perspectives;
- exploring uncertainty and assessing trade-off through prototyping and visualisation;
- achieving a holistic view of complex systems and a shared strategic vision.

Agency designers involved with Beta’s consumer products claim to contribute to discussions about product strategy, and less often, brand strategy. But Beta is a large firm and most of its activity is in provision of networks and telecommunications; consumer product strategies, although important, constitute a small element of corporate strategy as a whole.

“We are a network provider with some bolt-on nice tangible products to go on the end of it. Consumer Products is a drop in the ocean for Beta as a business... Design agencies are not influencing Beta and our whole corporate future strategies of business, definitely not. Beta’s business is about providing communications packages.” [B-9]

There is some scepticism of the motives and abilities of outside consultants who claim to have strategy expertise. It is suggested that consultants want to do strategy consulting because it is easy money for little work; for propositions manager B-5, many such engagements result in little value.

“Everyone wants to do strategy, to pretend they’ve come up with a great idea, it’s easy work, to make Powerpoint slides... Anyone can say they can do this. Whether they deliver is another matter.” [B-5]

Although it is important to explore long-term ideas with freedom from practical limitations, Consumer Products have to focus on near-term commercial products. Creative exploration must be balanced with core business.

“Companies can do very well when people are given very fluid structures to work in, to do different things. [But] they can do terribly badly, because people piss around and don’t focus on core activities.” [B-5]

In Beta, long-term exploration of applications is the remit of Research & Ventures, and designers there play an important part.

6.3.1 Stimulating creativity and providing fresh perspectives in the strategy context

i. Consumer product designers

Product designers such as B-1 are involved in developing new consumer products, and are thought to bring diverse, provocative ideas at the concept stage, yet have a sound understanding of technical feasibility. Such ideas commonly originate in brainstorming sessions, which involve a diverse group of Beta and outside staff.

“It’s about having the different ways of looking at the world, seeding the discussion, a good source of diverse ideas. You can provoke a team by having a designer, [or] anyone who isn’t an engineer can help. Designers are particularly helpful because... they have a foot in the production world.” [B-6]

Product designers contribute ideas which may be taken up at a high level, with long-term consequences, although it is difficult to attribute such ideas to individuals or to the agency alone. B-1 has been involved in discussions with senior leaders in Beta about the strategic role of consumer products, such as in positioning Beta's brand or entering new markets.

"[We were asked to track] where the company and core brand was going [and] mirror that in devices... 'What's the mission? Who are we, where are we, where does our brand go? How do we get into mobile?' They asked us that." [B-1]

B-1 recognises that such involvement requires trust from the client, based on the prior performance of his agency. Over the 20 years working with Beta this level of trust has varied according to personal relationships with senior Beta staff; when contacts in the firm change the relationship may need to be rebuilt. Trust also varies with the 'creative alignment' of the two parties; that is, whether the agency's creative style is in line with the client's brand direction.

"What's frustrating is [when we are] given the opportunity to give them strategic advice, they take it and good things happen. But it's very much an inside sell. You earn the right to have a strategic opinion because you have actually delivered results for people... After the head of devices left we got a quite disenfranchised at a senior level... [Now] we're getting asked all the big questions again, but it does ebb and flow." [B-1]

Trust is important, as design decisions involve high stakes for the client, even at product level. B-1 suggests that many designers are prone to underplay this, happy to risk their clients' money, and even resentful when risks are not taken. These stakes are even higher if attempting to influence strategy – as more designers seem to be.

"The design business needs to be careful. It's full of keen people who have read books and want to advise companies on strategy. But these companies, they go to war with real bullets! ...[Designers'] actions represent incredibly risky bets." [B-1]

ii. Design in Research & Ventures

R&V designers generate concepts for novel technology applications, both near-term and long-term. Long-term concepts help generate ideas and inform decisions with far-reaching consequences, such as investing in new infrastructure technology or entering new markets. Concepts are explored in R&V then presented as prototypes or visual stories describing their potential strategic implications. These are then used in Board-level discussions.

“We start with a concept usually – ‘this would be a cool idea’ – then go backwards to work out how that impacts the strategy.” [B-2]

Concepts usually involve technologies originating from the R&V research teams but also from sources outside Beta. These concepts contribute to business leaders’ awareness of technical possibilities and of competitor activity (6.2.3 ii, page 112), and help generate ideas around long-term options for the firm. Concept design work in R&V also has to be balanced with demand from the commercial divisions for near-term products, which will help them meet revenue targets or replace an existing, outdated product.

“More frequently we’re being pushed to be future-looking by Research [but] the lines of business want it to be more near-term... So it’s trying to walk that tightrope.” [B-3]

“The way it’s set up and incentivised for product managers... makes it very difficult for them to think strategically... Stove-piped Products teams would only be interested if [the idea] replaces what they currently have and that’s going out of date...” [B-2]

Summary

Trusted designers of consumer products contribute ideas to product strategy and brand strategy. High-level relationships depend on trust, and vary as personnel change roles.

R&V designers conceive long-term future scenarios and products to help generate ideas around long-term options for the firm.

6.3.2 Exploring uncertainty and assessing trade-off through prototyping and visualisation

Creating visual representations is characteristic of the design process, and is vital for exploring and assessing new product ideas. At a higher level in the firm, visual designs help senior management make strategic decisions regarding investments in new applications of communications technologies. As already noted, R&V designers play an important role generating and communicating concepts. They use sketches, models and prototypes to ‘bring technology to life’. Concept development begins with many short written scenarios, but selected ideas are quickly taken to prototype stage

“We usually start with lots of scenarios, sometimes hundreds, usually written, so we can knock through them pretty quickly, [and some] go through to a prototype. By building a prototype we’ll get much more involved in this design to try and make it real... create enough of an idea of what the product should be, the retail cost, how it might influence the strategy.” [B-3]

In this context, visual methods are valued for conveying and exploring ideas which are difficult to articulate in words, yet their styling is not important.

“Although most of us have [visual styling skills, and] we quite enjoy doing it, it is downplayed within research. It doesn’t earn me any Brownie points. Here people aren’t interested in whether it looks cool or funky.” [B-3]

Although it helps attract media publicity when it is needed, an over-styled model or concept can distract from the principle behind the concept; accounting for the complex factors that lie behind the concept is more important than its appearance.

External design services have also been used by researchers in the Technology division to produce graphic documents which help communicate future possibilities, looking 4 to 10 years ahead. B-11 found them very effective and would like to use them more for these purposes.

“[An agency] produced these very large visual documents which brief an idea... in the strategic stages, before you’ve even accepted that it’s going to be a product or service that the business can develop and sell... [linking] into real stuff that is happening, but also projecting into the future, which I find very attractive, very appealing...” [B-11]

Summary

Prototypes from R&V and graphic documents from outside agencies help senior management explore uncertain futures and make strategic choices.

6.3.3 Achieving a holistic view of complex systems and a shared strategic vision

Corporate level strategy decisions involve complex scenarios, which might be encapsulated and represented to some extent by the models and storyboards mentioned above. The visual style of prototypes from R&V designers is of secondary importance to the holistic consideration of these complexities.

“[Merely] being visual doesn’t cut any mustard here. Sometimes it’s a hindrance. The more holistic, strategic we can make something [the better]: IP, potential revenue, and the back story [of] why we’ve done this initial prototype, they’re the important things.” [B-3]

When they are taken up by the Board, concepts from R&V may have far-reaching impact on Beta’s business, influence pricing structures or network infrastructure, or creating new businesses for the group.

“[We generate and communicate] concepts which together might actually create a whole new business case related to the delivery of lots of content... [which might] drastically change the strategy for the deployment of wi-fi hotspots across the city, for instance. And will influence potentially even the pricing models.... So these concepts... should influence the core strategy that the company develops and deploys.” [B-3]

Other parts of the Technology division might also benefit from using design services, to ensure their strategic contributions and goals are recognised by the rest of the firm.

“We’re just not very good at articulating why the business should be doing this sort of research... There’s some very attractive things for the business in there, but researchers are just very poor at talking about [them]. I think if it was higher up their agenda, then the business would be more prepared to invest in this space, would actually do better as a business.” [B-11]

Summary

R&V designers represent complex technologies and systems, which inform board-level decisions with far-reaching consequences, such as investing in new infrastructure technology or entering new markets.

6.4 Key contributors to strategic design

Sections 6.2 and 6.3 have sought to identify the ways in which design may contribute to strategy implementation and formulation in Beta. This section refers in summary to these findings, to relate them to the three contributing factors for successful, optimal design integration identified in phase 1 (chapter 3, page 36):

- Is design applied to different areas of the business with consistency and completeness?
- Is design applied with different stakeholders of the business in mind?
- Is design permitted to contribute at a high level in the organisational hierarchy?

6.4.1 Design applied to different areas of the business with consistency and completeness

i. Design consistency in conveying corporate values

Marketing and Sales

Beta's group-wide Brand team oversees corporate identity, working with many agencies to ensure consistent use of the brand identity by Sales & Marketing and by partner firms, and to maintain association of the Beta name with its corporate values (6.2.1 i, page 101).

Changes to the group corporate identity have caused difficulties in production, when the new logo has not been suitably designed for application to existing products (6.2.5, page 123).

Design of products and services

Industrial designers work with propositions managers within market-facing units. 'Look and feel' consistency of designed (not 'buy-and-badge') products is managed by the head of each device group, not by the Brand team. The Touch initiative for consistent graphic icons runs through all devices though. (6.2.1 ii, page 102)

Design of products for Business, Wholesale and Operations divisions were not explored in this study.

Customer experience

Good customer experiences raise perceived value and customer loyalty, and improving customer experience is a major focus for the whole Beta group. This drive is also the reason for the Right First Time program (see below), and may correspond to increasing awareness and influence of Human Factors design expertise. (6.2.1 ii, page 102)

ii. Completeness of design supporting and integrating within the business

Integrating multiple design disciplines

Beta appears to use design disciplines in a co-ordinated way in both R&V and Consumer Product design, engaging design skills in interaction, human factors, graphic and industrial design. HF skills are also applied with interaction design to some internal infrastructure systems, such as customer care diagnostic systems. (6.2.5, page 123)

The application of architecture and interiors design to the workplace interiors and buildings was not discussed.

Design supporting and integrating all business activities

Designers conceive and improve market-facing products, services and marketing materials, and also internal systems and communications. HR systems are outsourced, and may not be amenable to design improvements. Procurement processes could benefit from design attention.

The Right First Time program rewards holistic design, identifying linkages and improving fit between value activities, reducing hidden costs. New product development may be hindered by stove-pipe (silo) mentality among product teams.

Diagnostic systems for customers and staff have been improved by designers, but other systems need refinement. Design prototypes and research papers gain positive publicity, and help sell corporate contracts, although Marketing staff might like to use designers more. (6.2.5, page 123)

Agency designers of consumer products mediate between marketing and technical specialists inside and outside Beta, and between project managers and their senior managers. They may also recognise and connect people in the firm with relevant skills and agendas who may not know one another. Designers have no influence on business architecture. Designers in R&V use visual methods and models to communicate real life applications of novel research and technologies, among other researchers, between researchers and MFUs, and also between the MFUs and external firms and universities. (6.2.3, page 114)

Summary

Beta's Brand team work with agencies to maintain consistency and quality of their marketing communications, PR and brand identity. Brand changes have previously caused difficulties for product design and production. Consistency of designed products is managed within the devices groups, not by the Brand team, although the Touch icon set applies across all devices. Improving customer experience is presently a priority, and HF design skills are increasingly applied.

Design skills in interaction, human factors, graphic and industrial design are co-ordinated in both R&V and Consumer Product design.

Design is applied in Sales and Marketing, internal (infrastructure) IT systems and Services, but little or not at all in HR or procurement. The design of devices such as Consumer Products is part of Operations and Services.

The strategic planning of value activities – the business architecture – is not influenced by designers.

6.4.2 Design applied with different stakeholders in mind

i. End users

Beta has made, and continues to make, a deliberate effort to prioritise customer experience in all its activities. Right First Time aims to find and correct the causes of customer confusion and dissatisfaction, and has led to design improvements in customer services and in self-help web sites. (6.2.5, page 123)

Perceptions of value and differentiation are influenced by the design of Beta's identity, products and service interfaces. These visible and tangible brand expressions are important for representing Beta's intangible infrastructure and services. Propositions managers and industrial designers bring customer insight into new product development. Human Factors expertise is increasingly valued and recognised for improving the customer experience. Visual consistency across product lines has improved usability and strengthened brand image. (6.2.1, page 107)

ii. Employees

Designers are involved in improvements to internal IT systems and communications. Some HR systems are complex and daunting, but are outsourced so may not be amenable to design improvements. Diagnostic systems for call centre staff have also been improved by designers, but other systems need refinement. Call centre staff accommodation and workplaces receive some design attention to improve morale and productivity. Call centre staff within Beta provide feedback for improving systems supplied to corporate clients. (6.2.5, page 123)

Design for other employees such as field workforce, technologists and scientists was not discussed.

iii. Suppliers

Access to Beta by SME suppliers is hindered by a complex formal procurement process, which might be better designed with SMEs in mind. (6.2.2 ii, page 109)

Technical advisors from suppliers of materials and components inform the consumer product design process. (6.2.2 ii, page 109)

iv. Shareholders

Shareholders receive newsletters and magazines, and have access to a dedicated website, all designed by external agencies. Important elements of the strategic vision are also demonstrated through R&V prototypes, publicised among employees and shareholders.

