

Intelligent Design

How managing the design process effectively can boost corporate performance



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The Advanced Institute of Management Research (AIM) develops UK-based world-class management research. AIM seeks to identify ways to enhance the competitiveness of the UK economy and its infrastructure through research into management and organisational performance in both the private and public sectors.

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AIM consists of:

- Over 200 AIM Fellows and Scholars – all leading academics in their fields...
- Working in cooperation with leading international academics and specialists as well as UK policymakers and business leaders...
- Undertaking a wide range of collaborative research projects on management...
- Disseminating ideas and shared learning through publications, reports, workshops and events...
- Fostering new ways of working more effectively with managers and policy makers...
- To enhance UK competitiveness and productivity.

AIM's Objectives

Our mission is to significantly increase the contribution of and future capacity for world class UK management research.

Our more specific objectives are to:

- Conduct research that will identify actions to enhance the UK's international competitiveness
- Raise the quality and international standing of UK research on management
- Expand the size and capacity of the active UK research base on management
- Engage with practitioners and other users of research within and beyond the UK as co-producers of knowledge about management

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Current AIM research projects focus on:

UK productivity and performance for the 21st century.

How can UK policy makers evaluate and address concerns surrounding the UK's performance in relation to other countries?

National productivity has been the concern of economists, government policymakers, and corporate decision-makers for some time. Further research by scholars from a range of disciplines is bringing new voices to the debates about how the productivity gap can be measured, and what the UK can do to improve the effectiveness of UK industry and its supporting public services.

Sustaining innovation to achieve competitive advantage and high quality public services.

How can UK managers capture the benefits of innovation while meeting other demands of a competitive and social environment?

Innovation is a key source of competitive advantage and public value through new strategies, products, services and organisational processes. The UK has outstanding exemplars of innovative private and public sector organisations and is investing significantly in its science and skills base to underpin future innovative capacity.



Adapting promising practices to enhance performance across varied organisational contexts.

How can UK managers disseminate their experience whilst learning from others?

Improved management practices are identified as important for enhancing productivity and performance. The main focus is on how evidence behind good or promising practices can be systematically assessed, creatively adapted, successfully implemented and knowledge diffused to other organisations that will benefit.

Design – *the purposive application of creativity to all the activities necessary to bring ideas into use either as product (service) or process innovations*¹ – could and should make an important contribution to the performance of every firm. The design process is inextricably linked with innovation and thus with an organisation's competitive position.

The truth is, however, that too few firms understand or acknowledge the role that design can play. This briefing document highlights a number of key issues about the relationship between design, creativity, innovation, performance and competitiveness.

In particular:

- Evidence strongly suggests that design can make a real difference to performance and thus competitiveness.
- Many companies do not consider design as a strategic tool. In fact many consider design to play no part in their business.

Accepting that design is relevant to the company and its performance is only part of the story. Another challenge is how best to use design to increase performance. Fortunately, many companies have already successfully incorporated design into their businesses and these companies provide some useful lessons.

- Creativity is for the many not the few. All employees can be creative; it is just a question of matching styles of creative behaviour with design needs.
- An integrated approach to the design process is more effective than a sequential one.
- In the future the design process is likely to involve active contributions from all the stakeholders – from customers to suppliers.
- There are many behaviours and tools that can be used to enhance the prospects of managing the design process successfully. Many are listed in tables one and two in the briefing document.

The design process is inextricably linked with innovation and thus with an organisation's competitive position.

Managing design is an iterative process. While each organisation requires an approach tailored to its particular strategic aims, there are many generic examples of best practice that can be incorporated into the design management plan.

The most significant challenge for organisations, however, is to acknowledge the important role that design can play in boosting performance.

introduction

Two recent reports by AIM Fellows focus on the links between design, innovation and competitiveness.² *Management of Creativity and Design within the Firm* explores the potential for, and experience of, using creativity and design as a *strategic* resource within organisations. More specifically it addresses three questions:

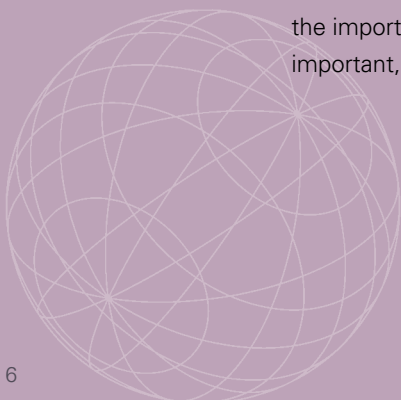
- How can creativity and design be used as a strategic resource within the business?
- What evidence exists that using creativity and design as a strategic resource within the business has a positive impact on organisational performance?
- What are the barriers to using creativity and design as a strategic resource within the business?

