DESIGN MANAGEMENT EUROPE

DME SURVEY_

THE INCORPORATION OF DESIGN MANAGEMENT IN TODAY'S BUSINESS PRACTICES

AN ANALYSIS OF DESIGN MANAGEMENT PRACTICES IN EUROPE

2009

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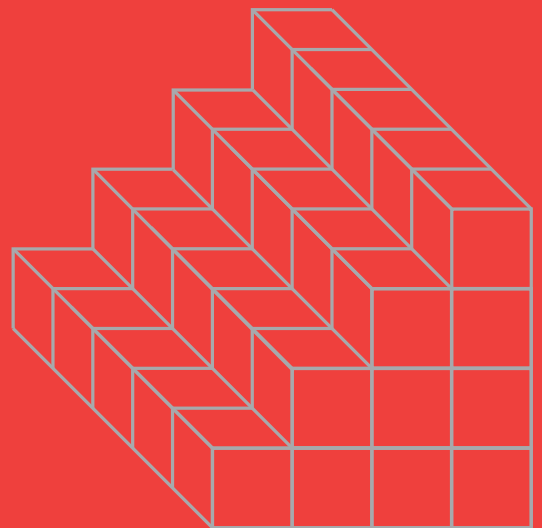
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'WHEN ALL BUSINESSES ARE DESIGNING VALUE-ADDED, USER-ORIENTED, DESIRABLE PRODUCTS IT WILL BE THOSE WITH GOOD DESIGN MANAGEMENT PRACTICES THAT WILL BE ABLE TO STAY AHEAD'.

(DARRAGH MURPHY, 2007)

PREFACE / ACKNOWLEDGEMENTS

This report is the end result of a research project spanning nearly two years, as part of the ADMIRE programme (Award for Design Management Innovating and Reinforcing Enterprises).

ADMIRE is a joint initiative by nineteen partners and ten agents from twelve countries, who together make up DME (Design Management Europe). The chief aim of this Pan-European collaboration is to set up a European Design Management Award. In addition ADMIRE also aims to raise awareness of design management, and share knowledge in this area, especially among small and medium-sized enterprises across Europe. The programme was part financed by the European Commission's DG Enterprise and Industry as part of the sixth framework programme's PRO-INNO Europe programme.

By drawing on the resources and contacts of participating partners and agents - including a number of national and regional design institutes - a pretest was pieced together, and respondents from different countries were recruited for participation in the study. We are particularly grateful to the Municipality of Eindhoven as the project coordinator and these partners* for their contributions.

Among the partners who worked together on this research project were several research institutes and design management experts. Alongside INHOLLAND University of Applied Sciences (CBRD) these were:
- The National Centre for Product Design & Development Research (PDR), University of Wales Institute, Cardiff (UWIC)
- University of Art and Design, Helsinki
- European Design Centre (EDC), Eindhoven
- Design Connection Brainport (DCB), Eindhoven
- Agence pour la promotion de la création industrielle (APCI), Paris
- DesignFlanders, Brussels

The ADMIRE programme's research results were influenced and shaped by these partners to a significant extent as they invested their ample experience and knowledge in this challenging exercise.

Special thanks go to the members of the research team: Darragh Murphy and Caroline Mougenot (PDR/UWIC), Sally Brazier and Barbara Cruz (EDC), Steven Cleeren (DesignFlanders), Jean Schneider (APCI), Yaana Hytonen (TAIK) and Ingrid van der Wacht (Municipality of Eindhoven).

The author would like to show his gratitude to the CBRD for offering him ample opportunity to unfold activities for this study, and extend particular gratitude to Prof Brigitte Wolf – who headed up and lectured at the CBRD for part of the research project – for her contribution.

EURIB, the independent research institute that developed an instrument for data collection and analysis, was called in to assist during the execution stage of the study. The author would like to extend special thanks to Jean-Pierre Schreurs, Leo van der Blom and Janneke Verhorst for contributing their statistical expertise, and also for their fully gratifying collaboration.

English translation: Erwin Postma PhD

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DME **SURVEY**_

CHAPTER 1 - INTRODUCTION

This report comes in response to calls from the field for greater insight into the role of design management through targeted research. Effective use of design is a crucial enabler of competitiveness for many companies, but how well are companies actually doing when it comes to using this tool? Do they have the right management skills for that? The central idea is that effective design does not come about by accident, but rather as a result of targeted management practices.

The issues dealt with in this report will give the reader a clearer picture of what design management is all about. It will make a good introduction to design management for readers who are unfamiliar with the subject. For those with wider experience with the subject, this report provides an opportunity to reflect on their design management practice in comparison with the picture painted in this report, and to find out where they stand in terms of design management capability. It will hopefully encourage readers further to take up this subject. This report covers a practice-based study that was conducted to meet a demand from professional circles for knowledge and insights that can be applied in practice.

WHY DESIGN?

Design is a powerful differentiation tool companies can use to make themselves stand out among their competitors. Back in the 1980s, marketing 'guru' Philip Kotler already claimed that design's importance for a company's competitiveness is evident (Kotler & Rath, 1984). Kotler's claims sparked around 15 studies – mainly in the UK, Scandinavia and the US – into the relation between design and business performance. The results of these studies showed that design does indeed impact positively on business performance in terms of, for example, profitability, quoted value (share price), employment and export. Furthermore on a macroeconomic level, there is a strong positive link between the use of design and home-market competitiveness.

Deploying effective design is not a stand-alone exercise, but requires companies to develop wide-ranging capabilities in this area. Such design capability is increasingly being valued as a source of competitive advantage, yet still often overlooked by companies.

DESIGN MANAGEMENT AND INNOVATION

The concept of design management relates to certain management activities, methods and skills that are required to optimize and manage design processes. This is dictated by the highly complex nature of the design process.

As a professional field, design management focuses on a complex of all visual manifestations of companies, brands and products. As well as on non-visual aspects relating to the design process as such, or to processes for product development, production, distribution, sales, delivery or service.

Another explicit objective comprises the creation of synergy between the creative realm and the business realm. These realms tend to operate with their own culture, own values and opinions, and their own dynamics. This disunity is perpetuated by management courses' lack of focus on design as a business tool, and design courses' lack of focus on business aspects, as these predominantly choose a cultural approach. As a result, design specialists' affinity for communication marketing and business strategy tends to fall short. Design management aims to connect these two realms, and bases itself on the idea that companies and organisations perform better when they manage to successfully harness and exploit the potential of design.

The European Commission considers design management to be a competence that comes under the umbrella of innovation management, in recognition of the fact that companies need innovation capability to be able to respond to new market opportunities and threats.

Companies that invest in design tend to be more innovative and profitable, and grow faster than companies that do not. A string of recent studies show that design-driven companies do better in the area of innovation than others. And that innovation-driven companies see sooner design as a strategy than non-innovative companies. These studies also show that

companies that deploy design on a strategic level, or as an internal process, are quicker to come up with new products than companies that do not have a design policy in place.

'There is a clear potential to improve innovation performance and competitiveness at company and national level through the use of design. This potential has become increasingly evident in recent years, due to the changing nature of innovation and developments in the concept of design on the one hand, and to increasingly sophisticated consumer demand and global competition on the other.'

'The role of design is to strengthen the communication between the different parts of the innovation process – for example between R&D and production, R&D and marketing, to turn ideas and technological inventions into products and services, and make innovative products commercially acceptable, user-friendly and appealing. In this sense, design is a tool for innovation in new or emerging markets where user-friendly and appealing design is a must to create or enter the market. Design is also a tool for innovation in mature markets where technological developments bring only marginal improvements to the end-user, and in low tech markets.'

(Source: 'Design as a driver of user-centred innovation',
EU Commission Staff Working Document, 2009)

The assumption is that good design management practices in small and medium-sized enterprises lever a more effective use of design. This claim is substantiated by a recent study into the effects of design investment on business performance, and the role design management plays in that (Chiva & Alegre, 2009). This study returned the following results:
- It provides scientific evidence for the hypothesis that design management boosts business performance;
- Investing in design is positively related to design management;
- Design investments only influence business performance when the company has a design management structure in place;

- This study demonstrates that companies are very capable of self evaluation when it comes to design management skills.