Summary

Beta products and services are designed with input from end users, Beta call centre employees, and suppliers. Communications with shareholders are designed, and may publicise R&V design projects. Design applied to the procurement process could benefit suppliers.

6.4.3 Design contributing at a high level

i. Consumer product design

Consumer product designers contribute ideas and views which might be taken up at high level, but such influence requires trust from senior management, as well as a shared creative outlook. These vary as personnel change roles (6.3, page 125). Product design agencies are used primarily at product strategy level, not corporate level (although B-1's agency influences corporate strategy for smaller clients with fewer product platforms and ranges than Beta). B-1 suggests product-level engagements can have greater strategic impact than some corporate-level branding design.

“For larger clients like Beta we do brand expression... [strategy] at a project level... On the one hand, we're capable, but we don't sell ourselves at a high enough level. On the other hand, a lot of people who are saying they do strategy are actually [just] doing logos.”

[B-1]

Strategic impact of design, B-1 argues, can come about not only through high-level collaboration but also, and perhaps more importantly, from a *deep* engagement with the client.

“It's about going into the operations of the business. ... to go from the inside out and find the purpose, be the one to articulate, convert that purpose into the [product] specs.”

[B-11]

ii. R&V design

R&V designers generate concepts for novel technology applications, some of which inform board-level decisions with far-reaching consequences, such as investing in new infrastructure technology or entering new markets (6.3, page 125). Their influence in Beta is generally upstream of that of consumer product designers. Their conceptual and exploratory work helps the senior leaders of the commercial divisions to imagine ways of offering value and differentiation. Concepts from R&V are considered at senior and Board level before they are passed down to propositions managers, if approved, for development and design by outside agencies, such as B-1's.

Just as for agency designers, changes in senior personnel affect the relationship between R&V designers and the business leaders (6.2.7 ii, page 125). Design awareness has reached higher levels in the firm as personnel have risen to leadership positions.

“In the past 15 years we've been trying to move up the value chain, influencing strategy. It's taken a long time but it's just beginning to have an impact... These people [who championed design,] are much more senior now than they were 20 years ago, so they have a bit more influence over the thinking, so design awareness is higher up in the organisation.” [B-2]

Yet the CTO, B-7, has board-level responsibility for R&V and all of Technology Development, and does not recognise a role for design or designers in shaping the business architecture in these groups.

Summary

Product design agencies are used primarily at product strategy level, not corporate level, but claim to have impact equal to some brand design. Influence of R&V design is upstream of that of consumer product designers

6.5 Case 2 summary

As in case 1, the following is a summary of how the proposed contributions of design are

- 1) Recognised by the firm – i.e. whether there is evidence that the firm recognises that design can make such a contribution and that it is strategically important;
- 2) Practised in the firm – i.e. whether there is evidence that the firm implements design in such a way.

This study of Beta shows evidence that the firm recognises several strategic contributions of design, as categorised for this study. These are mostly in market-facing activities, R&V

and also in Operations. Most of these were evidently being practised in the firm, and some were practised though not evidently recognised. These are summarised in table 7, below.

The implications for this study of these findings are discussed in the next chapter, together with the findings from case 2, and a further group of interviews.

	Recognised	Practised
Design in implementing strategic positioning, fit, learning & culture		
Design used to build market differentiation, customer intimacy & perceived value	◆	◆
Design influencing dependencies in the supply chain	◆	◆
Design integrating and mediating between professional domains	◇	◆
Design shaping and communicating corporate culture	◇	◆
Design supporting activities in the value chain		
Design in primary value activities		
Inbound logistics	◇	◇
Operations	◆	◆
Outbound logistics	◇	◇
Marketing /sales & communication	◆◆	◆◆
Service	◆◆	◆
Design in secondary (support) value activities		
HR Management	◇	◇
Technology development	◆	◆◆
Firm infrastructure	◇	◇
Procurement	◆	◇
Design in processes and systems of knowledge management	◇	◇
Design as a tacit knowledge resource: path dependent and hard to imitate	◇	◆
Design in informing strategy formulation		
Stimulating creativity and providing fresh perspectives in the strategy context	◇	◆
Exploring uncertainty and assessing trade-off – prototyping & visualisation	◇	◆
Achieving a holistic view of complex systems and a shared strategic vision	◇	◆
Additional factors influencing strategic design		
Design applied to different areas of the business with consistency & completeness	◆	◇
Design applied with different stakeholders in mind	◆	◇
Design contributing at a high level	◇	◇

◆◆ strongly evident

◆ evident

◇ not evident

Table 7: Summary of findings from case study 2: Beta Telco.

Chapter 7

Corroboration and interpretation

7.1 Introduction

This chapter seeks to draw some conclusions in support, or otherwise, of the proposed strategic contributions of design; that is, to answer the questions:

- are such contributions evident in real firms?
- are they recognised as strategically important by real firms?

To do this, the findings from the Alpha and Beta case studies are summarised once again for each of the proposed ten categories. At this stage of the study, additional views are incorporated from the third sample group Delta, described in chapter 4. Each proposed contribution is related back to the context from where it was derived, that is, the strategy models described in chapter 2 (see summary 2.5.1, page 31). The chapter concludes by examining how the contributing factors identified in phase 1 may relate to the proposed design contributions.

All three samples are small (11, 12 and 9 respondents respectively), and from only a few firms, but this is not an attempt to make gross generalisations about all firms. There are many aspects of the research design that make it unsuitable for such claims, as will be discussed later. The aim here is to identify design usage that is evident from the study findings. A lack of evidence will be taken as inconclusive, not as evidence that such contributions are not happening. Such simplistic reasoning is regarded as sufficient for the purpose of this thesis.

The comparison of Alpha and Beta also elicits some notable observations specific to these firms, which are identified here and discussed further in the next chapter. These findings demonstrate how a study based around these categories can help build a rich description of how different organisations use design.

7.1.1 Delta group interview participants

As described in chapter 4, a further group of nine interviews were conducted concurrently to those in Alpha and Beta. These sought the views from a broader range of industry contexts, albeit with less depth than Alpha and Beta, including designers from agencies, with experience of many clients, and others working in-house for major multi-national firms. Sampling and recruitment were carried out as a continuation of the exploratory study in phase 1 (see 3.2, page 37). The quotations that appear in the following summaries are all from these interviews.

ID	Role	Activity/industry	Employees (approx)
D-11	Director Senior Designer	Product Design & Innovation agency	20
D-12	Freelance industrial designer	Product Design	-
D-13	Owner / Director	Product Strategy Consultancy	10
D-14	Head of Foresight	Product Design Consultancy	65
D-15	Senior Designer	International airline	9 000
D-16	Head of Multimedia Design	Global mobile phone manufacturer	48 000
D-17	Senior Designer	Global mobile phone manufacturer	48 000
D-18	Senior Global Director of Design Research and Innovation	Global electronics & lighting manufacturer	200 000
D-19	Director	Branding and design consultancy	50

Table 8: Participants in the Delta group, from various design agencies and in-house teams.

7.2 Implementing strategic positioning, fit, learning, and culture

7.2.1 Design used to build market differentiation, customer intimacy and perceived value

This design contribution relates to the principles of *market positioning and differentiation* by which loyalty and perceived value confer strategic advantage, reducing the threat of substitution and buyer bargaining power [Porter, 1980; Porter, 1985; Treacy & Wiersema, 1993] (2.3.2, page 20). It also covers design as a *core competence*, improving ac-

cess to a wide variety of markets and contributing significantly to perceived customer benefits [Prahalad & Hamel, 1990] (2.3.3, page 26).

This is perhaps the most visible, recognised and accepted of design's strategic contributions, yet the case study findings demonstrate two quite different contexts in which they may occur.

Differentiation and perceived value

Both Alpha and Beta recognise and exploit the strategic importance of design for building market differentiation, customer intimacy and perceived value. For Alpha, design helps its clients differentiate themselves, adding value in a variety of markets. In providing this expertise, Alpha is shaping perceptions of its own value offering and specialisation to potential clients and to the general public. Perceptions of value are reinforced by a consistent brand identity in marketing communications, offices, and other publicly visible aspects. In Alpha, design *is the core activity*, reinforced by other market-facing design.

In contrast, Beta uses visible brand expressions, in products, service interfaces and branded marketing and PR communications to represent its intangible primary activities. In Beta, brand and product design *serve the core activity* to shape customer perception of it (although design from R&V has some public visibility). Beta outsources most design work to agencies, some with long-standing relationships, allowing it to focus on core activities. Such practice is also common among smaller firms, such as those who have sought the services of agency designer D-14.

“Most businesses are more about delivering the product to customers on time than they are about making things. It's just not very interesting, it's not very sexy, or creative. You outsource the thinking to someone else. And who better to do it than your creative agency who really understands the brand [and] has a good track record of successful products in the past?” [D-14]

Customer intimacy

Alpha's designers build intimacy with clients by challenging them for a deeper understanding of their motives and needs. Alpha's design projects are very large and mostly one-off, not for the mass market; market research does not directly drive design decisions, though they are informed by research in long-term social, geo-political and environmental trends.

Beta's consumer products are strongly market-driven, informed by extensive market research. Customer focus and design awareness used to be minimal but are now high throughout the firm, and contribute to Beta's value and reputation in the consumer and corporate markets. Although proportionally, designers are involved very little in the firm as a whole, they play an import role as advocates of the customer. This is reiterated in a general observation, that designers may feel more closely allied to the end user than to their client or employer.

"I know from experience, many, many designers who... either as consultants or employees... almost feel that they aren't really working for that company, they are working for the customer of that company. That's also possibly what slightly scares some [colleagues], because it makes them feel these employees are not wedded to the company."

[D-16]

Alpha and Beta recognise and work towards exploiting the strategic importance of design to market differentiation, customer intimacy and perceived value. Designers are often advocates of the customer, with mixed loyalties. Design can play such a role as part of, or in support of, a firm's core activity, and confer competitive advantage through strategic positioning.

7.2.2 Design influencing dependencies in the supply chain

This design contribution relates to the principles of *market positioning*, and to the *generic strategies* of both *cost leadership and differentiation* [Porter, 1980; Porter, 1985; Treacy & Wiersema, 1993; Prahalad & Hamel, 1990], specifically to buyer and supplier bargaining power as identified in Porter's Five Forces, which influence the competitive environment outside of the firm [Porter, 1980] (2.3.2, page 20).

Designers' decisions are recognised in Alpha as having strategic influence over suppliers, both for client building projects and for their own infrastructure and operations. Design activity has also enabled strategic alliances with manufacturer-suppliers, e.g. of lighting and furniture.

Beta recognises that design must be used to differentiate and add value to their consumer products, to reduce the bargaining power of retailers, i.e. to maintain its margin in competition with unbranded products. However, for some products, differentiation is sacrificed in favour of a buy-and-badge approach, to allow rapid entry to market at lower risk.

Design is not evidently used in either Alpha or Beta to deliberately shape the *experiences* of suppliers. However, Alpha recognises that suppliers may be influenced by the credibility

and pride of association with well-known projects. Beta staff identify aspects where design could facilitate more agile supplier engagement, especially for small firms.

A senior designer in a major mobile phone manufacturer is involved in procurement decisions, planning for future demand of materials and technologies, such as metal (rather than plastic), and thin camera components. This firm increasingly recognises that design has an important influence on supply dependencies, and that a dialogue is therefore needed between logistics, procurement and design.

“[We are] talking to our logistics and purchasing people and saying ‘we want to be using metal in 2010 for 70% of our phones, so you need to go out and find the metal people...’ if we are talking about 16 phones a second, that’s a lot of metal we are going to need... It is quite interesting, this is the first time I have really been involved in these sorts of discussions and feeding in to how a business defines itself.” [D-17]

Here the firm’s scale gives it significant bargaining power, such as over suppliers of camera modules, the thickest components in mobile phones.

“[We keep] saying ‘thinner! Can you get it thinner?’ and just helping to drive those things at a strategic level... Saying ‘if you do this thinner then we will be ordering billions of these off you’. And that tends to focus minds!” [D-17]

Design is seen to influence supply chain dependencies upstream and downstream. Supplier and buyer bargaining power can be influenced by decisions in the design of products, by high profile design output (such as iconic buildings or popular products), and by design-led alliances, resulting in competitive advantage through strategic positioning. These influences are recognised in the case firms, though in some cases may be traded off against other factors such as speed to market.