The second report *The Role of Design in Business Performance* addresses a number of design-business related questions including³:

- What is the nature of design knowledge?
- What evidence exists to show that firms that make greater investments in design are likely to exhibit superior economic performance?



This briefing document considers some of the fundamental issues relating to design, innovation and competitiveness raised in these two reports. In particular it considers the importance of design in terms of organisational competitiveness. And, if it is important, what actions organisations can take to enable, manage and leverage design.



Design, creativity and innovation defined

No sensible discussion of the relationship between design, innovation and competitiveness can take place without first defining design. So what is design? And what are creativity and innovation?

Taking design first, it should be noted that design is used both as a verb and a noun. There is the act of designing; as in James Dyson designing the Dyson cleaner or a manager designing a new working system. And there is the noun, as in a new product or service design, such as Sony's latest hard-drive design for the Walkman, or the internet banking service provided by egg.com.

Another way of thinking of design is to consider it as referring to processes and outcomes. The process – a creative thinking process – can involve things, models for example, or can be abstract, using visualisation say. The outcome – about how products look – can also be tangible as with a product, or intangible as with a vision, concept, or even service.

The focus of this briefing is primarily on the activity of designing– and in particular on how the process might be organised and managed to create a strategic advantage.

We define design therefore as *the purposive application of creativity to all the activities necessary to bring ideas into use either as product (service) or process innovations.*⁴

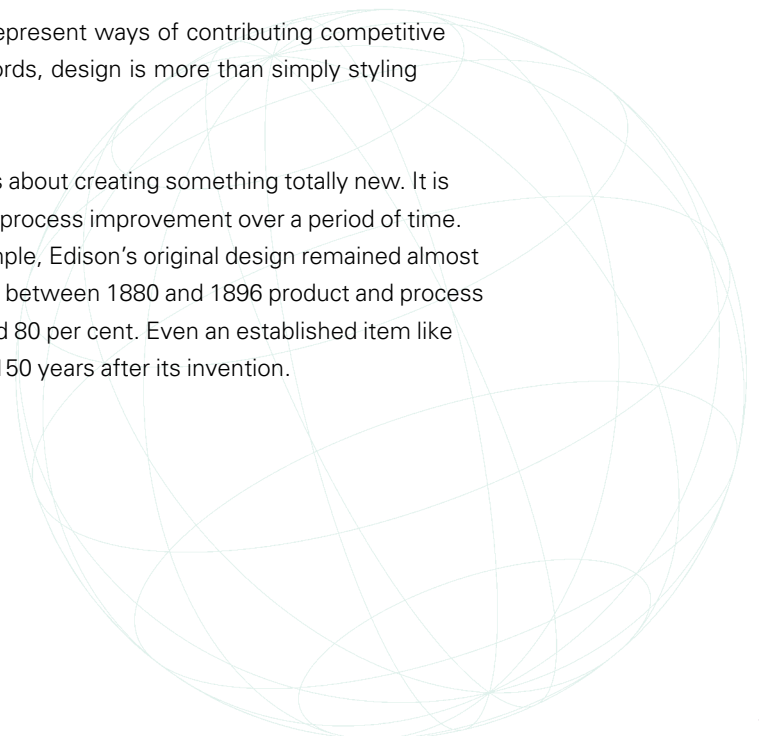
There are many aspects of design covered by this definition, including:

- Design for aesthetic appeal – styling, image, fashion status – for example, the iPod;
- Design for function – for example, aircraft engines, Dyson cleaners, the eBay auction service;
- Design for reliability and quality in use.

Importantly these and other aspects all represent ways of contributing competitive advantage to the enterprise – in other words, design is more than simply styling or image.

It is worth noting that design is not always about creating something totally new. It is very often about incremental product and process improvement over a period of time. In the case of electric light bulbs, for example, Edison's original design remained almost unchanged in concept for many years, yet between 1880 and 1896 product and process improvement led to a fall in price of around 80 per cent. Even an established item like the bicycle is continuing to evolve, some 150 years after its invention.