Ahire & Dreyfus (2000) had already shown that design management has a positive effect on product design performance and process quality management. Good design and investment in design alone will not automatically make a company more successful. Design only bolsters business performance when it is the result of a well-managed process. The right skills are required to run an efficient and effective design process. Only then can design have a positive effect on business performance.

'Companies that manage design effectively and efficiently attain better performance than those that do not. Therefore, good design does not emerge by chance or by simply investing in design but rather as the result of a managed process'. (Chiva & Alegre)

A second idea behind design management is that good design management practices at SMEs enable these to unleash the potential of design as an innovation driver or tool. Literature on the subject pinpoints the ability to manage innovation processes as one of the skills of design management (Dickson et al., 1995). This leads to the hypothesis that good design management can give companies a greater competitive edge and greater business success.

In 2003, the UK *Department of Trade & Industry* published the report 'Competing in the Global Economy: The Innovation Challenge'. This report lists three important conclusions regarding the influence of design on innovation:
- *'Research shows that design skills are vital to innovation and can significantly enhance a company's financial performance'.*
- *'Unfortunately, not enough businesses use design to connect new ideas with market opportunities, and lack of design ingenuity usually indicates static or poor overall business performance'.*
- *'In short, the most successful and imaginative companies use design to enable innovation'.*

(Source: Borja de Mozota, 2003.)

PRACTICAL PROBLEM

Many companies are currently not using design in a conscious, systematic or strategic manner. This is despite the fact that design appears to be specifically suited to SMEs as an innovative activity, due to the relatively low capital demand and quick investment recovery.

Design management is becoming a commercial necessity, as it enables a company or organisation to successfully deploy design for innovation purposes, stay in sync with the market, tailor to consumer needs, and realize benefit. When design management is an explicit part of management processes, it will have greater impact on business performance and help secure a market position for the long term. However, certain parties are voicing concerns that most European SMEs lack sufficient grasp of the role of design management, and that their focus on design management is still underdeveloped. However these concerns are never substantiated. Barring a few small-scale studies based on case histories, there has been no substantial research into the way companies handle design. We simply do not know to what extent companies succeed in integrating design into their operational management, or what design management skills they actually have. In an attempt to fill that void, DME has now taken the opportunity offered by the ADMIRE programme to launch such research.

One of the ADMIRE project's objectives was, therefore, to bring the current status of design management in the European SME sector to light. A second objective is to identify factors that stand in the way of companies implementing design management. One possible stumbling block is a lack of knowledge. There is no lack of publications and studies showing that education is an important part of the problem. Design courses spend little time on business implications and management skills. Similarly management training has little regard for the possibilities offered by the application of design.

DME's expectations are that the findings of this research will ultimately prove interesting for policy-makers (as they will provide insights into design management's weaknesses and the opportunities it offers). Aside from that, DME hopes this research will provide European design support centres and business support centres with valuable input for the intensification of their efforts to promote design management. Finally, the DME network also expects this research to offer companies themselves insight into where they currently stand in terms of design, and what possibilities they have for further development of their design management capability.

> *'The ability to design excellent products, services and experiences is a fundamental source of commercial success. Well-managed design has the power to enable strategy, create innovation, build brands, and ensure customer satisfaction. In many SMEs however, effective design management practices are rarely adopted. The result can be products which may be technically adept, but which are difficult to use or are uninspiring to their intended customers. Equally damaging is the creation of beautiful objects which fail to make sufficient profits due to poor design for manufacture or insufficient functional or technical performance. Perhaps of greater concern is when the companies have excellent products or services but neglect to design branding, communications and environments that differentiate the company and attract customers. Overall these companies fail to gain competitive advantage through the effective use of design.'*
>
> (Source: ADMIRE project plan)

THE DESIGN MANAGEMENT STAIRCASE

There are a range of design management aspects that can influence the way in which design is integrated and managed by a company – and therefore have to be considered when defining a company's design management capability. In practice, companies handle design in a myriad of ways. Even two equisized companies operating in the same sector will often adopt different approaches (Lewis et al., 2009). One important challenge we are facing is, therefore, to bring the main aspects of design management capability together in a coherent model.

In order to be able to assess or evaluate companies' design management capability we need a clear conceptual model and framework. Close scrutiny of literature on the subject has confirmed that a validated model for this purpose is still lacking, albeit that there have indeed been initiatives to devise such a model (including Hayes 1990, Olson et al., 2000, Borja de Mozota 2002, Danish Design Centre 2003). The Design Council (Summers, 2000, Design Atlas Tool) and Moultrie & Frazer (2004) also made a significant contribution with their descriptions of audit tools.

Based on the literature consulted, a model was put together: the Design Management Staircase. The DM Staircase uses an approach that is similar to the one the Danish Design Centre used in the development of its Design Ladder (Ramlau en Melander, 2004). Like the Design Ladder, the DM Staircase model is also a four-tier model, but a key difference lies in the fact that the four tiers in the DM Staircase are defined on the basis of five factors, which makes the Design Management Staircase more specific and more detailed. The other difference is that is focussed on design management rather than simply the use of design.
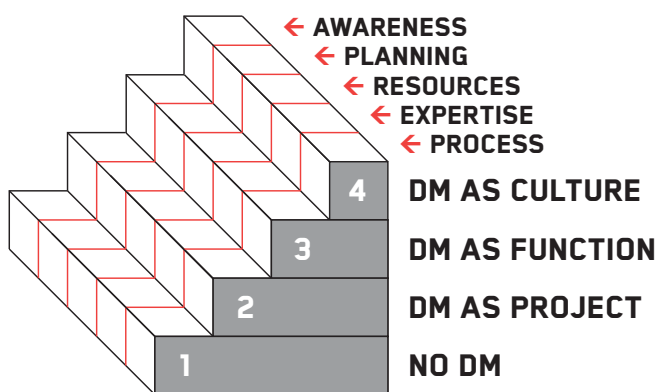

← AWARENESS
← PLANNING
← RESOURCES
← EXPERTISE
← PROCESS

4 DM AS CULTURE
3 DM AS FUNCTION
2 DM AS PROJECT
1 NO DM

Fig. 1.1 Design Management Staircase

The Design Management Staircase conveys companies' typical behaviour in the realm of design management on four levels. The specifications of these four levels of development are context-driven, but in principle range from immature to a level where design management is of a strategic nature and part of the company's culture.

The staircase form of the model suggests that the higher a company makes it up onto the stairs, the greater the strategic importance of design at that company. The significance of the latter is highlighted by different studies that show that a company is more likely to grow when it deploys design in a strategic fashion (including Design Council, 2004, Danish National Agency for Enterprise and Housing, 2003).

THE FOUR LEVELS
The following describes the four levels using a number of general characteristics:

Level 1: No design management *(some or no design activity; not repeated, defined or managed)*
On this level, companies hardly pursue any active design policy, if at all. It may have just been implemented, or still used on an ad-hoc basis with limited targets and guidelines. There is little to no knowledge and experience available to handle design activities. Design plays no role or a limited role in the company's attempts to differentiate itself from its competitors. Possibly because the importance of differentiation is not understood, recognized or valued – or because the company is sceptical about design's potential added value. Any possible design activities that are in place will be unpredictable and yield highly inconsistent results, which is down to the absence of clearly-defined processes.

Level 2: Design management as project *(design project management; repeated)*
This approach to design management is found at companies that make limited use of design (only to meet direct business needs). Design is deployed on a limited basis in ad-hoc style changes, product line extensions, or product improvement projects. At these companies, design is largely neglected as a significant tool for New Product Development (NPD) and innovation.
Design is primarily used as a marketing tool, with a view to adding value to the existing product offering (through product appearance, styling, packaging, marketing communication, or visual identity). But design is not used to create added value through new products or services. As part of product development

processes, design is merely used as a finishing touch at the end of the process. Any design undertakings at this level lack a substantial focus on realizing process improvement, as that is not a critical factor with such limited design objective. As a result, design is barely integrated into other business processes, if at all, and design activities involve no, or limited, collaboration between departments (such as Marketing and R&D). Coordination of design activities is minimal within a level 2 company. Responsibility for design activities is held at operational level. Experiences with design are only logged and shared on a limited scale within the organisation, mainly by a small group of directly involved employees.