7.2.3 Design integrating and mediating between professional domains

This design contribution relates to the principles of *strategic fit*, improving linkages (and hence fit) between internal value activities [Porter, 1985] and to external co-ordination of the firm in its environment, identifying potential partnerships and generating new industry vision [Borja de Mozota, 2003] (2.3.2 iii, page 23).

The mediating role of designers is regarded in Alpha as fundamental to its core activity and performance. Multi-disciplinary collaboration is emphasised in sales messages, and appears to be highly valued strategically. Recognition of such a role was not explicitly evid-

ent in Beta. However, influential designer mediation was evident in the firm's research activities and in consumer product development; designers mediate between internal and external stakeholders, and contribute to the formation of new partnerships in business and knowledge-sharing.

In-house designers may recognise valuable capabilities within their own firms: D-16's team recognised the strategic importance of materials engineers dispersed in the organisation.

“There was a bunch of materials science engineers sitting in corners finding out about new plastics. And the rest of the engineers were saying ‘we’ll just use the same plastics as usual’, but we said ‘hang on a second, this is much more interesting!’... We realised before the rest of the company [that they] were going to be critical to our future.” [D-16]

This led to more innovative use of materials in the designs, and also established good working relations with the engineers, who were pleased to have a new higher standing in the firm.

“[We were able to bring] people in the business into the focus, into the light, and say look, these people are really important to us... this is a really important competence or function, we should be using them more, developing their capabilities more. So that means we have a very good relationship with those people. They love us because we help them become heroes.” [D-16]

Agency designers may be familiar enough with a client firm to identify interested or useful collaborations, as in Beta, or to provide insights into linkages between operations.

“[The client] really liked the fact that we'd gone from research to brand and product strategy. It was joined up... We ended up talking to product design, market research, marketing directors, it was quite cross-functional, meeting lots of people across the organisation... The bigger the organisation the more likely it is [that they won't know each other].” [D-13]

Designers are seen to provide mediating roles within and outside the firm, identifying potential partnerships, optimising linkages (fit) and generating new industry vision. Some firms recognise design's role here as strategically important.

7.2.4 Design shaping and communicating corporate culture

This contribution relates to the principles of the *learning organisation* [Senge, 1990], specifically to creating and communicating a *shared vision*, one of the learning organisation's five disciplines. It also relates to nurturing people with knowledge, as valued according to the *knowledge-based view* [Manville & Foote, 1996; Grant, 1996; Wernerfelt, 1984; Barney, 1991] (2.3.3, page 26).

Alpha regards its strong and distinctive corporate culture as an essential contributor to the firm's long-term success; its culture is believed to encourage performance through technical excellence and creative freedom, and is seen as a key factor in staff satisfaction and hence retention. Design is used to communicate cultural values, histories and knowledge, but is also regarded as an essential *part of the culture* itself.

Beta's Head of Brand believes that designers cannot shape culture, and that this is the role of HR. However, important elements of the strategic vision are introduced and reinforced in corporate culture through graphic and communications design, and through concepts and prototypes that represent Beta's long-term direction. Also, indirect cultural influence may come from the design of Beta's products and services which express and reinforce the firm's values and purpose.

In D-16's firm, design is used to shape the culture, and specifically to fulfil a company-wide strategic imperative: to promote corporate social responsibility among employees and shareholders.

"It is one of our internal capability strategies to use learning and insights from design to help us become more socially and politically motivated – this whole idea of 'purpose beyond profit'... Design is very strongly connected to that and that's partly because we are connected to [end users]. I think we can often find ways to articulate [CSR to shareholders] that then does not get in the way of good business." [D-16]

Design is regarded in some firms as a powerful tool for shaping and communicating corporate culture. It is recognised for its role in creating a shared strategic vision for a learning organisation, and for improving employee satisfaction and retention in accordance with the knowledge-based view.

7.2.5 Design supporting activities in the value chain

As in 7.2.3 above, this design contribution also relates to the principles of *strategic fit*, [Porter, 1985], as part of a holistic design strategy so that design can contribute across communications and identity, products and services, and environments [Cooper & Press, 1994] (2.3.2 iii, page 23).

As noted in 7.2.3, design is regarded in Alpha as an essential element throughout all primary activities, and more broadly as a unifying process between of all of them. Alpha regards all its Operations activity as design, and also much of its R&D.

Beta's Right First Time program rewards holistic design, identifying linkages and improving fit between primary value activities. Although the program is not solely the domain of designers, there is ambition to better capture behavioural and subjective aspects of the customer experience, likely to result in more design involvement.

Both firms use and value design expertise in technology development. Design's potential contribution in other secondary value activities is recognised in both firms, but is not evidently practised; some specific concerns were identified (notably in the HR departments of both firms).

D-12, a self-employed product designer for manufacturing firms, may be involved in all aspects of primary activities, though the direction and scale of influence varies.

"We have huge discussions about the process. Whether they need subcontractors, or get in extra design help, or a team of 20 or whatever... My input [to Inbound logistics] is huge, fairly influential [in Operations], slightly influential [in Outbound logistics], Marketing & Sales would be influencing me, and I would be influencing it only a little bit. In service I'd only have a tiny bit of discussion." [D-12]

D-17 gives a similar account, with different emphasis, and noting a shift to more involvement in services; the firm's strategy calls for greater customer involvement during the life-time of its products (mobile phones).

"We don't go much into [Inbound logistics], although we do have an effect more at a planning stage. We are very deep in [Operations] and we have a certain effect in [Outbound logistics]. We can be quite deep in [Marketing & Sales] and here [in Services] I think this is really changing. We are all getting really deep into the service thing." [D-17]

Other product designers also are engaged with the full process of primary activities. D-11's product agency may be involved with planning whole processes and the facilities to carry them out.

"If we get involved in [strategy] thinking... we will do it as a designer understanding all of the drivers... so that we can give you a vision for what [the product] is going to be... and how much it will cost and what partners you will need along the way to make it, what brand, what manufacturers... We go around the world and we actually create manufacturing divisions within companies." [D-11]

Other firms may explicitly and formally recognise the value of design in all value activities. For D-16, design is part of the firm's 'capability strategy', which is guided by the overall business strategy, and runs throughout the value chain, much as described by Alpha, but also serving other secondary activities.

"These would be our capability strategies here [across the value chain] and we apply them across the whole business, and design is a capability strategy... It still needs the business strategy to say what you are pointing this at. [It] is what we believe are our core capabilities that will enable our business to achieve its strategic objectives." [D-16]

D-16 emphasises that the role is one of informing as well as implementing the business strategy.

"[It is] doing two things: it has to also inform as well as support. It's not just a delivery strategy. Because it's a capability it's embedded in the core of our business and it's in the core of our being, so it does have to actually... make what the strategy is as well as make it happen." [D-16]

Design is often considered by clients only in terms of the product itself, the "object of value", but firms need to attend to all the signals of value associated with a product or service.

"[Firms are having to take note of] communications, marketing, advertising and design... The object of value is [commonly] the focus of design [but what matters] in the long term is the *communication* of the value, whether through brand or advertising, communication design or the product." [D-16]

In several of the firms discussed, design makes a recognised, valuable contribution within primary activities, in technology development, and in other secondary activities. Design is not seen to be systematically applied or co-ordinated across secondary activities in Alpha or Beta.

Other firms may employ design, co-ordinated systematically throughout and within the primary and secondary value activities, in a role which implements and informs the business strategy. Such co-ordination also takes account of the various channels through which value is communicated.

7.2.6 Design in processes and systems of knowledge management

Design can be applied to improve knowledge management systems and processes, contributing to strategic fit (as in the firm infrastructure, a support activity in the value chain), as above in 7.2.5. But in its own right, knowledge management is a crucial strategic *capability* according to the *knowledge-based view* [Grant, 1996; Wernerfelt, 1984; Barney, 1991]

Knowledge management is regarded as critical to Alpha's performance and sustainable advantage, and design is used by the Information Management group to provide a core resource to the primary activities in the firm, combining interactive systems, physical places, graphic and communications design. The firm recognises design's strategic importance in this respect.

Knowledge management in Beta was not examined, so design in this context was not found to be either recognised or applied as a strategic resource. Other designers interviewed did not mention knowledge management per se.

Well designed knowledge management processes and systems may be regarded as strategically important in some firms, as in Alpha, in accordance with a knowledge-based view.

7.2.7 Design as a tacit knowledge resource: path dependent and hard to imitate

This contribution, like the previous, also refers to the principles of the *knowledge-based view*; design knowledge can be a strategic resource or *capability* if it is path dependent, or difficult for competitors to develop quickly, and is valuable to the firm [Barney, 1991] (2.3.3, page 26).

As design is part of Alpha's core activities, the strategic value of tacit design knowledge is recognised as a crucial competitive resource for the firm. It is difficult for competitors to imitate yet difficult to manage as a resource. Alpha's culture nurtures tacit knowledge by encouraging personal interactions, and learning by example, demonstration and participa-

tion, and this is regarded as an essential element of the Alpha culture, as already noted (7.2.4, page 143).

Tacit design knowledge for Beta's Consumer Products resides with the design agencies commissioned, so does not provide strategic advantage. Its value may be recognised, in a general sense, yet considered inappropriate for Beta's fast-follower approach to products. Long-standing relationships with agencies may provide a trade-off between knowledge ownership and the burden of its management. In Research & Ventures, tacit design knowledge may be a source of strategic advantage, but is not always valued highly as a resource.

Many firms prefer to use design agencies rather than in-house teams, but the success of this approach may depend on internal capability to manage the process, to co-ordinate the relationships with design agencies. Although avoiding the necessity to manage *design knowledge*, this management role itself still requires some design expertise. D-16 is doubtful that firms without such skills can exploit design fully, being less able to integrate the design activity with their strategy.

“[Their success depends on what] is supporting their business strategy, and what is informing their business strategy from those [design] channels, and then also how much they let that into their process... They use resources externally but manage the relationship internally. And even some companies completely divest their responsibilities, even their strategy is defined externally. I think very few companies can survive like that but I've seen companies who don't have design managers at all, let alone designers.” [D-16]

Tacit design knowledge may be nurtured as an imperfectly imitable resource, conferring strategic advantage in firms where such knowledge is valuable. In some firms, the value of acquiring and keeping such knowledge may be less than the cost to do so.

7.3 Design informing strategy formulation

7.3.1 Stimulating creativity and providing fresh perspectives

This design contribution relates to the *fallacy of formalisation* [Mintzberg, 1994], the misconception that strategy can be made in an imposed formal structure and process, without allowing freedom for creativity (2.4, page 29). Designers and design methods may include both formality and freedom, which might contribute to strategy formulation.

Alpha's Foresight team uses design methods to bring creativity to the firm's strategy-making. Designers from Alpha are invited by clients to offer ideas and challenging views on strategic-level questions. In Beta, designers contribute to strategy with long-term future scenarios and products to help generate ideas around long-term options for the firm.

In Alpha, designers participate in board-level discussions, for clients and for the firm. Whereas in Beta, designers generally present formally to the Board, and are not participants; their presentations may serve as visual stimuli, the results of free and creative exploration, but are presented quite formally.

Other firms are increasingly invited to bring creativity to the strategy-making process. As in Alpha, they are asked to bring ideas to an open-ended discussion about possible futures for the client firm.

"Design used to be briefed. [Our clients] would say 'We've worked out what we need... now go away and package it... make it look sexy, produce it, make money'. Now, increasingly companies say 'we know we need to do something but just not entirely sure what'."

[D-14]

Stimulating creativity and providing fresh perspectives in strategy-making is evident in Alpha, and to a lesser degree in Beta. Other firms are using design consultancies for early-stage discussions, to bring new ideas and creative approaches rather than be bound by formal or formulaic processes.

7.3.2 Exploring uncertainty and assessing trade-off through prototyping and visualisation

This design contribution relates to the *fallacy of predetermination* – that business conditions can be predicted to any meaningful degree – and to the *fallacy of detachment* – that strategy should or could be based only on hard facts in objective isolation [Mintzberg, 1994] (2.4, page 29). It also relates to the concepts of *strategic intent* and *trade-off* that are required of a business leader in order to set a strategic course [Hamel & Prahalad, 1989; Hammonds, 2001].

Rather than trying to predict the future, Alpha's foresight activity focuses on understanding possible futures, and designers use visual media to share and explore them. Although informed by rigorous research, this approach encourages intuitive and judgemental thinking. Clients come to Alpha for this service, but the Foresight team also contributes to Alpha's own strategy making.