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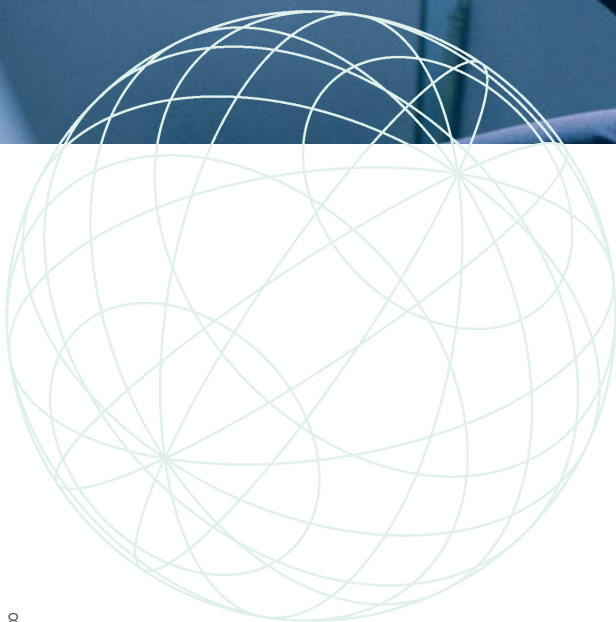
There is a misconception that creativity is the province of specialists or gifted individuals.

For a definition of creativity we turn to the definition used by William Coyne, Vice President of 3M, "*the thinking of novel and appropriate ideas*". There is a misconception that creativity is the province of specialists or gifted individuals. It is in fact a common human capability. It is merely a question of the preferred creative style – some people are more comfortable taking radical leaps, others prefer to deploy their creativity in more incremental, problem-solving fashion.

Our definition of innovation corresponds to the DTI's, "*the successful application of new ideas*". This may involve the broad spectrum of innovation including: product or service innovation – what the enterprise offers the world; process innovation – the ways it creates and delivers those offerings; position innovation – the market contexts into which it delivers those offerings; and paradigm innovation – the underlying business models in use.

Is design important?

There is overwhelming evidence to suggest that a business strategy that enables and promotes creativity and design as a part of a process of innovation can have a beneficial effect on performance and consequently competitiveness.



There are many academic studies in support of this argument. For example:

- A survey of 1308 managers in Sweden revealed that companies with the greatest design maturity were found to enjoy very strong growth.⁵
- In a study of 147 Dutch firms, integrating industrial design in new product development projects had a significant and positive influence on company performance.⁶
- A study of 42 UK firms found statistically significant relationships between business success and various measures of long-term investment in design and innovation.⁷
- A survey of 2900 German service firms found that competitiveness was related to quality and flexibility in meeting different users' needs rather than on price.⁸

This is true at many different levels – firm, sector, and national.

There is also plenty of anecdotal evidence to support a positive connection between creativity, design and performance. The services industries can benefit greatly from design judging by the performance of pub chain JD Wetherspoon, one of the fastest growing companies in the UK. The company has achieved its spectacular growth through set procedures for designing and developing the services in each new pub.



It is a similar story with product design. In July 1979 Sony launched a revolutionary new concept in portable audio –the Sony Walkman. This radical design sold 50,000 units against a predicted 5,000 in the first two months. Since that fateful July (for audiophiles at least) Sony have shifted over 300 million personal stereos in one format or another.

These numbers emphasise another point about performance and design; that the performance benefits obtained appear to be sustainable in terms of growth. Initially competitive advantage comes through radical design and innovation, then, over the following years, it is sustained through a series of systematic modifications and incremental improvements building on and exploiting the core knowledge base.

Successful firms improve their products in response to user needs and continuously revise and update their designs to take advantage of emerging new technologies and competing products. Sony followed up the cassette tape Walkman, with the CD, DAT and miniDisc Walkman, and has now produced the flash memory Walkman for playing MP3 tracks. Sony's excellent track record for innovative design ranges across its entire product line, including products such as its slim-line VAIO design for lightweight laptops.

What research tells us about the relationship between design and performance, is that it is not the product of isolated happenstance and individual flair, but rather of a well-managed design *process*.

Studies on the Commercial Impacts of Design (CID) by the Design Innovation Group

In the late 1980s to early 1990s the Design Innovation Group of researchers undertook a study of design and product development projects in 221 small and medium-sized firms. Most of the firms studied had received support under the DTI/Design Council 'Support for Design' programme and were sampled to be representative of UK manufacturing industry as a whole.