Level 3: Design management as function *(management of the design function, integrated with other processes; a defined role for design)*
As soon as companies start linking the deployment of design to innovation and product development – at an early stage and structurally – their design efforts cease to only focus on the product and take a broader approach that includes the process (Heany, 1983 in: Von Stamm, 2003). Innovation and the development of products and services call for the mobilisation of several disciplines and specialities, and require the company to synthesise an array of different factors. Companies with such an approach to design management will have a dedicated employee or department with formal responsibility for the management of the total design process in the organisation. This person or department will act as an interface between different kinds of design specialists, departments and company management.
In order to accommodate shortening product cycles, design is used proactively, and product development becomes a permanent feature. One critical success factor is time-to-market; project turnaround from the initial idea to product launch. Process quality is an important factor to ensure a company keeps up with the competition.

Level 4: Design management as culture *(strategic management of design; design leadership; infused)*
This approach to design management can be found at companies that are looking to establish themselves as

a market leader through design innovation. This refers to non-technological innovations that are first-to-market, as opposed to so-called me-too innovations, where design innovations are copied by followers. Design innovation can come in the form of new products or services, an innovating communication/presentation style, or innovating marketing tactics, such as a new retail concept (Also refer to: Gemser & Leenders 2001, Verganti 2006).

These companies are highly design-driven. They stand out because they have a differentiation strategy that has design at its core. This approach is often also adopted by start-ups that are founded on innovation. In order to be able to excel, both senior management and the different departments are closely involved with design, and design is part of the company's main business processes. These kinds of companies also manage to instil awareness of and commitment to the importance of design in their employees. In the view of Dumas & Mintzberg (1991) this will probably lead – when design has trickled into the fabric of the company and become part of corporate culture – to the most successful and broadest use of design. Design is in such cases a way of life within the organisation. The staircase model could lead people to believe that the highest tread is always the one to aim for, but not every company will need to focus its strategy on the role of design as a driving force for innovation. Depending on their nature, market position, or strategy, a level 2 or level 3 approach may well suffice. Still, most companies cannot afford to neglect design management altogether, as in the case of companies stuck on the first tread of the staircase model (possibly except for local, small-scale very specialist providers).

THE FIVE FACTORS
In order to get a clearer idea of what the four levels of design management entail, the study identified five factors based on an extensive literature search. These factors appear to bear upon the success and failure of design, making them indicators for good design management. Each factor is represented in each of the four DM levels, as becomes apparent in the matrix figure (Fig. 2.1). The following gives brief explanations of each factor:

Factor 1: Awareness of benefits

The extent to which a company (and its management in particular) is aware of the benefits and potential value design and design management can offer.

Management's attitude towards design is a critical factor affecting whether design actually contributes to the success of a product or not. A lack of awareness of the possibilities and potential benefits forms a barrier preventing effective use of design. In today's practice, this lack is down to the education and background of senior managers (cultural background, design training, technical and business knowledge, etc.), as well as their attitude towards so-called 'soft' assets, i.e. brands and reputation. It is also important for there to be a common belief in the importance and value of design among employees.

Factor 2: Process

The extent to which a company pursues a robust and effective design management process, embedded into its core business processes.

Timing, i.e. when design is applied in development processes, also plays a key role here. Is there a systematic policy for product development and innovation processes, into which design was embedded from the start, in place?

Design management comprises of a formal programme of design activities as opposed to a mishmash of ad-hoc design activities. Design management at process level has a formal set up, meaning that it is part of a company's wider policy-making process, and that it interfaces with other areas of the business. Implementation of such a programme within an organisation will depart from an earlier created organisational structure; it is not merely a 'hobby' of one individual manager, but 'interlinks' all involved parties and responsible managers by facilitating effective collaboration.

Factor 3: Planning

The extent to which a company has developed a strategy for design, articulated in business plans, and communicated widely.

This concerns the formal documentation of basic principles and objectives, and the dissemination thereof among employees, with an intention of gaining their interest and inciting them to action. Whenever business plans are devoid of objectives for design, design management will only be rolled out on a limited scale. Another key aspect is whether a company is able to formulate design targets (in line with their business or market targets) to drive design activities. When it is unclear what design is supposed to achieve, and what effects are to be strived for, developing a good strategy is simply impossible. It will therefore have to be clear what the competition strategy is, and how design should dovetail with that.

Factor 4: Expertise

The quality of the staff (level of experience, skills, and knowledge) and the range of tools and methods applied.

This is all about the quality of the available staff (professional designers, design managers, advisors, multi-disciplinary design team, and the directorship / management) and the advanced nature of the applied tools and methods.

Factor 5: Resources

The extent to which a company invests in design projects and deploys an appropriate design staff. Also if it invests in a creative working environment, hard- and software for design, etc.

Resources are considered the sum of all design investments. This is mainly about the right design capacity (the number of people), but also about the ability to adequately budget for design projects. Design investments also go into training budgets and production facilities (for example, staff training, hardware and software for design, and an inspiring work environment). One of design management's jobs is to ensure the best possible use of the means available within an organisation.

A lack of resources is considered an impediment for good design management practices. Conversely there is a positive link between the level of design investments (design intensity) and design management (Chiva & Alegre, 2009).

FACTORS	DESIGN MANAGEMENT CAPABILITY LEVELS			
	LEVEL 1: NO DM	LEVEL 2: DM AS PROJECT	LEVEL 3: DM AS FUNCTION	LEVEL 4: DM AS CULTURE
AWARENESS (OF BENEFITS)	Not aware of benefits and potential value of design (unconsious use or no use)	Some functional specialists are aware	Most are aware that it is important to remain competitive	All are aware that it is fundamentally important to gain a leadership position
DM PROCESS	No idea where design fits within current processes	Performed inconsistently and late in development process; not repeatable across projects	Performed consistently and early; formal DM process drives performance	Ongoing activity; business is engaged in continuously improving DM process
PLANNING	Company / marketing plans do not mention the use of design	Limited plans and objectives exist at the individual project level	Plans and objectives exist which set direction and integrate design in various activities	Design is part of strategic plans; design planning is a dynamic process that drives the business
DM EXPERTISE	Little or no skills to handle design activity; no DM tools applied	Some skills; basic DM tools applied inconsistently; lots of room for improvement	Standard DM tools applied consistently; some room for improvement	Appropriate expertise; use of advanced DM tools; appropriate metrics used
DESIGN RESOURCES	The business has not committed resources to design activity (may not appreciate the potential return of design investment)	Limited resources are allocated for individual projects; one-off design investments with no review of potential returns	Sufficient resources are allocated on the basis of potential return, but with limited procedures in place to assist in decision making	Substantial resources are allocated, with financial procedures in place to assist in appraising investments, assessing risk and tracking returns

Fig. 1.2 Design management maturity grid

OBJECTIVE AND RESEARCH QUESTIONS

The central research question is: *'how do European SMEs manage design in practice, and how can they further develop their (design management) skills to increase the effectiveness of their design activities?'*

The objective of the research is to bring the current status of design management in the European SME sector to light. A second objective is to identify barriers that stand in the way of companies implementing design management.
This leads to the main objective of developing a model and tool that can be used to assess companies' design management capability. Such a tool is needed to be able to run longitudinal research to the extent and manner of further development of this capability. Repeated capability assessments can, for example, offer policymakers insight into whether their efforts are paying off, or facilitate benchmarking. But they can also help companies evaluate their current design activities. Following on from that, the study also sets out to identify the main explanatory factors (in research terms: variables) for design management capability.

These objectives generate the following research questions:
1. How does design management capability and business performance correlate?
2. To what degree does the level of design management depend on specific company characteristics or respondent characteristics?
3. What are the main stumbling blocks for the implementation of effective design management?
3. To what degree are companies able to evaluate their own design management capability?
5. What is the relative importance of the five underlying factors of the Design Management Staircase?
6. How can we evaluate the reliability and validity of the DM Staircase model?