In Beta, prototypes from R&V and graphic documents from outside agencies help senior management make strategic trade-off decisions, and to explore uncertain futures, including softer aspects of human attitudes, behaviour and preference.

D-18 notes that designers in the firm's large research and innovation division present future possibilities visually to the firm's businesses, based on thorough research.

“Through the design ideas that we draw, we visualise strategic direction, we challenge [leaders of other business divisions]. These are the places to go, this is the portfolio of products and services solutions you could start to deliver based on these insights... Design can help give a company strategy a sense of form...You can see what the consequences would be if you followed this [or] that strategy.” [D-18]

However it is stressed that, while design can help visualise a future, it is unlikely to inform the plan of how to achieve it.

“You can visualise the future [but can you say] what is the strategic process you need to follow to reach that future? I think it is worth defining these things because there is a big difference; the strategy for reaching a vision can be one of many.” [D-18]

Design is being used by some firms to consider unpredictable futures. Through visual representations, trade-off decisions may be explored and clarified, and decision makers may draw more on intuitive and judgemental thinking.

7.3.3 Achieving a holistic view of complex systems and a shared strategic vision

This contribution relates to the concepts of *shared vision* and *systems thinking*, two of Senge's Five Disciplines [Senge, 1990]. Systems thinking is “a discipline for seeing wholes”, which is described by Senge as a design approach, and shared vision is required for a firm to have a united sense of strategic direction (2.3.3, page 26).

Alpha's Foresight designers help represent and communicate complex systems to aid strategy making. Senior designers in Alpha help translate a strategic plan into a shared vision, a concept which can be assessed and also executed, and this contribution is recognised in Alpha and by its clients.

In Beta, R&V designers inform strategic decisions by representing complex technologies and systems, addressing the complex systems of new business propositions, such as

investing in new infrastructure technology or entering new markets. This role is evident in practice.

Making sense of complex systems is also a role performed by product strategy consultant D-13, whose skills and experience are based in product design and consulting. Tools such as frameworks and visual maps are used, rather than representations of products themselves.

“We definitely operate [in strategy]. We work to help [clients] develop tools to help categorise their products. It's management consulting around products, not just product development.” [D-13]

Design skills and customer insights are complemented with business-focused rigour, learned from management consultants. This might be regarded by some as the archetype of ‘design thinking’, but the respondent is dismissive of the validity of designers transferring skills outside of the product sector.

“We're learning from management consultancies, taking their approach about rigour, but also about getting close to the client... I wouldn't like to be known as a design thinker... People often call me [that] but I don't subscribe to that. There's a lot of tosh, hubris about this, lots of smart designers saying ‘we can take our problem-solving skills anywhere. We're geniuses, polymaths!’ I just think that's bullshit... We are a product strategy consultancy...[we're] not taking 'design thinking' processes, wandering into non-product sectors.” [D-13]

D-14 describes this contribution as closely related to the role of mediator and translator, and even uses the same words unprompted (*italics*) to describe this contribution.

“Design can basically be the universal translator, reconciling the competing needs of say, production [and] marketing... Design is not only helping the owners to understand that complex problem... They can visualise it. So, in this case, design plays a role of *visualising the complex processes*. That's one of the things it can do, or it helps get agreement amongst people who have got competing concerns by sharing a *common vision*.” [D-14]

For D-17, this contribution is made through designs of the product themselves.

“A lot of the work we are doing is about helping the business get clarity of what their business is going to look like in [three years]. We have just delivered some 20 handset models, [saying] ‘well, that's pretty much what our portfolio is going to look like’.” [D-17]

Such assessments were previously done using spreadsheets of written specifications, which convey little or none of the crucial differentiating design elements.

“On a spreadsheet it all looks very similar but actually the designs are very different in terms of how people would respond to them. We are helping the business understand the market in more emotional terms. Business is very good at... making strategy out of [quantitative data], but we are bringing the more qualitative thinking to that.” [D-17]

Designers help some business leaders visualise complex systems and provide a common vision. This may be achieved with visual representations of products, or with abstracted representations such as conceptual frameworks.

7.4 Key contributors to strategic design

The previous two sections have summarised the findings regarding recognition and practice of design’s strategic contributions. This section now considers the three contributing factors, identified in phase 1, with respect to their influence on those strategic contributions.

7.4.1 Design applied to different areas of the business with consistency and completeness

Consistency and completeness must, by definition have implications for all design contributions to strategy implementation. Alpha is found to recognise the importance of design contributing in almost all the ways proposed, but despite this, secondary support activities outside of technology development appear to lack full design support. In Beta also, design support is not clearly evident in secondary support activities outside of technology development. Notably, design is evident in many areas where its role was not seen to be highly regarded, but no co-ordinating role was identified for design in these parts of the firm.

Respondents in both firms expressed the view that they apply more design attention for their customers than for their staff (“physician heal thyself” [A-10], page 75, and “cobbler’s children effect” [B-4], page 122).

Alpha was found to have a strong emphasis on design in its culture, which may be related to the widespread recognition found. D-15 argues that successful permeation of design can only come from the culture, sanctioned by the business leaders; it cannot simply be bought in from agencies on demand.

“It has to be led from the top, it has to come down from there. That message permeates through the organisation. It’s all very well having a design department, but if that culture is not valued from the top down it won’t go anywhere. [People] read a report about Apple, and say ‘we need designers’ but don’t understand that it goes deeper than that. They don’t grasp that it has to be part of the culture.” [D-15]

There is a strong design culture in D-15’s firm, an airline, and *outside* the firm, careful attention is paid to ensure consistency and unity across the customer experience.

“We must try to prevent those touch points becoming islands. It’s how you bridge those bits and pieces. If someone goes online to buy a ticket, then the next time they meet us it’s at the airport, the check-in, the lounge. How do you bridge those gaps?” [D-15]

That is, design is strongly evident in both internal corporate identity (culture) and external (image). D-16’s firm has a strong design culture generally, and appears to have design co-ordinated and integrated by the design team.

“We are involved in the retail, in the packaging; we talk at almost all of the trade events. We push very hard for [awards]; we have a whole team to look at IPR within design; we are involved in product services, UI, new business development. We run almost all of the consumer-based research, ethnography – anything people here learn about consumers they do it through design.” [D-16]

However, the cost of achieving consistency has to be weighed against the benefits; even a design agency may have inconsistency in its presentation, such as outdated logos on office buildings.

“Taking a holistic view of the company – I do not disagree with that... but as a business, I have to weigh up the energies... consumed in doing that versus another activity. I have to make that decision as the manager of the business. You cannot criticise [that point of view], but I think it is quite a crude brush.” [D-11]

Many such small businesses do not have the mass-market, consumer-led business model of a mobile phone manufacturer or an airline, where experience is everything, and so the cost involved is not easily justified.

Firms recognise the strategic value of design applied consistently and completely, but this may be difficult in practice. Consistency and completeness have implications for design in corporate culture (as well as for designing the culture), and for all proposed design contributions to strategy implementing.

7.4.2 Design applied with different stakeholders in mind

Both Alpha and Beta show strong evidence of recognising the strategic importance of design for stakeholders. There is evidence that they are practising it in many parts of the firm, though not that it is co-ordinated and consistent in secondary support activities, as noted above.

D-17's design team has close relations with other parts of the firm, such as in Procurement and Technology Development, as already noted. Part of the role of design as mediator includes this relationship with such internal stakeholders. Externally, designers may also have a mediating role. However, like Alpha and Beta, they may find that access to the end user or customer is made difficult by having to please intermediary buyers. Large retailers hold sway over many manufacturers, as noted by B-1 (6.2.2 i, page 108).

“If you supply to Wal-Mart, you are designing for Wal-Mart not the end consumer. Wal-Mart is telling you what they want. The consumer doesn't get a look-in.” [D-14]

For mobile phone manufacturers, network operators have conflicting priorities with those of retailers and end users. Whereas retailers want to offer choice and quality to their customers, networks are trying to hijack the customer relationship to avoid being seen as a commodity.

“[The retailers just] want to sell good [phones]. As designers, we listen, they listen to us, we are respectful of each other and so forth. With [network] operators it is a real 'sleeping with the enemy relationship' – they hate us! They want [customers] to forget who we are. They want to retain that relationship because they are petrified that they could just be a utility provider” [D-16]

Although shareholders are important stakeholders in many businesses, they are also difficult for designers to engage with. Yet like Beta, many firms use communications design to maintain a relationship. For D-16, they are represented by large consortia.

“They're just huge institutions. I present to shareholders twice a year about the big things we are doing [but] we do not get to touch individual shareholders, the shareholder is too large to get a sense of a granular relationship with them so that is really tough.” [D-16]

Stakeholder relationships appear to be important for permitting strategic contribution for design, particularly in terms of providing consistent, complete design. Managing stakeholder influence may be part of the designers' role if they have sufficient seniority and access.

Buyers and end-user may have conflicting needs or priorities which must be accounted for and managed, often by the designer. Such stakeholder inclusion and management relate directly to the role of designer as mediator and integrator, but are implicit in the previous category (consistency and completeness of design), and hence in design's other contributions to strategy implementation.

7.4.3 Design contributing at a high level

As a trusted advisor, Alpha increasingly uses design as part of its board-level influence in client firms, and considers it important for the quality of output. Given that Alpha designs and makes very large structures, representing a large investment on the part of their clients, it is perhaps unsurprising there would be high-level engagement. Similarly, Alpha's own Board includes many designers, receptive to applying design to strategy.

In Beta, product design agencies are used primarily at product strategy level, not corporate level, but may have impact equal to some brand design. R&V design has a higher level of contribution than consumer product design.

As noted above (D-15, 7.4.1, page 151), leadership's recognition of design is thought to be essential for achieving consistent and complete design application, and permeation of design awareness into corporate culture.

Respondent D-17 observes differences in attitudes and culture in client firms, and believes that design's high status in the mobile phone firm is a large part due to board-level representation.

“Design needs to have a portfolio owner in an executive board... a that's critical. [Not necessarily] a designer themselves, it's about being an advocate, believing in the value and being given the portfolio responsibility to ensure that it is engaged in a strategic way.”

[D-17]

It is emphasised that seniority alone is not enough; there must be genuine belief and interest in design's capabilities. This was absent in many subsidised engagements D-16 carried out, offering design consulting to British SMEs.

“Actually the bottom-line is all about attitude... For many years I was engaged by the CBI.¹⁸ I was wasting my time with fat, lazy business people ... who feigned to be interested. I was convinced they were there for the lunch and really just went away with probably some [token] attention to what they heard... but their attitudes didn’t change.”

[D-16]

Notably, D-16 believes that design executives are more in touch with customers than other Board officers, even Marketing. This echoes the point cited previously, that designers feel more loyalty to the customer than to the firm.

“Everybody is interested in the customer, from sales to marketing to R&D, whatever the function might be around the table, but I think that most of them [even Marketing] struggle with retaining the empathy with their customer.” [D-16]

Such advocates must be present at high level, but also in numbers – there needs to be sufficient individuals in the firm to have an influence.

“The question is what position do they hold, and how many of them are there that can carry [that message] through mass rather than through authority.” [D-17]

It is taken as axiomatic that engagement with senior and Board-level business leaders is necessary for design to inform strategy formulation directly. But if design’s value is recognised at senior and Board level, then there is more likely to be an overarching design vision and authority, with which to achieve consistent, complete design and cultural recognition of design.

Design engagement at a high-level is necessary for design to inform strategy formulation. Business leaders who recognise design’s value have authority and influence with which to oversee consistent, complete design, and hence enable contributions to strategy implementation.

7.5 Summary

Each of the proposed contributions has been examined in companies Alpha and Beta, and discussed with designers in the Delta group. By collating the findings it is shown that all of the proposed contributions were either recognised (evidently valued for their strategic contribution) or practised (evidently occurring) in at least one of the three sample groups.

18. Confederation of British Industry

These findings are summarised below in table 9. As all data are qualitative, this is merely a visual summary, and must not be interpreted as any kind of quantitative ‘score’. Note also that *not evident* may mean not examined or discussed, so does not necessarily indicate a weak area.