About half the projects were for the design or redesign of products; a third were for projects involving engineering design or engineering and industrial design; the remainder were for packaging, technical literature and other product-related graphics. The products covered by the survey were as diverse as wind turbines, lasers, electronic components, kitchenware, textiles, furniture and shoes.

In summary, this research found:

- Of the design projects that were launched on to the market (i.e., implemented), 89 per cent paid back their total project investment and made a profit.
- The average payback period was 15 months from product launch. Nearly half (48 per cent) of the implemented projects recovered their total costs within a year or less of market launch and nearly 90 per cent of the successful projects achieved payback within three years.
- Of the projects that failed, the largest single cause was inadequate briefing of the design consultant, which was particularly a problem among smaller firms. Other problems included the failure to maintain adequate contact between the company and consultants and, in a minority of cases, the selection of an inappropriate design consultant.

- Where comparisons with previous, less design-oriented, products were possible, sales increased by an average of 41 per cent.
- A quarter of the projects opened up new home markets and 13 per cent resulted in new or increased exports. A further 36 per cent had other international trade benefits, largely through strengthening British goods in the UK market against competition from imports.
- Other benefits included reduced manufacturing costs, stock saving, increased profit margins and improvements in a company's external image.
- Almost half the companies in the survey increased their use of professional in-house or consultant designers following their experience with the subsidised consultant.

Significantly, many of the companies whose projects did not make a profit were sufficiently convinced about the importance of design that they too increased their spending on it. A third of the firms said that the consultancy project had improved attitudes towards design and, in particular, they felt that they had learned key design management skills, especially how to select, brief and manage professional designers.

Overall, therefore, the firms achieved considerable returns for their investments in design. The authors noted the following: "The relationship between investment in design and business performance is complex and interactive. In other words business success and investment in design and product development are likely to be mutually reinforcing, while poor financial performance and a failure to invest can lead to a cycle of decline. Investing in design and product development is likely to be a necessary, but not sufficient, condition for good business performance."

Roy, R., Riedel, J. and Potter, S. (1998) *Market Demands that Reward Investments in Design*, Design Innovation Group, Open University, report to the Design Council.

The problem with design

Regrettably, few firms consider design as a well-managed process. In fact rather surprisingly, few firms make the explicit connection between design and performance in a strategic sense.

Look at the response to the Design Council's National Survey of Firms.⁹ Three quarters of the respondents agreed that design is 'used to develop new products and services'. In other words that it is part of the new product development process. A similar proportion agreed that it is 'about how products look'. In other words it is, at least in part, about styling. Half said it is 'a creative thinking process', and 'used to produce something that will sell'.

Yet only a third of the respondents claimed design is 'a strategic business tool' used for differentiating the business from its competitors. In other words for most businesses, design is not recognised as integral to their competitiveness.

In fact when asked what role design played in their business, from design being integral to the business, to design playing no role at all, the largest proportion of firms, at 37 per cent, claimed design had no role to play at all, with a further third claiming it had only a limited role.

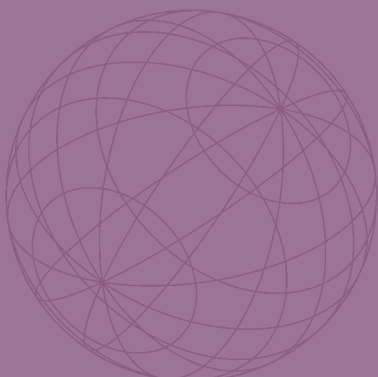
The Design Council's survey also showed that the service industries appear to have a particularly long way to go when it comes to acknowledging the importance of design. Rightly or wrongly, design tends to be associated with tangible goods, and with the promotion of these goods through packaging and other forms of communication. As services tend not to produce tangible goods they are less likely to perceive they have strong commitment to design. Design, innovation and creativity are perceived to have played limited roles in most of the service firms surveyed.

Clearly there is a big perception gap to be addressed. Especially when all the evidence suggests that design can play a significant role in increasing organisational performance.