Then there is one additional research question that is not directly linked to the scope of this research, but does ensue from the ADMIRE project's main objective:
7. How does design management impact on innovation?

This last question is a pertinent one as the European policy agenda explicitly links design management to innovation management. The relationship between these two fields is, however, still a rather vague one. Seeing as this issue interfaces with the DME research scope, this question will be tackled in a separate chapter (5).

The next chapter will outline the methodology used to tackle above research questions. Subsequent chapters will then go on to describe the results and conclusions.

CHAPTER 2 - METHODOLOGY

The model used in this research is made up of four levels that are, in turn, construed using five factors. The research tool is intended to provide e reliable scoring of companies and organisations on five factors (awareness, process, planning, expertise and resources). A total of 18 questions were devised for this tool, each factor comprises three or four questions, the answers to which are compiled into an overall factor score.

The five ensuing factor scores are merged into one total score. This total score is taken as an indication of a company's ability to professionally manage design activities. That means managing these activities in a way that can be classed as conscious, planned, structured, controlled and repeatable. This total score is referred to as a company's DM rating.

The technical side (methodological and statistical analysis) of this pretest (n=58) was taken care of by an independent firm in the summer of 2008: EURIB (European Institute for Brand Management), based in Rotterdam. The results were positive, i.e. they showed that the questionnaire proved to be a usable tool. Based on these results and the points raised in the evaluation forms, the questionnaire was further improved, leading to a final version.

A second methodology and validity evaluation was performed using data collected from companies nominated for the Design Management Europe Award 2008 (n=129). The registration form that nominated companies and organisations had to complete incorporated the DME Survey questionnaire (Lewis et al., 2009).

DATA COLLECTION

The DME survey was conducted using an online questionnaire. Data was gathered over a period of four months (November 2008 to February 2009). Using the address databases of partners, agents, and their business relations, several thousands of companies were invited by email to take part in the survey. The invitation was followed up by one reminder email. By way of incentive for participation, respondents were promised a copy of the DME Awards 2008 'Book of Winners', as well as a PDF of the research report, for completing the questionnaire.

Pretest and methodology evaluation
An initial version of the questionnaire was trialled among 58 respondents in 8 countries (UK, Austria, Germany, Luxembourg, The Netherlands, Portugal, Spain and Turkey) in the spring of 2008. These respondents were asked to complete the questionnaire on their own, and to think out loud. While doing so, they were observed by the interviewer, who took notes. After finishing with the questionnaire, respondents were asked to fill out an evaluation form to find out their thoughts on the questionnaire. Issues such as understandability and time needed to complete the questionnaire were covered as part of this evaluation.

RANDOM SAMPLE

This research does not intend to draw conclusions concerning the European SME sector as a whole. The random sample therefore does not need to reflect the total population. What this research is ultimately after is to compile a group of active design users, and chart their views and practices. Expectations are that within such a group, this research will unearth interesting and valuable correlations.

It would, in our view, be a futile exercise to analyse design management at companies that hardly use design, if at all. Moreover, such companies will in practice not be motivated to fill out the questionnaire either. Their ignorance about the subject could also diminish the reliability of the scores.

The primary goal of the research is to validate the Design Management Staircase, i.e. to show that it is a reliable model, which actually measures companies' design management capability, providing input data is valid. There is a clear need for a practical and straightforward tool for the assessment and improvement of organisations' design performance.

In order to assess the *quality* of the random sample, the questionnaire contains a number of control questions:

- The number of years the respondent has been involved with design;
- Whether the respondent has enjoyed formal training in the area of design or design management;
- The number of years a company has been using design;
- The kind of design activities in place at the company for the past three years.

For the time the survey was online, the questionnaire was completed by 776 respondents. After an initial analysis, it turned out that not all respondents could be included in the research. The quality of participants was corroborated by checking their companies' websites. And a number of respondents were inadmissible because they simply had not answered a sufficient number of questions. This eventually left 605 respondents for the analyses.

The results show that the random sample is a group of experienced and active design users:

- 44% of respondents have been involved in design activities for at least 10 years, and 6% under one year.

- 54% of companies have been using design for at least 10 years, and only 4% under one year.
- 56% of respondents indicated to have enjoyed education or training in the area of design.
- 33% indicated to have enjoyed education/training in the area of design management.

The extent to which design has taken root within a company can be derived from the number of design disciplines employed over the past three years. This encompasses deployment of design in a maximum of six areas: corporate identity/branding, company environment, product development, packaging, promotion and market exploitation (retail environment). On average, respondents list 3.4 areas, leading us to conclude that this is indeed a group of active users.

The usual questions were included to distinguish between the population members that make up the random sample:

- The type of market the company operates in (B-to-B or B-to-C);
- The main sector the company operates in (manufacturing, services, etc.);
- Size of the company (number of employees);
- Turnover in the past year.

DESIGN USAGE
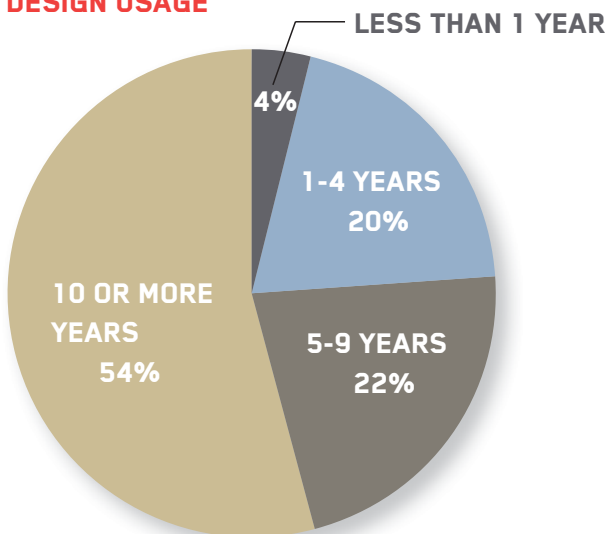
Fig. 2.1 Number of years companies have been using design (Q 37, n=376)

NUMBER OF EMPLOYEES
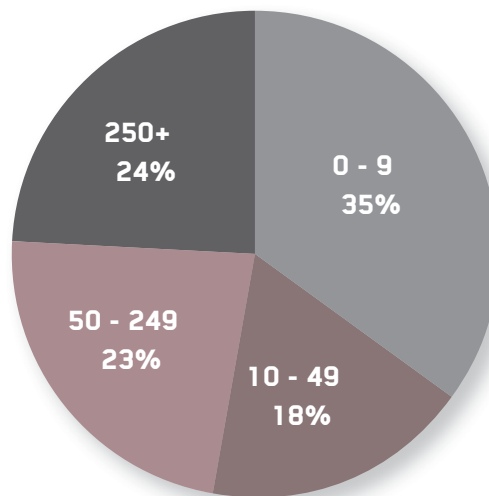
Fig. 2.2 Number of employees (Q40, n=387)

The results show that the majority of responding companies operate in a business-to-business realm. In particular companies active in the manufacturing and services sectors completed the questionnaire.

Over half of responding companies have fewer than 50 employees. The groups of micro companies, small enterprises, medium-sized enterprises, and large enterprises are reasonably well represented, but again this even spread will not reflect real proportions in different countries.

Over 30% of companies list turnover of under one million euros. A relatively large group of respondents (21%) claim not to know on the turnover of the company they work for. But it may very well be that they are simply not willing to share this information for this study.