Strategic design contribution	Recognised or practised		
	Alpha	Beta	Delta
Design in implementing strategic positioning, fit, learning & culture			
Design used to build market differentiation, customer intimacy & perceived value	◆◆	◆◆	◆◆
Design influencing dependencies in the supply chain	◆	◆	◆
Design integrating and mediating between professional domains	◆	◆	◆
Design shaping and communicating corporate culture	◆	◆	◆
Design supporting activities in the value chain			
Design in primary value activities			
Inbound logistics	◆	◇	◆
Operations	◆◆	◆	◆
Outbound logistics	◆	◇	◆
Marketing /sales & communication	◆	◆◆	◆
Service	◇	◆	◆
Design in secondary (support) value activities			
HR Management	◆	◇	◇
Technology development	◆◆	◆	◆
Firm infrastructure	◆	◇	◇
Procurement	◇	◆	◆
Design in processes and systems of knowledge management	◆◆	◇	◇
Design as a tacit knowledge resource: path dependent and hard to imitate	◆◆	◆	◇
Design in informing strategy formulation			
Stimulating creativity and providing fresh perspectives in the strategy context	◆	◆	◆
Exploring uncertainty and assessing trade-off – prototyping & visualisation	◆	◆	◆
Achieving a holistic view of complex systems and a shared strategic vision	◆	◆	◆
Additional factors influencing strategic design			
Design applied to different areas of the business with consistency & completeness	◆	◆	◆
Design applied with different stakeholders in mind	◆	◆	◆
Design contributing at a high level	◆	◇	◆

- ◆◆ strongly evident
- ◆ evident
- ◇ not evident

Table 9: Summary of findings from case studies and corroborating interviews

Notably, design support in secondary value activities (outside of technology development) is less evident. In the case of the Delta group, this may be due to a general focus on primary activities and marketing during the interviews. Still, this suggests that design support in secondary value activities is worthy of further investigation. In general, the proposed strategic contributions of design are found to be corroborated by the evidence gathered in this study.

The next chapter discusses some further observations emerging from the study, and proposes a combined representation of the identified strategic design contributions.

Chapter 8

Discussion

8.1 Introduction

The examination and validation of strategic design contributions has been the main purpose of this study. The first section of this chapter presents a final version of the diagram to represent the identified strategic design contributions and additional factors.

The secondary purpose was to demonstrate how examination of these phenomena in practice can provide a rich description of the firm's design use. Following from the detailed descriptions in the previous three chapters, some further observations are presented on the differing design approaches in Alpha and Beta. Specifically, these are comparisons of how they use design to shape public perceptions of value, and to support, mediate and co-ordinate within the firm.

Lastly, some more general observations are made on design's representation in the value chain. Variants of the diagram are proposed here to represent four phenomena: integrated, disparate, partial and silent design.

8.2 Towards a model

This section presents a diagram to represent the identified strategic design contributions and their relation to the additional factors identified.

To recap, the three additional factors were found to be related as follows:

i. Design applied with different stakeholders in mind

Conflicting needs or priorities of end-users, buyers and internal stakeholders must often be accounted for and managed by the designer. Such stakeholder inclusion and management relates directly to the role of designer as mediator and integrator. Stakeholders should be considered in all design activity in order for it to contribute most effectively to strategy implementation, but this factor is not seen to be directly related to strategy for-

mulation. Its occurrence (or otherwise) may depend on management at a project level, but does not require high level design engagement.

ii. Design applied to different areas of the business with consistency and completeness

Consistency and completeness have implications for design in corporate culture (as well as for design of the culture), and for all the proposed design contributions to strategy implementation. Firms may recognise the strategic value of design applied consistently and completely, but this may be difficult in practice. Achieving it requires high-level design engagement and support. This factor is not seen to be directly related to strategy formulation.

iii. Design contributing at a high level

Design engagement at a high level is necessary for design to inform strategy *formulation*, as these three contributions require direct engagement with design by senior decision makers in the organisation.

Also, business leaders who recognise design's value have authority and influence with which to oversee consistent, complete design, and hence enable contributions to strategy *implementation*.

To clarify these contributing factors, consistent and complete design requires high-level design engagement, but stakeholder inclusion is managed at a project level (see figure 16).

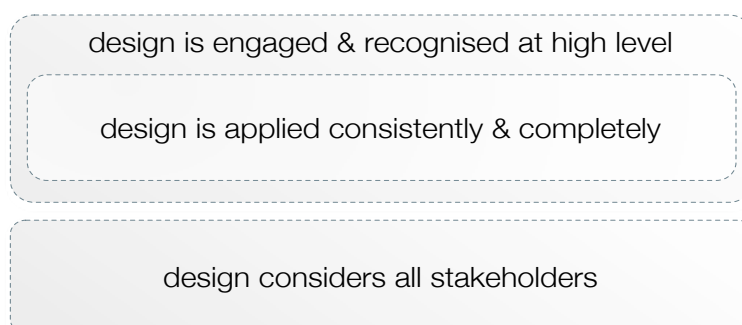


Figure 16: Relationship of identified additional factors.

It is also noted that most of the design contributions to strategy implementation work internally, on operations within the firm rather than directly through the output (product or service) of the firm. The exceptions are *influencing supply chain dependencies* and *building market differentiation, customer intimacy and perceived value*.

iv. Revised diagram

The diagram presented early in this thesis (figure 10, page 49) has been revised based on these observations. This version is proposed to represent the identified strategic design contributions and influential factors (figure 17).

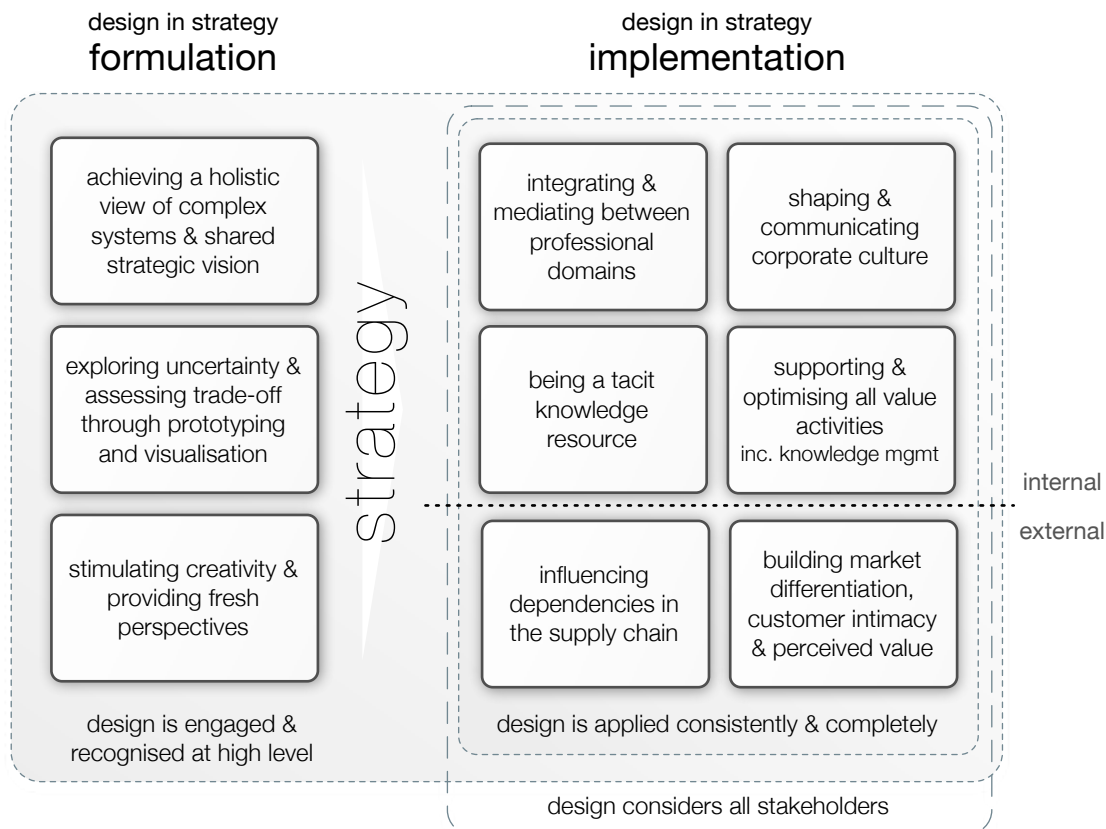


Figure 17: Revised diagram of strategic design contributions and influences.

8.3 Design approaches in Alpha and Beta

As noted previously (7.2.1, page 139), both Alpha and Beta recognise and exploit the strategic importance of design for building market differentiation, customer intimacy and perceived value. The case studies identify markedly different approaches to using design; Alpha's design focus is clearly evident and distinct from Beta's market-led approach.

In Alpha, design is *the core activity*, reinforced by other market-facing design. In contrast, Beta uses visible brand expressions to represent its intangible primary activities. In Beta, brand and product design *serve the core activity* to shape customer perception of it. These different approaches are represented below in figure 18.

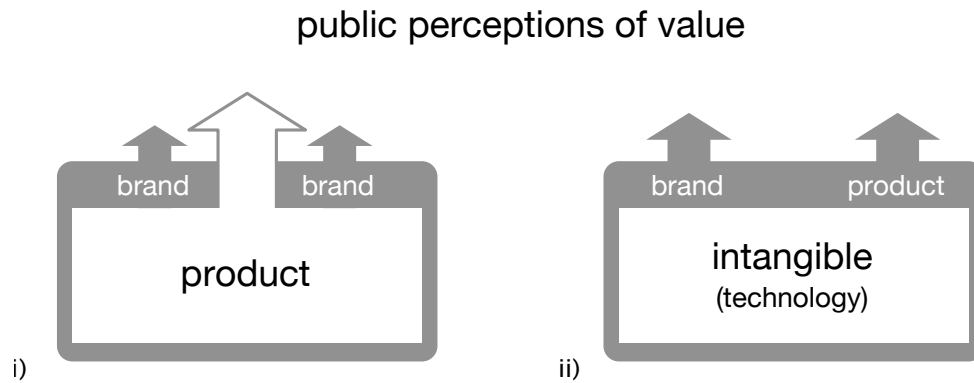


Figure 18: Design as the core activity, as in Alpha (i) and design serving *to represent* the core activity as in Beta (ii).

In Alpha, design activity acts as a bridge between Technology Development and Operations. When project work in Operations calls for innovative technology, the connection is made. This is the ‘flywheel’ analogy made by A-6 (page 80).

Design in Beta’s Operations, such as for consumer products is directed through Marketing, and constitutes just a small fraction of Operations activities. Some design output from R&V design feeds into Infrastructure systems (e.g. human factors in call centre technology). In Beta design is used extensively and expertly, but applied in some operational areas only. Alpha’s use of design is much closer to being fully integrated.

These differences are illustrated when mapped onto the value chain (figure 19), providing a clear visualisation of design’s contributions in both *integrating and mediating between professional domains* and *supporting activities in the value chain*. Other more general representations of design in the value chain are discussed next.

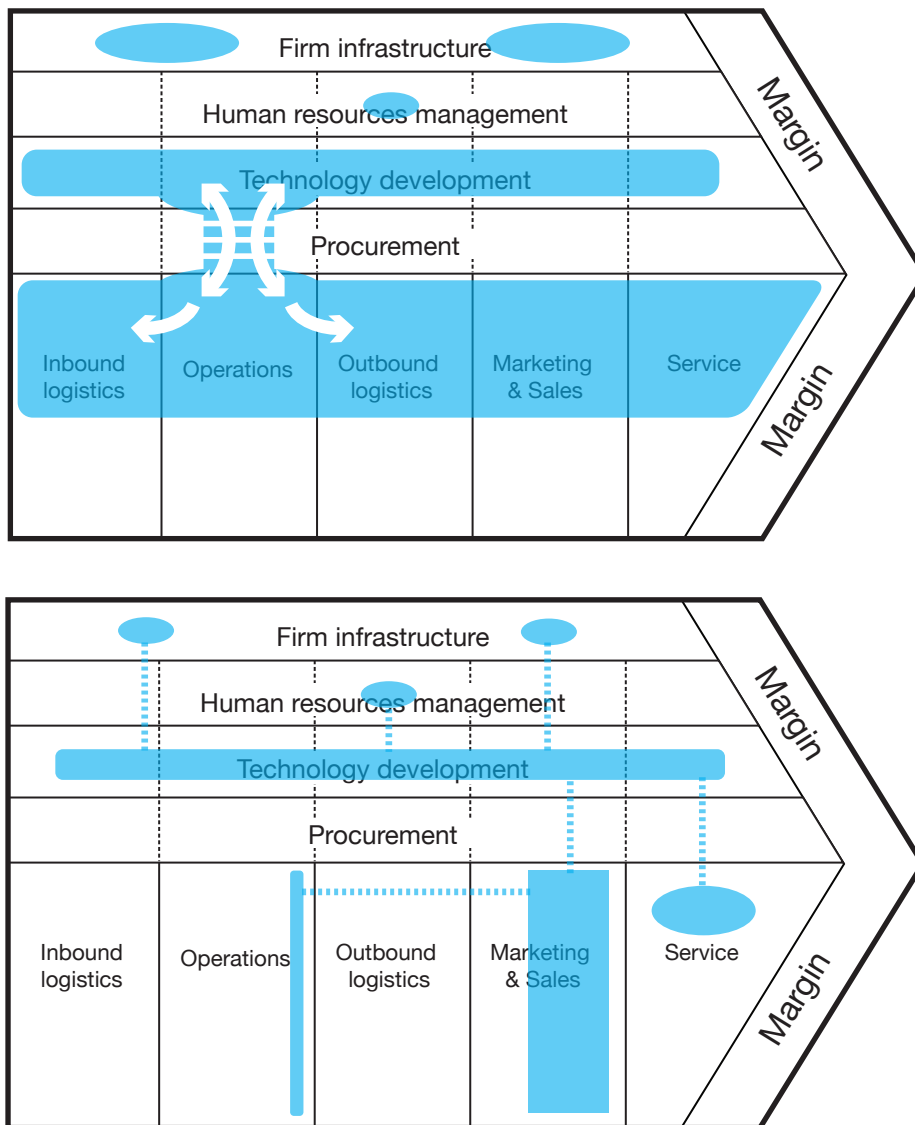


Figure 19: Design in value activities of Alpha (above) and Beta (below). Shaded areas indicate design influence identified.