Table 1: Which of the following most closely represents the role design plays in your firm? (Design Council's National Survey of Firms, 2004)

	Percentage of all respondents (column percentages)						
	All Firms	Primary, Construction, Communication	Manufactures	Financial and Business Services	Trade & Leisure Services	Stayed the Same Size	Grown Moderately/ Rapidly
It is integral to the firm's operation	12	8	41	15	6	6	17
It has a significant role to play	16	8	35	18	15	16	16
It has a limited role to play	35	18	15	39	42	24	47
It has no role to play at all	37	66	9	28	37	54	19

Source: Design Council National Survey of Firms undertaken by Public and Corporate Economic Consultants (PACEC)



design elements

To deal with design as a process it is important to understand what that process involves and how it is changing.

The design process

There are three phases of design activity:

The planning phase is where the initial ideas are generated and developed. Plus there is an analysis of potential technical and market issues, a feasibility assessment, and preparation of a design brief.

In the development phase detailed market and technical specification takes place. There is also concept design, prototype development and testing, detailed design and production engineering.

Finally, in the production and sales phase, there is production and marketing planning, tooling, test manufacturing, trial marketing, full-scale production, market launch, and follow up.

In the development phase detailed market and technical specification takes place.



(i) Key stages in the design processes.

There have been many approaches to formulating a model for the process of design. Typical key stages in the process are:

Activity	Description
Stimulus/trigger	Kick starting the process. A new idea or a strategically planned extension to an existing offering, for example.
Concept development	Appraise the idea in terms of viability, based on strengths, capabilities, and marketplace demands. Also consider production feasibility.
Project planning	Establish a product plan covering objectives, resource allocation, timescales and budgets. Prepare design brief' if design specialists are to be involved.
Sourcing design skills	Either an in-house team; combined external and in-house designers; or outsourced.
Concept design	Create outline of design idea that can be shared and explored; such as sketches, simple models, notes. Create a more formal design brief shaping outline into a clear, focused concept, to be considered in strategic terms.
Concept development	Elaborate on concept, collect missing and incomplete information and explore key strategic questions. e.g. By initial market or technical research.
Prototype and testing	Produce mock-up, model/preliminary version of final design which can be explored, tested, evaluated, used to promote discussion and development.
Detailed design	Convert design into detailed specifications for production prototypes.
Market development	Extended problem finding and solving on market side, including the nature of demand and any changes to original concept
Technical development	Extended problem finding and solving around technical aspects, including feasibility, de-bugging, and design for ease of manufacture.
Launch	Product launch usually signifies the end of the design phase.
Evaluation	Analyse the process and project outcome. Review design management process to ascertain if the design achieved its goals; was delivered on time and budget, was a success – sales figures, customer feedback, etc.
Support and extension	Maintain close links with users. Access their feedback on the product or service. Customer retention and the development of relationships depends on providing a degree of after-sales support.
Re-innovation	Important but often neglected stage where the lessons of experience in both design and post launch inform a further round of innovation.

Table 2: Key stages in design process

Enabling design and innovation

A variety of people and technologies contribute to the design process. The specialist designer is just the tip of a designing iceberg. Remember that design is defined here as “purposive creativity applied across the entire innovation process.” Design should be an integrated organisation wide, cross-functional process involving all employees as well as product or service users.

(i) Creative skills

The popular idea of a creative person is that of someone who is often slightly marginal and radical in their attitudes and behaviours. The individual concerned being one of a few creative people in the organisation. Evidence suggests, however, that the capacity to think creatively is common to all people – the major differences lie in the preferred style of expressing it.¹⁰

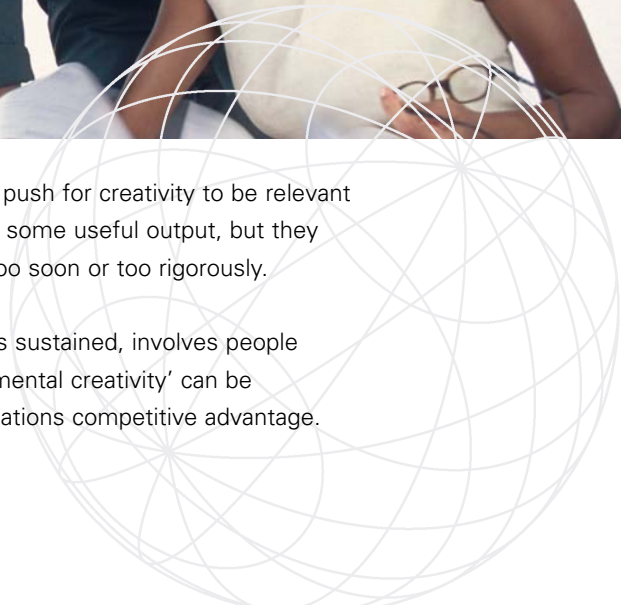
Part of the challenge for organisations is to recognise the context in which different creative behaviours are required – sustained incremental, short-term radical breakthrough thinking, etc. – and set up the organisational conditions within which people feel motivated and enabled to deploy those behaviours.