WHICH IS THE MAIN SECTOR IN WHICH YOUR COMPANY IS ACTIVE?		
Manufacturing	215	36%
Service providers	273	45%
Wholesale and retail trade	25	4%
Agriculture, forestry and fishing	9	2%
Non-business sectors	17	3%
Other	66	11%
Total	605	100%

Table 2.1 Composition of the random sample (Q8, n=605)

TURNOVER LAST YEAR
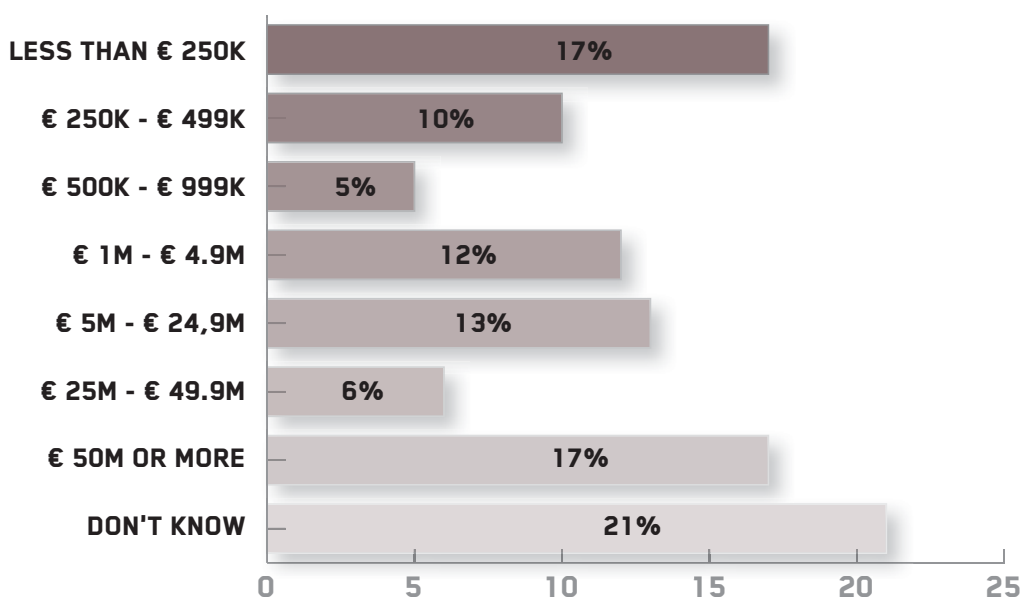
Fig. 2.3 Turnover last year (Q41, n=400)

Due to the fact that results are expected to differ per sector and company size, separate analyses were run for manufacturing and non-manufacturing companies, and for companies of different sizes. The group of 'non-manufacturing companies' is mainly made up of service providers, supplemented by small groups of companies active in trade & retail and agribusiness.

COUNTRY GROUPING

The European Commission commissioned a study into the innovation performance of EU member states ('European Innovation Scoreboard 2008'). As part of this study, the different countries were categorised into four groups: 'innovation leaders', 'innovation followers', 'moderate innovators' and 'catching-up countries'. On the request of the Commission, this country grouping was included in analyses for reasons of comparison.

COUNTRY GROUPING EIS 2008		
Innovation leaders (SE, FI, DE, DK, UK)	65	11,7%
Innovation followers (NL, FR, BE, LU, IE, AT)	392	70,5%
Moderate innovators (IT, GR, PT, ES, CZ, SI, EE, CY	99	17,8%
Total	605	100%

Table 2.2 Country grouping European Innovation Scoreboard 2008

The largest group of companies represented within the random sample falls into the category of 'innovation followers'. This category is actually overrepresented in the random sample. This group is therefore also big enough for us to be able to draw specific conclusions about it, as is the group of 'moderate innovators'. The group of 'innovation leaders' is too small to make any valid judgements about it. 'Catching-up countries' are lacking from the random sample altogether.

Respondents in the country group of 'moderate innovators' were approached using the address databases of design support centres in Spain and Portugal. This may lead to a bias; the results show that the scores for this country group are higher in relation to the groups of 'innovation leaders' and 'innovation followers' than was to be expected. Whenever country groups are referred to, the primary intention is to emphasize certain findings. In other words, to support certain observations. That means results relating to company size will be scrutinized at the same time, using those measurements to verify the results.

DM RATING CALCULATION

The answers to Staircase questions were converted into a standard score for each variable, in order to offset scores against each other. Special attention was paid to making sure the eventual scores would not contain too many extreme values (illogical numbers of low or high scores). The eventual variables were to show a normal spread as much as possible. The five factors were calculated as the weighted average of these variables.

This weighting is based on the extent to which these factors show a normal spread. A variable with fewer extreme values was given a higher weighting factor. This weighting factor was never more than 3 or less than 1.

The final DM rating was subsequently calculated as the non-weighted average of the scores on the Staircase factors. This total was corrected on the basis of the degree of the differences between the underlying factors. These differences should not be too great, as it is not logical for a company to score 4 on Awareness and not score higher than 1 on Planning. The maximum difference was set at 2. Whenever the difference is greater, the respondent in question will not be included in the calculation of the overall DM rating.

CHAPTER 3 - RESEARCH RESULTS PER STAIRCASE FACTOR

This chapter lists the results of each of the five factors of design management capability, and outlines the main findings with a summary at the end. A more detailed list of the factor scores can be found in the annexes.

Factor-specific analyses also considered differences in terms of:
- Manufacturing vs. non-manufacturing companies
- Company size
- Country groups (classified as per the 'European Innovation Scoreboard 2008')

FIVE FACTORS OF DESIGN MANAGEMENT CAPABILITY

FACTOR 1: AWARENESS OF BENEFITS

The extent to which a company (and its management in particular) is aware of the benefits and potential value design and design management can offer.

LEVEL OF DM	LEVEL 1: NO DM	LEVEL 2: DM AS PROJECT	LEVEL 3: DM AS FUNCTION	LEVEL 4: DM AS CULTURE
FACTOR 1: AWARENESS (OF BENEFITS)	Not aware of the benefits or potential value of design and design management	Some functional specialists are aware	Most in the company are aware that it is important to remain competitive	All members of staff are aware that design is fundamentally important in order to gain a leadership position in business

LEVEL 4 10%
LEVEL 1 28%
LEVEL 2 23%
LEVEL 3 39%
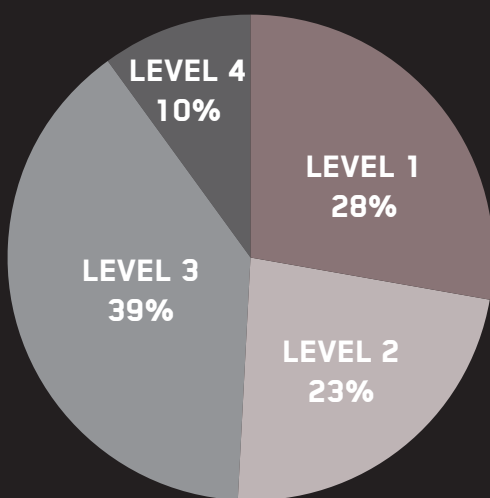
Fig. 3.1 Factor results for 'awareness' (n=394)

The answers to the following four questions were used to compile the factor score:
- 'Over the last 5 years, to what extent would you say that design has improved the following within your company?' (Q29: rating of 16 items)
- 'To what extent do you personally believe the following statements to be true?' (Q30: rating of 5 items)
- 'In your view, what are the benefits for your company when managing design effectively' (Q32: selection from 14 items)
- 'To what extent are people in the company aware of the benefits of managing design effectively' (Q33: choice of statement)

The pie chart (fig. 3.1) depicts the results.

BENEFITS OF DESIGN

	To a limited extent	To some extent	To a great extent
COMPANY / BRAND IMAGE	9%	31%	54%
COMMUNICATION - EXTERNAL AND INTERNAL	11%	36%	47%
COSTUMER EXPERIENCE	10%	36%	40%
PRODUCT EASE-OF-USE	14%	33%	29%
EMPLOYEE MOTIVATION	19%	34%	26%
CORPORATE CULTURE	15%	36%	31%
EFFICIENCY / PRODUCTIVITY	19%	38%	25%
EMPLOYEMENT	24%	28%	17%
SUSTAINABILITY	25%	31%	19%
COMPETIVENESS	13%	32%	43%
DEVELOPMENT OF NEW OR IMPROVED PRODUCTS / SERVICES	12%	28%	45%
AIDE DEVELOPMENT OF NEW MARKETS	17%	33%	26%
EXPORTS	19%	20%	21%
TURNOVER	16%	29%	29%
MARKET SHARE	16%	32%	23%
PROFITS	17%	33%	25%

TO A LIMITED EXTENT
TO SOME EXTENT
TO A GREAT EXTENT

Fig. 3.2 Perceived contribution of design (Q29, n=394)

Fig. 3.2 shows how respondents are most convinced of design's contribution to company or brand image, and to internal and external communication. Competitiveness, product development and customer experience are also pinpointed as areas in which design has a positive impact. However respondents are a lot less sure of design's direct influence on business performance (export, turnover, market share, and profit). The same goes for design's role in increasing employment and sustainability. This indicates that the business approach to design is still largely underdeveloped.