8.4 Design as a secondary value activity

As demonstrated above, Porter's value chain can be used to represent design's strategic contributions in both *integrating and mediating between professional domains* and *supporting activities in the value chain*. Variants of the diagram are proposed here to represent four phenomena: integrated, disparate, partial and silent design.

8.4.1 Integrated design

Notably, several respondents (A-4, A-11, B-6, B-10 and D-16) indicated that design should be represented on the value chain as a support activity running through the firm, either as

an ideal, or as an actual representation of their firm. B-4's diagram, amended during the interview is shown below in figure 20. D-16 claimed such a version is very similar to a diagram already used by the firm, representing their capability strategy (page 145).

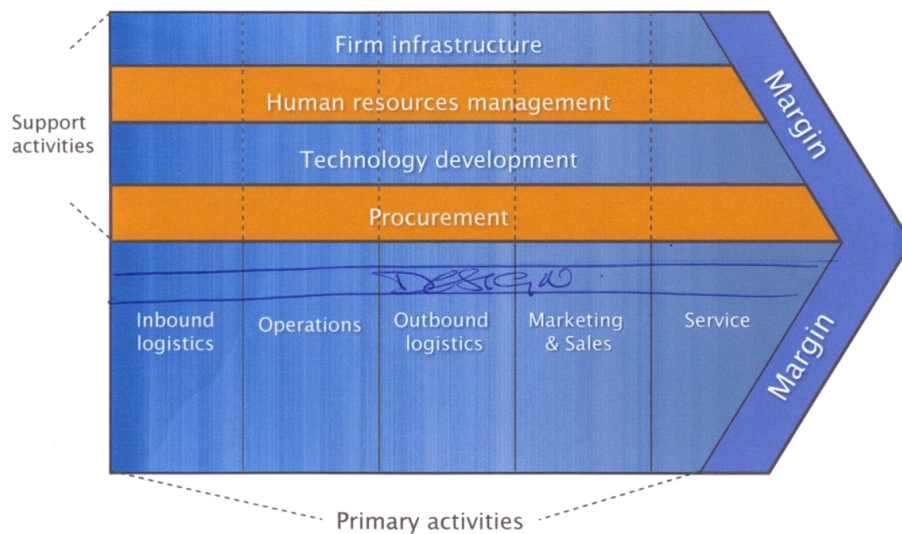


Figure 20: Design as a support activity running through the firm, drawn by B-10.

This may be a useful representation of an ideal use of design: consistent and complete, and integrated in the value activities (see figure 21 i). Based on the phase 1 interviews of this study, additional concepts were developed to extend this concept; it follows that incomplete or inconsistent application of design might also be represented, by the phenomena termed disparate design and partial design [Stevens *et al.*, 2008].

8.4.2 Disparate design

Interviews suggest there may be instances where design is applied appropriately in the whole operation chain, in keeping with an ambition towards integrated design. However, this is without full co-ordination and integration with other operational areas, or indeed between these design activities. This may be because activities and expertise are in silos in the organisation, and success is not measured in holistic terms. Design effort is complete but not consistent. Such a situation the author has termed disparate design (see figure 21 ii).

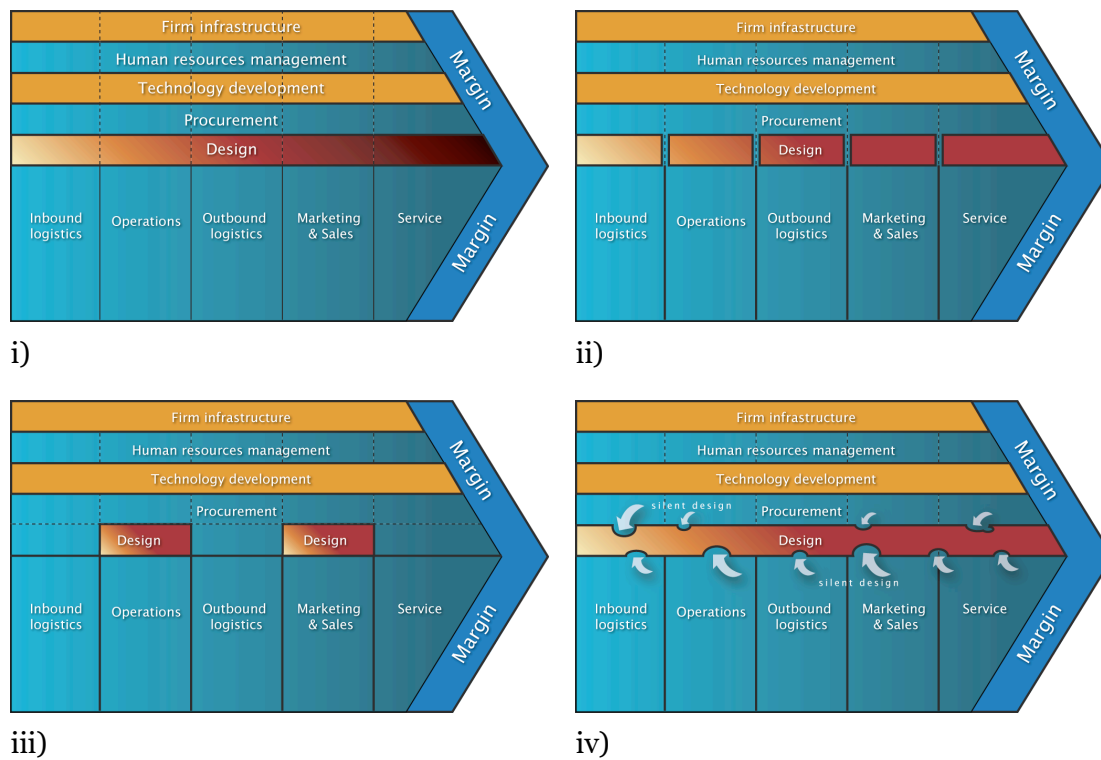


Figure 21: Design represented in the value chain: i) integrated, ii) disparate, iii) partial and iv) silent design.

8.4.3 Partial design

Although used extensively and expertly, the services of design may be applied in some operational areas only. For example, a firm may use packaging and product design to a great effect, while omitting or under-utilising design in other areas, such as its advertising or web site, or workplace design. As noted above, Beta uses design extensively and expertly, but only in some operational areas. Alpha's use of design is much closer to being fully integrated. So where design effort is not *complete* (though it might be *consistent*) is termed partial design (figure 21 iii).

8.4.4 Silent Design

Conceptually, the phenomena of partial and disparate design complement that of silent design activities of “people who are not designers and are not aware that they are participating in design activity” [Gorb & Dumas, 1987]. This may have a negative influence on design's integration through the organisation's activities (figure 21 iv).

Chapter 9

Conclusions

There are several existing conceptual models relating to design services and the strategic advantage they may confer. They differ in focus, scope and in their terms and concepts, and there have been no published attempts to consolidate and align them, or relate them to real-world cases. Through case studies of design's use in several companies, this study has refined and consolidated these models, and related them to industrial practice.

9.1 Findings

This study has proposed nine strategic contributions that can be made by designers or design activity in a firm. Compelling evidence has been found for their occurrence in firms, and for their recognition that they make long-term, business-wide contributions to competitive performance.

Design tools and methods can inform strategy formulation through

- stimulating creativity and providing fresh perspectives in the strategy context
- exploring uncertainty and assessing trade-off through prototyping and visualisation
- achieving a holistic view of complex systems and a shared strategic vision

Design in the firm can help implement strategic positioning, fit, learning, and culture through

- building market differentiation, customer intimacy and perceived value
- integrating and mediating between professional domains
- shaping and communicating corporate culture
- supporting and optimising all value activities, including knowledge management
- utilising tacit design knowledge
- influencing supply chain dependencies

Contributions are improved or enabled by

- consistent and complete design application
- designing with different stakeholders in mind
- design engagement and recognition at a high level in the firm.

Field interviews and case studies have demonstrated that some firms value and exploit some or all of these contributions. In some cases, even highly design-capable firms, these contributions may be recognised as important but are not practised; they may be difficult to implement, or may be inappropriate for a firm's strategy or business model. In other firms they may occur but their contribution may not be recognised at a senior level. In yet others, they are neither recognised nor practised.

9.2 Implications for theory

Individually, each of these strategic contributions of design is not a new concept in its own right. Many authors present partial descriptions of design, related to various strategic imperatives. The theoretical contribution of this thesis is the alignment and consolidation of these various terms and concepts into one simple collective representation. The vague and collective term strategic design can now be more precisely broken down into more specific, more meaningful categories.

Empirical literature of design management and business strategy often uses terminology and concepts specific to their domain, yet this study has identified there is important conceptual overlap, and has aligned the concepts there.

At this stage, the framework may not be comprehensive; areas for further investigation are proposed shortly which might refine, extend or clarify the model further. Nonetheless, this study has resulted in a more complete, more comprehensive, empirically grounded conceptual understanding of design's strategic capabilities.

9.3 Application in practice

Despite much empirical and industry attention, there is still frustration among senior design professionals at the lack of recognition in firms of design's contribution to competitive advantage. This was confirmed in the interviews in phase 1 of this study. If businesses do not recognise design's capabilities, perhaps it is because these capabilities are not articulated in business terms. If this is so, then alignment of design and strategy concepts

could be valuable; the strategic potential of design services may be better understood by business leaders who demand clear articulation in business terms.

The case study findings have practical applications in two ways. First, they serve as examples in context, providing specific, comparable descriptions of design's application in two firms, illustrating design approaches for different business models and some of their inherent challenges. Second, they demonstrate how the design contributions may provide a framework for examining the use of design in an organisation and identifying opportunities for improvement. This could be valuable for firms seeking to understand how to make better strategic use of design – particularly SMEs or non-profit organisations with few design resources, needing to leverage design capabilities in ways less obvious than a re-styled product or a new logo.

There is also greater (and broader) interest in design methods, or design thinking, applied to strategy formulation. The conceptual distinctions achieved here may enable a clearer understanding among business leaders of its relevance and application in industry.

9.4 Limitations of the research

9.4.1 Scope and depth

Every study has boundaries of scope and depth, and this one has attempted to achieve appropriate levels of both for the question at hand. Its original aim was to clarify the very broad concept of strategic design at a general level, which it has achieved. In reviewing the findings it is necessary to ask what might be missing from the model.

In terms of further detail of the contributions themselves, this can be answered with reference to the original sources, from which these categories were derived. Value added by design in (say) Sales and Marketing is well researched and documented. Much less has been done to consider the full potential of design in specific secondary activities such as HR or Knowledge Management. Detailed, systematic exploration of all secondary activities was beyond the scope of this study, and there are notable gaps in each case group. Beta's HR and infrastructure were not discussed, and Delta's designers focused on market-facing design activities, the product development process and business strategy. It is therefore not possible to say categorically where in the firm design is *absent* in these cases – perhaps the most important question for the firms themselves. Like Popper's black swans [Popper, 1959], a phenomenon may exist even though the researcher doesn't see it.

Statements from respondents in interviews are also, of course, not ‘objective truths’ but dependent on countless influences. Interviews and their later analysis required some balancing of conflicting viewpoints and some reading between the lines. In general though, respondents’ views were taken at face value, not analysed for hidden motives or unvoiced contradictions; such depth of analysis requires a much stricter application of phenomenological research methods than were used here.

The case study research design achieved a rich collection of data, and elicited many interesting and relevant insights. Yet the analysis process did not attempt to identify new phenomena from this rich data, it only sought to confirm those identified in phase 1. Although this was the aim of the study, based on well-established concepts in design and strategy, it is possible that the results may not be comprehensive.

9.4.2 Literature of design in construction industry

The literature review undertaken at the start of this study sought to identify the conceptual overlap of strategy and design literature. The design literature in the review focused primarily on product development and brand design, neglecting design in the construction industry which, it transpired, would be a major element of one of the case studies.