Design should be an integrated organisation wide, cross-functional process involving all employees as well as product or service users.



Organisations must also be careful that they do not push for creativity to be relevant too soon. Firms will want creative activity to lead to some useful output, but they must be careful not to block it by evaluating ideas too soon or too rigorously.

Fortunately research suggests that innovation that is sustained, involves people throughout the organisation, and is based on ‘incremental creativity’ can be organised and managed to contribute to the organisations competitive advantage.



(ii) Specialist design agencies

One growing option for organisations looking to ramp up design expertise is the use of a specialist design consultancy which takes on much of the management of the innovation process, from initial concept through to prototype and beyond. Organisations such as IDEO and WIPRO have become major global players covering an increasingly wide market and developing considerable in-house experience and expertise around generic design and innovation issues. Effectively this is the design process outsource, often offshore.

(iii) Technology aided design

Much of the new emerging models of innovation would not be possible without new technologies, such as advanced simulation and prototyping tools.

Used across a range of industries, these tools are used both for the co-ordination within the professional design project team and supply chain; and for soliciting input, and presenting design to end-users, clients, managers, funding institutions and planners.



Computer simulation, for example, enables developers to speed up and simultaneously reduce the cost of design iterations; increasing the frequency of problem-solving cycles while reducing the total time and money spent on research and development.

In one model of the innovation process, the different types of technology Information and Communications Technologies (computers, internet), Operations and Manufacturing Technologies (Computer Aided Design, Just In Time) and Innovation Technologies (modelling and simulation, visualisation/virtual reality and rapid prototyping) are seen as *enabling*, *implementing*, and *creating* innovation respectively.

These tools have been developed in parallel with a growth in the range and availability of methodologies aimed at supporting creativity – examples include various creativity techniques, empathic design methods and cognitive mapping.

Design from the customer perspective

In recent years there have been some significant changes in the design process. One is the shift from mass-production to mass-customisation. Accompanying this is a shift in the way that company and consumer interact.

Global competition has led to the growing importance of non-price factors in determining the competitiveness of companies. Design is one of those factors. The world of consumers has come a long way since it was happy to have identical mass produced goods foisted upon it. Henry Ford once commented that customers could have “a Model T Ford in any colour as long as it was black”. Today car buyers select from a myriad of colours with names like Pine’N’Lime, Tractor Orange, Sno White, True Blue and Thanks Vermillion. And the choice extends to more than colour as consumers select from a host of different extra equipment packages.

Successful companies are often successful because they are responsive to the needs of their customers.

In 2000 according to the annual Manufacturing Futures survey of the strategic concerns of global manufacturers the following are ‘order qualifying’ factors. That is, they are the things a manufacturer has to offer simply to stay in the game: availability, price, quality, differentiation, time to market with new products. ‘Order winning factors’ consist of price and customisation. And there is little doubt that customisation will soon join the other ‘order qualifying’ factors. Consumers want it all.

True the term mass customisation may be deceptive, as it is often used to describe ‘flexible production’ or ‘flexible specialisation’ a fine tuning of existing operations capabilities whereby high-volume, line production is simply adjusted to lower volume, higher variety batch processes. But there are more radical changes taking place that are associated with the concept. True mass-customisation may demand radical configurations and redesigns of the complete operations structure within an organisation’s plants.

Consumers also influence the survival of firms by the way they react to new technology. Successful companies are often successful because they are responsive to the needs of their customers. They listen to what the customers want and then deliver accordingly.

The challenge for these companies comes when a new technology comes along bringing radical change to products and services with it. Then existing customers tend to reject these products and services because as is often the case, early in the development of the new ‘disruptive’ technology the products and services are less reliable, more expensive and perform less well than the existing technologies.