Respondents lean towards a traditionally restricted view of design ('design as objects'). This is a narrow view that only focuses on visual appearance. Both the idea of 'design as a process' and design's impact on other performance areas are underrated, or not even part of respondents' awareness at all.
When asked to list perceived benefits of effective design management, a similar picture emerges. The

score on 'Improved performance of processes' is even the lowest in the list of possible benefits. Only 31% of respondents see process improvement as a benefit. But within this segment of respondents there are some striking differences between the DM levels; only 17% of level 1 companies see this benefit, against 84% of level 4 companies. The obvious explanation for that is that level 1 companies use design a lot less than level 4 companies (Fig. 3.3).

We do see higher scores on another aspect of process improvement, namely 'greater alignment between functional departments', of which 44% of respondents deem to be a benefit. The reason for asking is that both the design process and the results thereof are intertwined with the efforts and interests of different departments, such as the R&D and Marketing departments. The assumption here is that a design manager can bring greater harmonisation between departments.

BENEFITS OF DESIGN MANAGEMENT

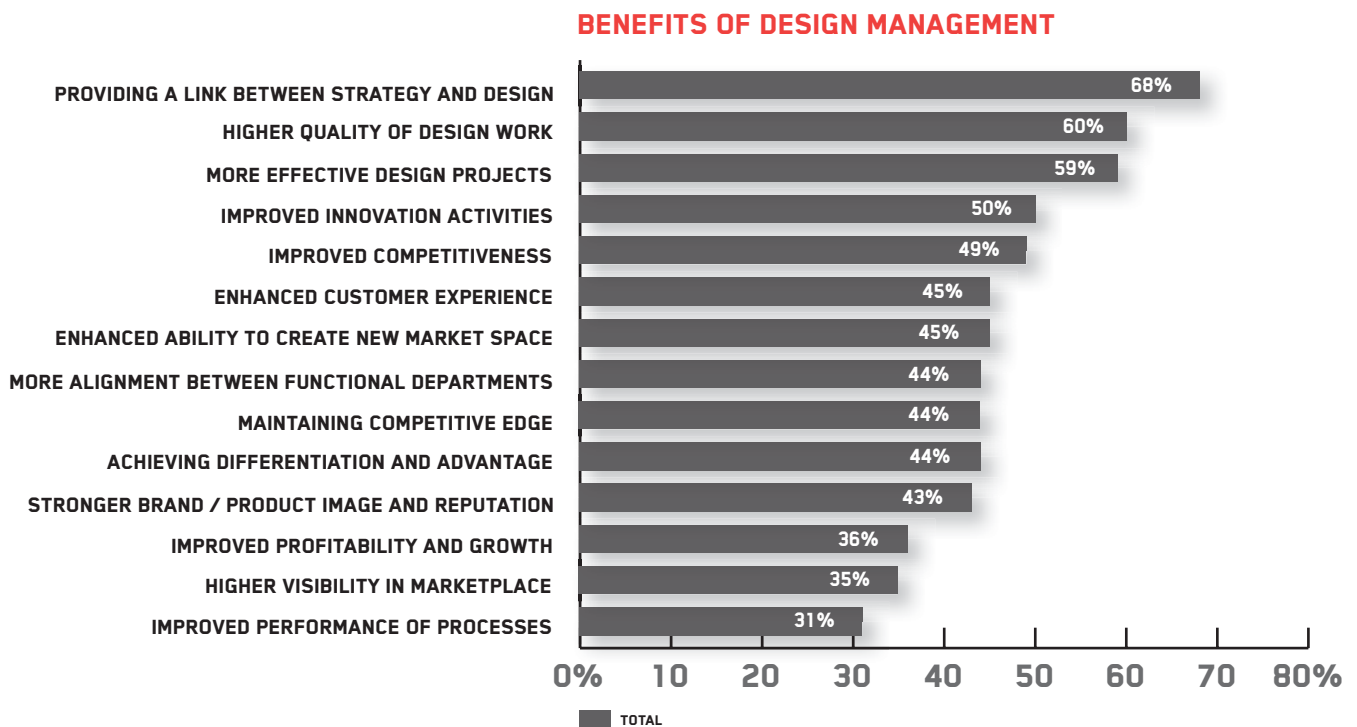| Benefit	Percentage
PROVIDING A LINK BETWEEN STRATEGY AND DESIGN	68%
HIGHER QUALITY OF DESIGN WORK	60%
MORE EFFECTIVE DESIGN PROJECTS	59%
IMPROVED INNOVATION ACTIVITIES	50%
IMPROVED COMPETITIVENESS	49%
ENHANCED CUSTOMER EXPERIENCE	45%
ENHANCED ABILITY TO CREATE NEW MARKET SPACE	45%
MORE ALIGNMENT BETWEEN FUNCTIONAL DEPARTMENTS	44%
MAINTAINING COMPETITIVE EDGE	44%
ACHIEVING DIFFERENTIATION AND ADVANTAGE	44%
STRONGER BRAND / PRODUCT IMAGE AND REPUTATION	43%
IMPROVED PROFITABILITY AND GROWTH	36%
HIGHER VISIBILITY IN MARKETPLACE	35%
IMPROVED PERFORMANCE OF PROCESSES	31%

0% 10 20 30 40 50 60 70 80%

■ TOTAL

Fig. 3.3 Perceived benefits of effective design management (Q32, n=412)

We are seeing, without fail, that respondents from companies where DM is an established part of processes see more benefits than respondents from companies that are lower down on the DM Staircase. Another striking observation is that manufacturing companies see benefits on more occasions than non-manufacturing companies. The same goes for large companies (over 250 employees) and the country group of 'innovation leaders'.

Respondents were also asked to assess the extent to which their company's people are aware of the benefits of effective design management. The results show that nearly half of respondents estimate that their people are not aware of those benefits at all, or that only a small group have that awareness ('*people are not aware; little or no attention is given to the use or management of design*' or '*some are aware of the benefits; directly involved people*'). And over 20% of respondents choose the statement '*most are aware because design manage-*

ment is formally performed and the design process is integrated into other business processes'. And then there are a further 23% of respondents who claim that everyone at their company is aware of the benefits of effective design management ('*all are aware that it is fundamentally important to our success; the management of design is embedded in our company; design is part of our DNA*').

Non-manufacturing companies report such high awareness levels on far more occasions than manufacturing companies (33% and 16% respectively). And we furthermore found that small companies are a lot more likely to have a corporate culture where everyone is imbued with the importance of design and design management. These figures drop as company size increases:
• 49% of micro companies (0-9 employees);
• 24% of small companies (10-49);
• 14% of medium-sized companies (50-249);
• 7% of large companies (250+).

FACTOR 2: PROCESS

The extent to which a company pursues a robust and effective design management process, embedded into its main business processes.

LEVEL OF DM	LEVEL 1: NO DM	LEVEL 2: DM AS PROJECT	LEVEL 3: DM AS FUNCTION	LEVEL 4: DM AS CULTURE
FACTOR 2: DM PROCESS	No understanding where and how design fits within current processes	Performed inconsistently or late in the development process; a partial DM process – not defined as a standard business process	Design performed consistently and early; formal DM process drives performance	Design is an ongoing activity; business is engaged in continuously streamlining and improving the DM process

The answers to the following three questions were used to compile the factor score:
- 'What place does design have in the process when something new is developed; when are designers typically involved?'(Q18: choice of statement)
- 'Does your company evaluate or monitor design performance before or after market launch?' (Q24: choice of statement)
- 'Please indicate how the design process in your company takes place' (Q25: rating of 11 items)

The pie chart (Fig. 3.4) depicts the results.