Design’s contributions, already recognised in the literature of product design have more recently been related to the design of buildings and large structures. Designers’ crucial mediation role in multidisciplinary teams, and design’s importance to perceived customer value are both increasingly recognised in the construction industry. A shift has occurred in construction design, as previously in other design disciplines, towards recognition of value and quality as perceived by end users and other stakeholders. A dominant focus on cost management, often led to the neglect of design quality, but attempts to redress the balance [Green, 1994] have followed a similar trend in product design.

Practical aspects of *functionality* and *build quality* must be considered also with a more subjective design quality, *impact*. These three elements together can be assessed through a Design Quality Index, which serves as a common measure for comparing building projects [Thomson *et al.*, 2003]. Such a measure also mirrors the attention in product design given to understanding, quantifying and formalising the design process where possible. Methods such as the Analytical Design Planning Technique and the RIBA¹⁹ Plan of Work

19. Royal Institute of British Architects

for Design Team Operations attempt to formalise the complex collaborative stages in the design process [Austin *et al.*, 2001].

While they do not elicit any further design contributions for consideration, these few examples reinforce the findings of the Alpha case study, namely that design's contributions are recognised and valued increasingly in the construction industry, following the trend in other design disciplines. They confirm that the mediating role of designers is vital in project teams, and the importance of design in creating value for stakeholders.

9.4.3 Research design

The second phase of this study sought to establish whether design contributions are recognised (or valued) and whether they are practised (or used). Such questions involve beliefs and also observable phenomena, and the case study approach is well-suited for combining both [Yin, 1993]. This approach was taken in the belief that it would provide *just enough* depth and breadth to meet its aims, that it would be more feasible to ask and observe, rather than attempt to apply a hypothetico-deductive model, changing variables and measuring effects. Such studies, which seek to identify causal explanations in complex business contexts, are often problematic [Gill & Johnson, 1991].

A questionnaire survey of many firms would give a greater breadth to this study, but the depth of the case studies would not be easily achieved. Questions would have to be worded very carefully to avoid leading the answers. Case studies, even simple ones such as these, give a far deeper sense of what is really happening. Also the use of diagrams as interview stimuli was a very useful addition for communicating the questions and capturing the responses. A broad survey might provide a useful *additional* dimension to the study.

9.4.4 Sample size and choice

Three interview groups, and 9-12 respondents in each group gave a broad and deep view of the context, from a variety of sources and perspectives. In all, 10 firms were directly represented in phase 2, plus many more indirectly through the agency designers whose experience spans decades with many major firms and brands. The designers' view was therefore well represented, as was that of middle-ranking and senior staff in Alpha and Beta. The researcher's own field observations, and publicly available materials also contributed to the breadth and triangulation of the findings.

The study would have benefited from more contributions from strategy makers in the firms. Unfortunately they were not available to participate.

9.4.5 Usefulness of the interview diagrams

As outlined in 3.5.1 (page 49) diagrams were employed to assist explanation of the concepts for discussion and to be drawn on by the interviewees. This use of diagrams as interview stimuli is termed graphic elicitation [Crilly *et al.*, 2006]. In accordance with the methodological advice given by Crilly *et al.*, respondents were explicitly encouraged to draw on them; care was taken to ensure that gestures and indications (such as “we work a lot *here* but not *here*”) were clarified, either with annotations on the diagram or by deliberately reiterating for the audio recording (such as “in Operations?” “Yes, in Operations”). In many cases, marks made by respondents were useful complements to the audio recording.

The diagrams were chosen as they represent the concepts examined, but would not lead respondents to try and give ‘right answers’. They are shown in 3.5.1 but are reproduced again below (figure 22). Diagrams (i), (ii) and (iv) were helpful, both for articulating context and questions and for capturing responses, though (iii) was less successful.

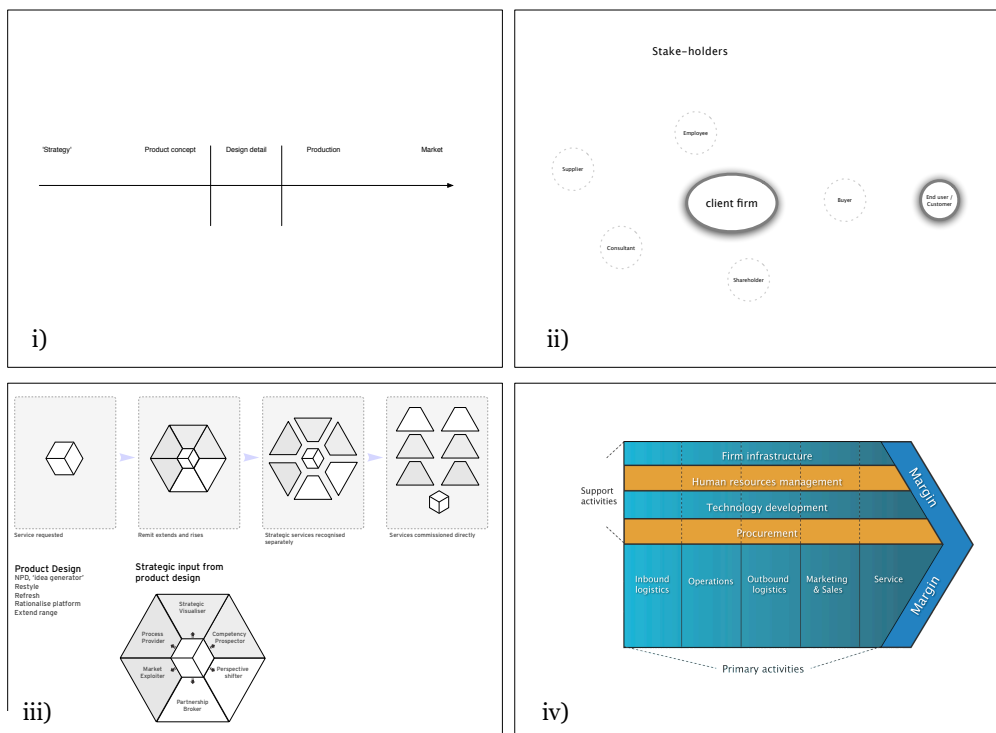


Figure 22: Diagrams used for elicitation in interviews.

Diagram (i) was used to initiate discussions on *design applied to different areas of the business with consistency and completeness, contributing at a high level, and influencing dependencies in the supply chain*. Diagram (ii) was used to initiate discussions on *design applied with different stakeholders in mind*. Both (i) and (ii) are very simple, and perhaps appear incomplete, therefore inviting the marks of the participant.

Diagram (iii), *Evolving strategic input from design services*, was helpful for explaining a complex question, initiating discussion around *design integrating and mediating between professional domains, and contributing at a high level*. Some respondents found it over-complex and stylised. The terminology used was also somewhat cryptic.

“I don’t understand market exploiter, because that's what I do anyway... maybe for your PhD you need to do it, but this is bullshit. Sorry.” [D-19]

This complexity was observed during the fieldwork stage, but the diagram was not modified, in order to maintain consistency through the study. In hindsight though, consistency between interviews was not critical, as the study did not seek to compare individual views in any depth. Therefore this diagram could have been modified during the case study without compromising the findings.

Diagram (iv), Porter’s value chain, provided a useful framework for discussing design activity and influence in various parts of the firm, the theme of *supporting and optimising all value activities* and the contributing factor of *design applied to different areas of the business with consistency and completeness*. Respondents appeared to understand the diagram, and it was used in different ways in discussions. Some participants used it to describe where design has influence, while others identified parts of the firm influencing design; both were relevant and equally valid, but care was required when interpreting any marks on the diagram.

Participants’ response to the diagrams was varied. Some scribbled liberally while talking, and others made no marks at all. Some examples are included in the appendix. Unsurprisingly, designers were generally comfortable marking the diagrams. Crilly et al note that designers are well suited to this interview method, as “they are comfortable with interpreting information presented visually... that may be revised and improved upon... [and] they often have a well-developed graphic sensibility.” Designer D-11 referred to the diagrams while discussing the strategic value of visualising complex systems.

“This [for example]: you are a designer, you have embodied your thinking, not given me a report, you’ve given me something to look at, to point to, to scribble on. Something a designer typically does better than other people.” [D-11]

In contrast B-5, who is not a designer, expressed distrust of such a simple representation.

“I’ve seen too many Powerpoint slides in my time that try to simplify company models into pretty pictures, and I don’t find them useful.” [B-5]

9.5 Further work

As with much research, this study has left some questions unanswered and raised several new ones. Answers to these might be brought closer by:

- **Returning to the cases studied** to feed back findings and validate the framework, revisit ‘problem’ areas and those which promised change, examine parts not covered, and, ideally to discuss with strategy makers themselves;
- **Exploring other firms** of different size, industry activity or locations;
- **Surveying a broader sample** to validate and develop the framework.

The findings from this study might be developed into a tool for application in industry.

9.5.1 Revisiting Alpha and Beta

Having built a deeper understanding of the two case firms through analysis and comparison, there are several benefits that could come from further contact with one or both.

i. Further validation of the findings

Alpha and Beta have both expressed interest in the findings of this study, and further discussions are planned with senior staff in each. The simple framework diagram resulting from this study could be validated with further discussions, and feedback from the firms might contribute directly to its further development.

Also, some feedback is owed to the firms, in recognition of their willingness to participate in this study. It is hoped that the case descriptions might provide the firms with useful perspectives on design use, perhaps indicating unknown problem areas they may wish to address themselves. They may also value the broader comparison of the two firms’ approaches, and the framework itself.

ii. Revisiting ‘problem’ areas

One of the main findings of the case studies is that even a firm with strong design culture and focus may not be using design as best it could. The findings show less use of design in the support activities of both firms, despite the awareness in each of the potential benefits. Exploring this further would be a natural next step from this point, to bring more clarity to why and how this might be. This might include a closer examination of (for instance) Alpha’s HR team, which was identified as lacking design support.

The purpose of this study was not to intervene or prescribe best practice, but a follow-up study could be more interventionist, taking an action research stance, perhaps revisiting identified problem areas with a view to making improvements or recommendations.

iii. Reviewing long-term changes

Returning to a case can also be useful to examine changes that have occurred in the interval. In Beta, both the Right First Time program and the Touch initiative were relatively recently implemented, and it would be interesting to examine resulting changes.

iv. Examining new areas

Both firms are very large, and the subject of this study is applicable in any part of the organisation. A more detailed examination of less-understood areas would make the cases more complete (but might not necessarily add to the model).

v. Talking higher up in the firm

As noted, the views of strategy makers in both firms are lacking from the study, and would be valuable additions to a follow-up study. Most executives approached for this study were unable or unwilling to participate. The model derived at this stage might enable better articulation of the study purpose, and therefore prove useful in persuading such involvement.

9.5.2 Other firms

In some respects Alpha and Beta were selected for this study somewhat arbitrarily. This study was not *aiming* at the outset to examine two large British firms with global presence and contrasting design management approaches. It might equally have been focused on firms of different size, industry activity or locations. Exploring more firms moves attention away from the model itself towards specific cases. Perhaps more cases would give useful

insights into variations between firms; findings from using the model may be useful in themselves, such as the value chain diagrams for Alpha and Beta shown in the previous chapter. The model as it stands is only defensible as a generalised view, but further work might generate different versions for different business models.

9.5.3 A broader sample

As noted, a broad survey might provide a useful additional dimension to the study, by canvassing a much greater number and variety of organisations. Their views on recognition and practice of design's strategic contributions could be assessed, albeit in less depth than case studies, to validate and develop the framework.

9.5.4 Development into a tool

Further validation as described could enable the framework to be adapted for a wider study, not just as a simple descriptive representation, but as a measure for assessing the degree of such design usage in a given geography or industry sector.

It might also be developed into a tool, such as a workbook, not to prescribe design management practice, but to help firms identify potential contributions from design to increasing or maintaining competitive advantage.