In this case part of the companies interaction with the consumer needs to be more about shaping and educating; rather than listening. Conventional media-based advertising is one way of educating customers, but there is a range of marketing tools that can be deployed to achieve these ends, including through the use of the World Wide Web (e-business).

managing the design process

Design is an increasingly important factor in creating a competitive advantage. The challenge for organisations is to be able to exploit the full potential of creativity and design to enhance the innovation process and contribute to competitive advantage. So what are the key issues in creating and managing an integrated design process; and what are the main barriers?

Design as a strategic business tool

As previously outlined, The Design Council's National Survey of Firms showed that few organisations recognise the important part that design can play in creating competitive advantage.

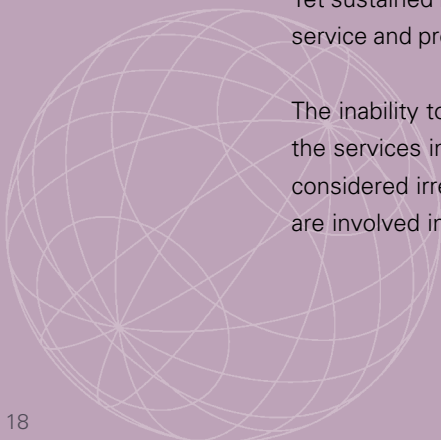
Design can contribute in many ways. In essence, however, it is about linking user needs with form and function to create something attractive and adoptable as an innovation. But there is still considerable reluctance on the part of organisations to take advantage of such opportunities.

One reason is a perception that design needs to have dramatic and stylish impact – as with the Sony VAIO laptop or Apple's iPod.



Yet sustained incremental improvement can have a major impact on both product, service and process design and consequently on performance factors.

The inability to appreciate the potential benefits of design is more pronounced in the services industry. Despite considerable potential for design, the concept is often considered irrelevant to service activity. Many companies do not even realise they are involved in design when considering new service products.



Getting design right

Creativity may require out of the box thinking skills, and the ability to think laterally, however, there is strong evidence that obtaining the benefits of design depends on managing the process in a *structured and systematic* fashion.

To a great extent the ability to build sustained competitive advantage through design will depend on being able to repeatedly create new ideas and bring them all the way through the system to becoming successful innovations.

A key principle in successful design management is to try and manage the risk; to try to manage the inevitable uncertainty in the process of design. It makes design less of a gamble, and instead more like a managed set of risks.

A process model is very useful. It provides milestones along the journey where risks can be assessed. One common process concept associated with design is that of stage-gates – points at which strategic assessment can be made. These are set up at the milestones and progress allowed through the gate only when key technical and market questions can be answered.

There are, however, problems associated with this commonly used approach. One problem in managing design is that the design tends to get left to the ‘designers’. But design is, and should be, an organisation-wide activity managed in an integrated and high involvement fashion. Individuals within the organisation should feel part of the design process and not that it belongs to a select group of ‘designers’.

Equally a staged design process model implies separation of involvement. It is much like runners in a relay race. When one stage is finished the process is handed on to those people dealing with the next stage. But if one runner in the design relay is slow then the whole performance is held back, and if the handover is poor or worse the baton is dropped, then once again everyone’s efforts may be wasted.

The way to avoid this is to adopt an integrated approach to the management of the design process which links the specific contribution of design specialists with those of others throughout the organisation. Instead of sequentially involving people, bring the whole set of perspectives together at the outset and build a shared and clear concept around which everyone can contribute.

Success factors

There is no guaranteed recipe for success in design. There are however many factors that appear common to those organisations who both manage the design process effectively and successfully and create the necessary culture for it to flourish in.

Success factors in managing the design process include:

- Top management commitment
- Clear concept definition
- Voice of the customer – dedication to the market and customer inputs throughout the project
- Well-planned and adequately resourced launch
- Early detection of problems – leads to less reworking
- Tough decision points and stage gate model with close monitoring at each stage
- Overlapping/parallel working, whilst retaining cross-functional involvement
- Choice of structure – matrix, line, project – to suit conditions and task

There are many factors that appear common to those organisations who both manage the design process effectively and successfully and create the necessary culture for it to flourish in.

- Cross-functional team working, use of team-building approaches to ensure effective team working and develop capabilities in flexible problem-solving
- Advanced support tools, such as CAD, rapid prototyping, computer-supported co-operative work aids to assist with quality and speed of development
- Learning and continuous improvement. Carrying forward lessons learned, via post-project audits, etc. Continuous learning improvement culture

These success factors should be coupled with those factors necessary to create an innovative culture.