Fig. 3.4 Factor results for 'process' (n=421)

PLACE AND ROLE OF DESIGN

AS A CENTRAL ASPECT; AS A MEANS OF ENCOURAGING INNOVATION; DRIVING THE DEVELOPMENT PROCESS	40% / 39% / 41%
AS A WORKING METHOD ADAPTED AND INTEGRATED EARLY IN THE PROCESS	35% / 42% / 31%
AS STYLING AT THE END OF THE DEVELOPMENT PROCESS; AS A FINAL AESTHETIC FINISH OR ENHANCEMENT	11% / 12% / 11%
DESIGN IS NOT INVOLVED IN THE DEVELOPMENT; NOT CONSIDERED TO HAVE A PROFESSIONAL ROLE	7% / 2 / 10%

TOTAL   MANUFACTURING   NON-MANUFACTURING

Fig. 3.5 Design's place and role in development processes (Q18, n=441)

Figure 3.5 charts the answers to the question about design's place in development processes. Nearly 40% of respondents state that design is regarded as a central aspect. On top of that, a further 35% state that design is integrated into the process at an early stage. Only 11% of respondents answered that design is merely used as styling at the end of the process. This is a highly encouraging outcome, although respondents seem to overestimate the role of design in development processes at their respective companies; this positivity is not reflected in the factor result.
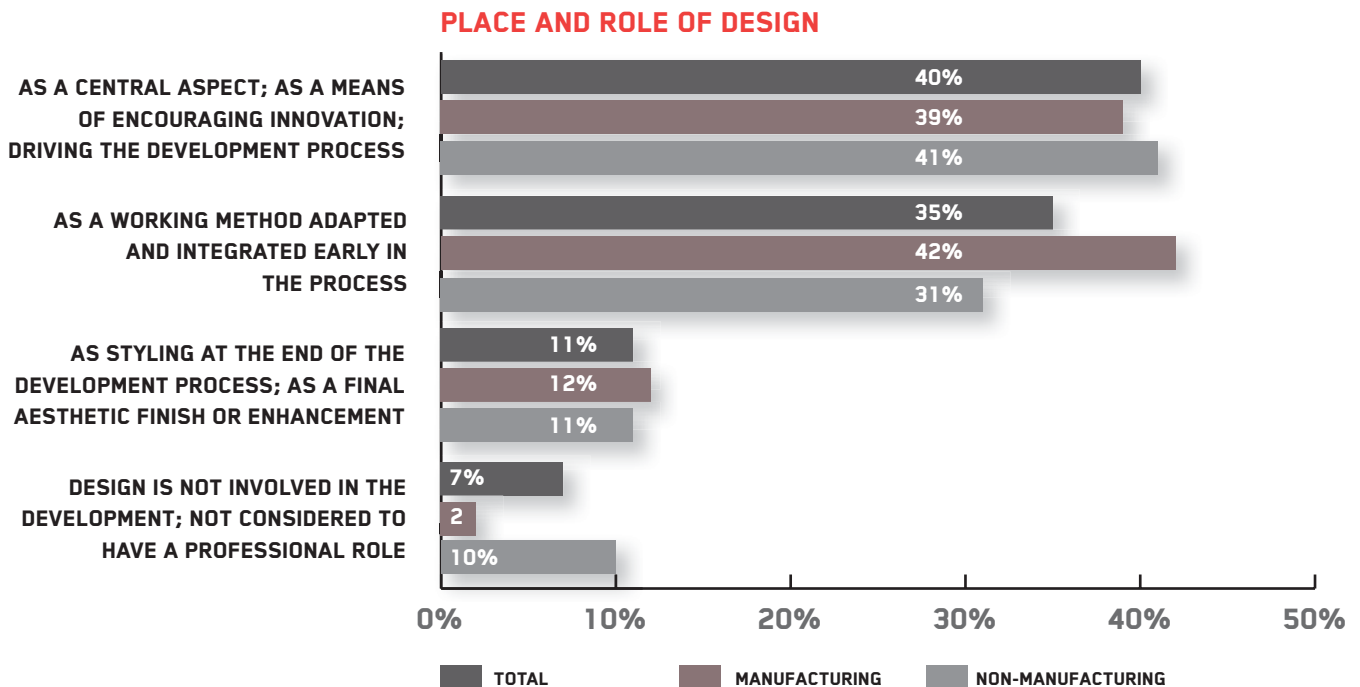
Evaluating design efforts is a key part of the design management process. And it is all about finding out whether targets set in the design brief were hit. Does design do its bit in attaining formulated business or market objectives? Did the design process unfold as planned? How does the intended target group rate the result? Considering that the launch of new or revamped brands, products, and services comes with considerable risk (most crash within a year), the use of design in such launches will also have to be evaluated. However, earlier research showed that although most organisations recognize the value of evaluation, it is still skipped on numerous occasions owing to a lack of time or funds.

The results from the questionnaire paint the following picture (fig. 3.6): 23% of respondents state that evaluation is often omitted because there was no time or need. A further 35% confess to limiting evaluation to a minimum and only doing it now and again. Only 12% of participants claim to conduct thorough evaluations and market tests.
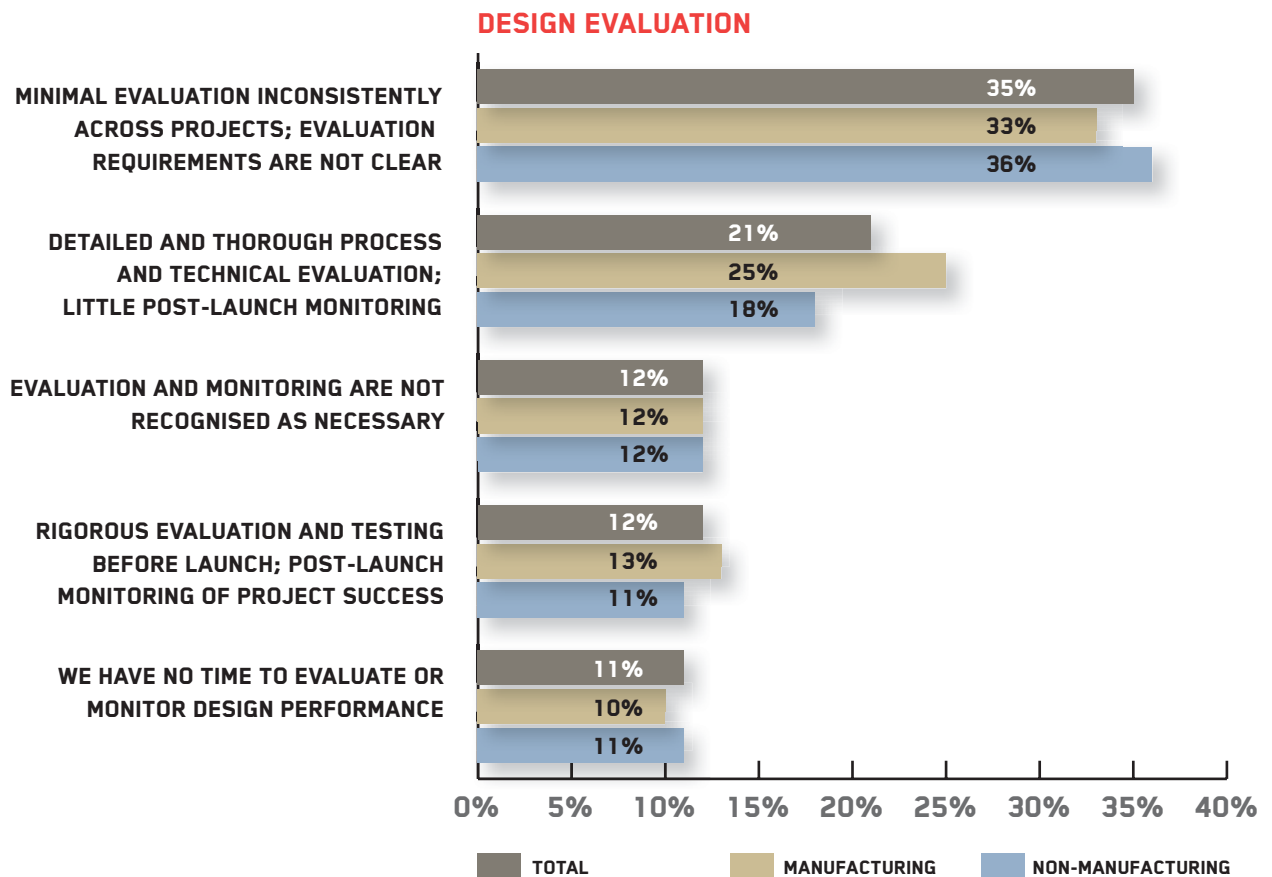
DESIGN EVALUATION

Fig. 3.6 Evaluation of design (Q24, n=399)

It is safe to assume that companies that have made design part of their mission – and therefore have carved out a more strategic role for it – will want to evaluate and monitor the effects of their design efforts. Organisations that have embraced design management principles will, in their business practice, pursue a research programme and work in a systematic and structured fashion. This turns out to be a significant parallel. The greater the uptake of design management, the more evaluation and monitoring mechanisms a company will have in place. This is clearly reflected in the table below.