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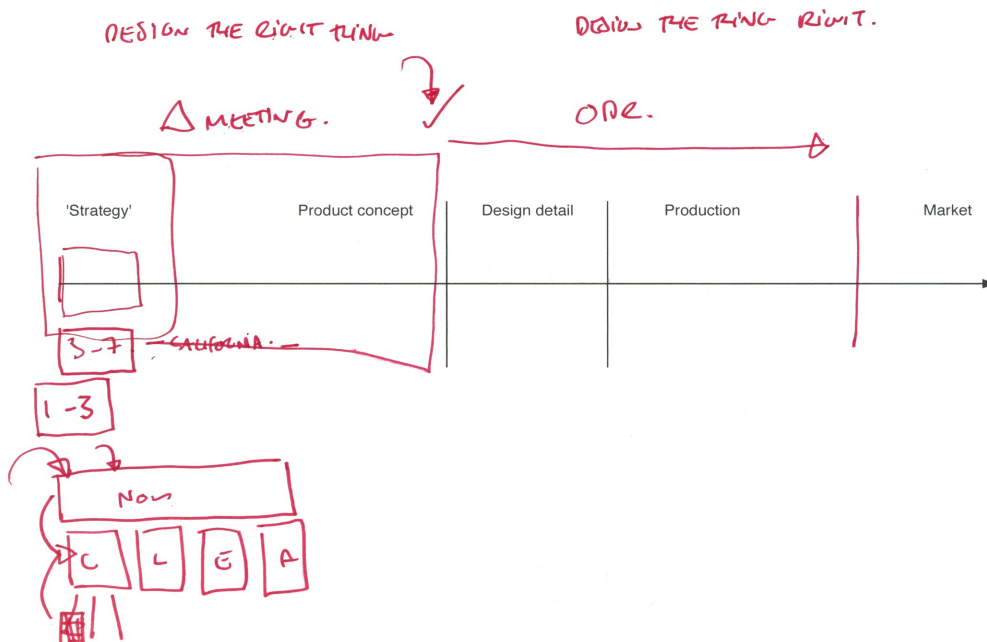
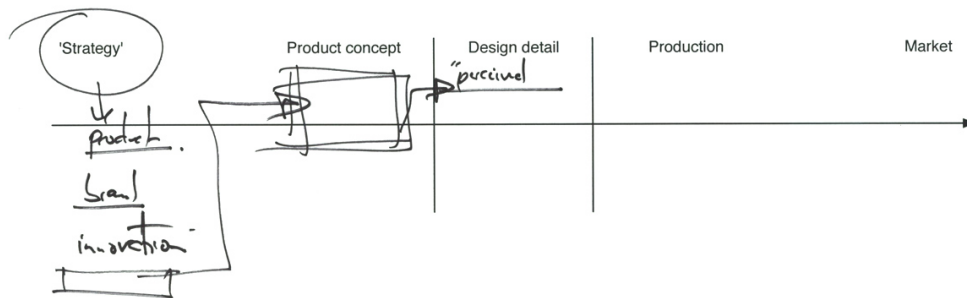
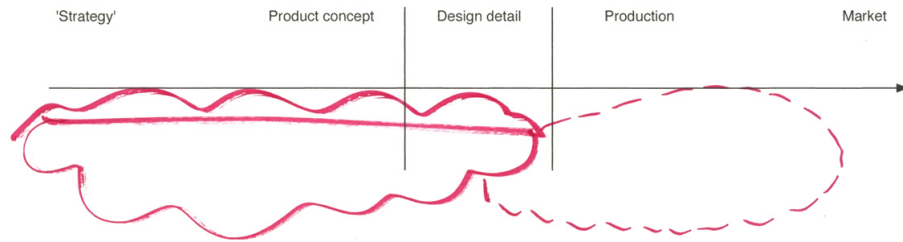
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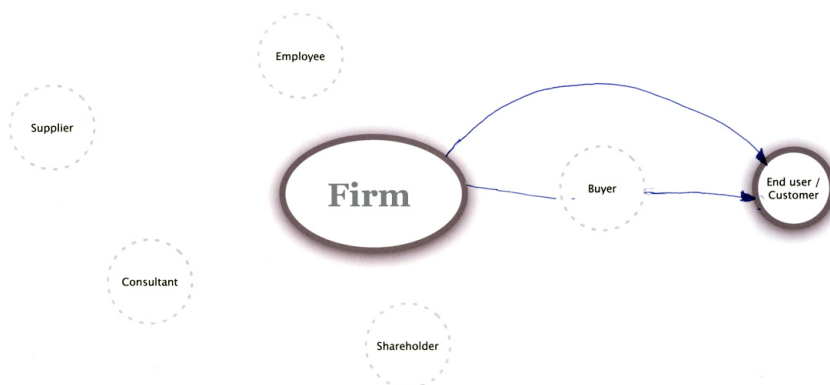
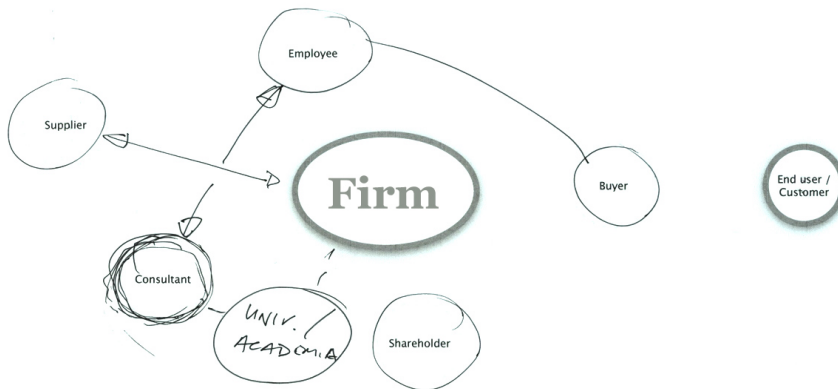
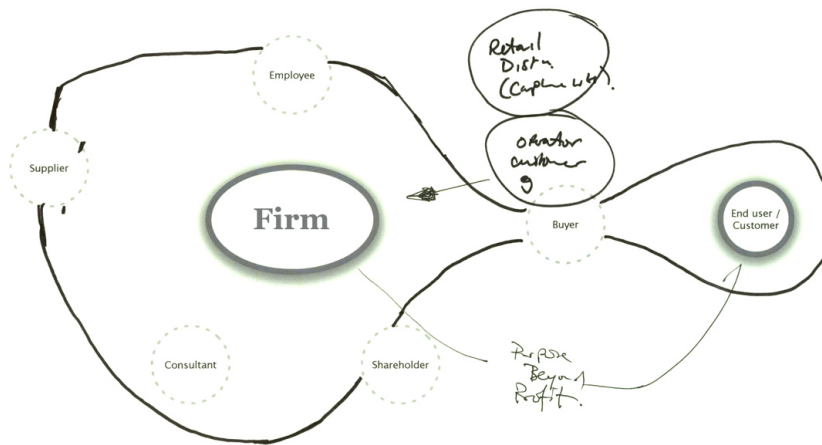
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Appendix

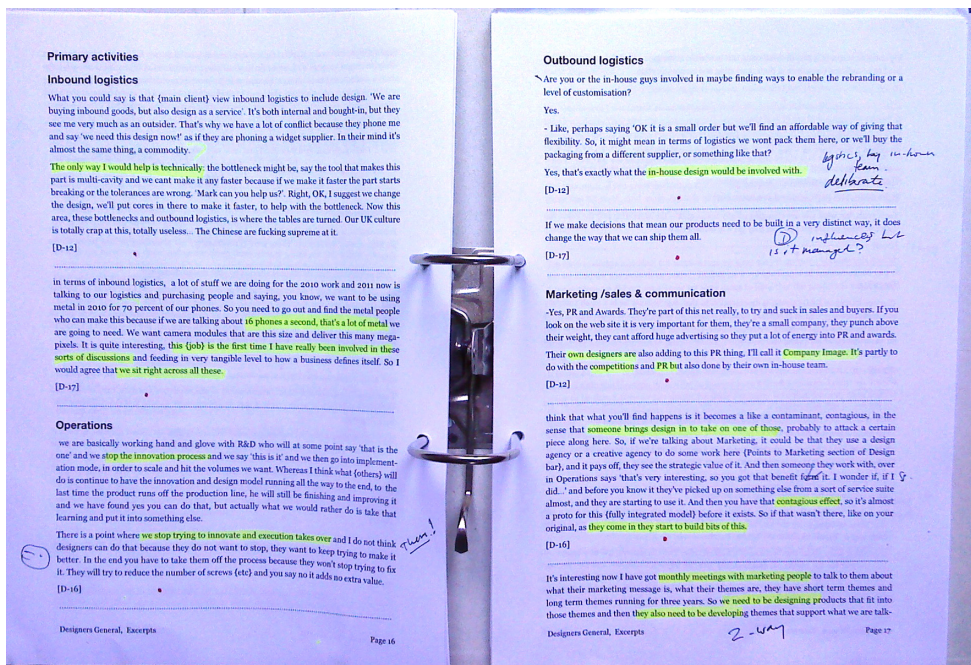
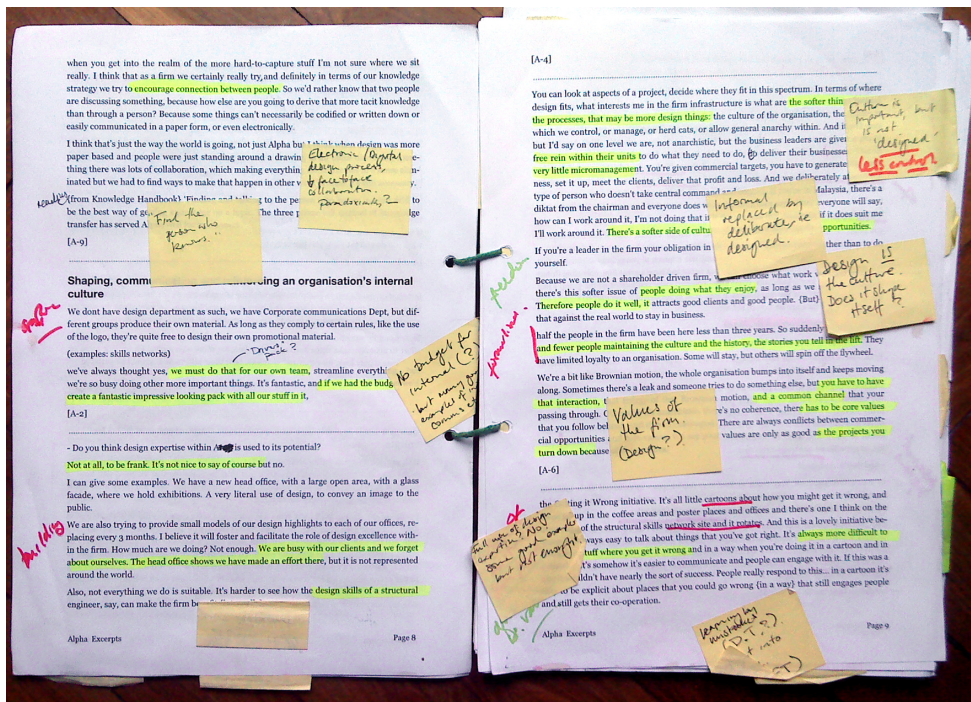
Sample sketches from interviews



Stake-holders



Images from data analysis stage



Transcripts in paper coding stage.

Coding Theme	A-4	A-5	A-6
Role	Director; Global Leader, Lighting	Product Designer	Leader, global facade engineering
Building product (or brand) differentiation and customer intimacy	<p>Strategic design is not only about helping orgs to move forward, but also having a very good imagination and understanding of how the world works. Shaping the environment, so we have to understand behaviour, for example.</p> <p>Working for a big dept store in Asia... No one was shopping there and they were not filling their concessions. They asked for our help, so we went to check it out. The building was just really drab and uninviting, bland, dull concrete - people didn't want to go through the door. Their marketing dept had suggested a \$20M ad campaign. We said pay us the \$2M to fix it. We used design to improve their business: to connect with their target group very precisely, which researched thoroughly, and we wanted it to fit their theme, which is high-end designer label fashion. Within a year they were fully occupied. They were losing tenants, which is a downward spiral. They are successful because they reconnected with a very specific group.</p> <p>[A-4]</p>	<p>(subjective aspects to do with human behaviour, preferences and aesthetics) are definitely considered, but more from the technical point of view, for example Building Services {Surfaces?} they really feel passionate about creating the right atmosphere for people, not too hot, not too humid. They really do everything they can. But I'm not sure if it is on the one hand, trying to provide those human beings with a nice day at work, or trying to find the right solution for this technical challenge [A-5]</p> <p>I think the practical difficulties are the easiest ones to solve. The most difficult is the mindset of the people in the team to be willing to work together, to trust the knowledge that others have and to trust their solution. And really be willing to communicate and to exchange information. That in a broad way means making sure people don't get into a fight, so they stop talking to each other, and really doing your best to provide everyone with the right information. Putting all these people together to solve a problem, the people themselves might be the biggest problem. And obviously you can't change everyone, so I think the way to solve that is to more consciously put people together looking more into their personalities, not just get the specialists (based on their expertise). Here projects are quite short, a couple of months, but in a Structures team they can last for years, so then it would be</p>	<p>We're trying to work with their brand to use it to create a product - a building - that takes the the brand and adds Performance to it. The business model is because it enhances their brand as the facade has performance, and therefore it shows they are not just about style, but actually that they care about the environment, about performance, about the cost of running their buildings. The real costs are negligible compared to the cost of their luxury products.</p> <p>[A-6]</p>

Spreadsheet of transcript excerpts.