Factor	Reasons and effects
Motivation	Need for achievement, need for recognition, etc. Drives people to make their mark on the world.
Availability of 'slack' resources	People need the time, space and resources to experiment. They need to explore, to create, even to fail.
Leadership	An expression of commitment at strategic level – this is important. Role models exemplify key values – innovators and rule breakers as heroes. Leaders provide resources and motivation and must act consistently – 'do as I do not just as I say'.
Direction	Buy-in and ownership of challenge. Strategically targeted innovation; not just 'moving the deckchairs'.
Self development	Learn to learn. Acquire and use key skills.
Enabling tools and resources	Systematic approach to problem finding and solving. Creativity training.
Communication and information exchange	Network across boundaries. Knowledge-based organisation.
Knowledge management	Capture and codify; Tacit to explicit; Display and disseminate.
Cross-boundary working	Link different knowledge sets. Unexpected knowledge inputs and stimuli. Different perspectives and complementary resources.
Team working	Build teams; understand the practice and theory.
Learning	Embed a cycle of systematic problem finding and solving Ensure challenging reflection on experience Build and extend a theory base Encourage experimentation Share and communicate learning with others



This briefing document highlights a number of key issues about the relationship between design, innovation, performance and competitiveness. It also throws important light on the way design is perceived by business.

Key points for practitioners.

- Evidence strongly suggests that design can make a real difference to performance and thus competitiveness.
- Unfortunately too many companies do not consider design as a strategic tool. In fact many consider design to play no part in their business.

Accepting that design is relevant to the company and its performance is only half part of the story. Another challenge is how best to use design to increase performance. Fortunately many companies have already successfully incorporated design into their businesses and these companies offer some useful lessons.

- Creativity is for the many not the few. All employees can be creative, it is just a question of matching styles of creative behaviour with design needs.
- An integrated approach to the design process is more effective than a sequential one.
- In the future the design process is likely to involve active contributions from all the stakeholders – from customers to suppliers.
- There are many behaviours and tools that can be used to enhance the prospects of managing the design process successfully. Many are listed in tables one and two in this briefing document.

For most organisations, the challenge of managing design is likely to prove an iterative process. While each organisation will require an approach that is tailored to its particular strategic aims, there are many generic examples of best practice that can be incorporated into the design management plan.

Perhaps the most significant challenge for organisations, however, is to acknowledge the important role that design can play in contributing to increased performance and enhancing an organisation's competitive position.

- ¹ Bruce, M. and Bessant, J., Eds. (2001) Design in Business. London, Pearson Education.
- ² Whyte J., Bessant J., Neely A., Yaghi B., DTI 'Think Piece', Management of Creativity and Design Within the Firm, Advanced Institute for Management Research.
- ³ Tether, B. S., Think piece on The Role of Design in Business Performance, ESRC Centre for Research on Innovation and Competition (CRIC), University of Manchester.
- ⁴ Bruce, M. and Bessant, J., Eds. (2001) Design in Business. London, Pearson Education.
- ⁵ Teknikforetagen & SVID. 2004. 10 Points – Attitudes, Profitability and Design Maturity in Swedish Companies. Sweden: The Association of Swedish Engineering Industries Design & Swedish Industrial Design Foundation.
- ⁶ Gemser, G. & Leenders, M. A. A. M. 2001. How Integrating Industrial Design in the Product Development Process Impacts on Company Performance. Journal of Product Innovation Management 18(1): 28-38.
- ⁷ Roy, R., Potter, S. & Riedel, J. C. K. H. 1999. The Long-Term Benefits of Investment in Design and Product Development. In Jerrard B., Trueman M. & Newport R. (Eds.) Managing New Product Innovation: 142-154, London: Taylor and Francis.
- ⁸ Tether, B. S. & Hipp, C. 2002. Knowledge Intensive, Technical and Other Services: Patterns of Competitiveness and Innovation Compared. Technology Analysis and Strategic Management 14(2): 163-182.
- ⁹ This was a survey of 1,500 firms carried out for the Design Council by PACEC. The survey asked firms about their understanding of design and the extent to which they themselves engaged in design activities.
- ¹⁰ Kirton, M. (1989) Adaptors and Innovators. London, Routledge.



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