DM SCORE AND EVALUATION

CATEGORY	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Minimal evaluation inconsistently across projects	26,8%	54,2%	36,2%	0%
Detailed and thorough process and technical evaluation	3,9%	17,7%	34,2%	39,1%
Evaluation and monitoring are not recognised as necessary	20,3%	10,4%	6,7%	0%
Rigorous evaluation and testing before launch	6,5%	4,2%	13,4%	60,9%
We have no time to evaluate or monitor design performance	21,6%	9,4%	2,0%	0%
Total	153	96	149	23

Table 3.1 DM rating and evaluation (contingency table, n=421)

DESIGN PROCESS STEPS

DEFINE CLEAR DESIGN OBJECTIVES	19% 25% 46%	
INCORPORATE A REQUIREMENTS CAPTURE PROCESS	16% 22% 26%	
DEFINE STRATEGY FOR DESIGN (DIRECTION / IDEATION)	19% 23% 43%	
DEFINE A PROJECT PLAN AND KEY MILESTONES	14% 24% 48%	
PLAN RESEARCH FOR CONCEPT / PROTOTYPE TESTING	23% 26% 33%	
DRAW UP A CREATIVE (DESIGN) BRIEF AND DO A BRIEFING SESSION	18% 25% 41%	
APPOINT A PROJECT LEADER OR MANAGER	12 16% 54%	
DETERMINE THE SIKLL REQUIREMENTS OF THE PROJECT TEAM	20% 22% 30%	
SELECT APPROPRIATE DESIGNERS (IN-HOUSE / OUTSOURCING)	11 23% 49%	
DETERMINE ROLE(S) AND RESPONSIBILILITIES OF DESIGNER(S)	12 21% 44%	
HOLD REVIEW MEETINGS ON A REGULAR BASIS	17% 24% 43%	

0% 20% 40% 60% 80% 100%
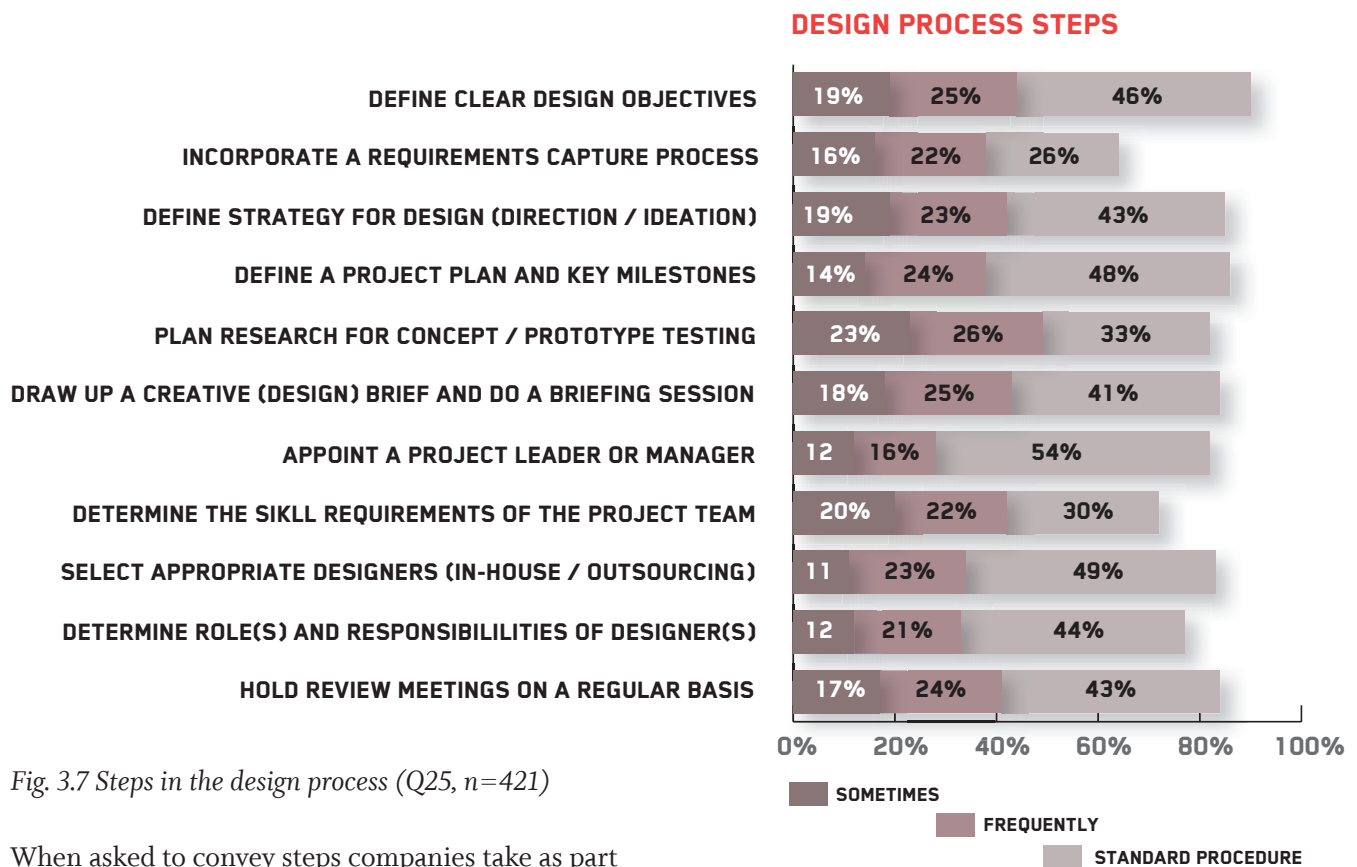
SOMETIMES
FREQUENTLY
STANDARD PROCEDURE

Fig. 3.7 Steps in the design process (Q25, n=421)

When asked to convey steps companies take as part of the design process, it turns out large companies perform better than small ones, with higher scores on nearly every single process step. This can be indicative of large companies' greater propensity for sticking to a more formal or structured process. That would be a logical conclusion since large companies will have a greater number of design specialists and different departments to coordinate.

This is also echoed when looking at the country groups, where the group of 'innovation leaders' outscores the group of 'innovation followers' on all process steps. The most eye-catching difference emerges in the process step *'define clear design objectives'*, which 62% of 'innovation leaders' have selected, against only 39% of 'innovation followers'. Another notable outcome is that manufacturing companies show no positive difference in relation to non-manufacturing companies. Considering the complex nature of product development, manufacturing companies were expected to employ a more methodical approach. However this expectation is not backed up by the results.

FACTOR 3: PLANNING

The extent to which a company has developed a strategy for design, articulated in business plans, and communicated widely.

LEVEL OF DM	LEVEL 1: NO DM	LEVEL 2: DM AS PROJECT	LEVEL 3: DM AS FUNCTION	LEVEL 4: DM AS CULTURE
FACTOR 3: DESIGN PLANNING	Company / market plans do not mention the use of design*	Limited plans and objectives exist at the individual project level*	Plans and objectives exist which set direction and integrate design in various activities	Design is part of strategic plans; design strategy and planning are dynamic processes that drive the business

* *'The role design could play in delivering strategic development is not understood or acknowledged. The organisation has not identified how design will help to achieve its objectives.'*
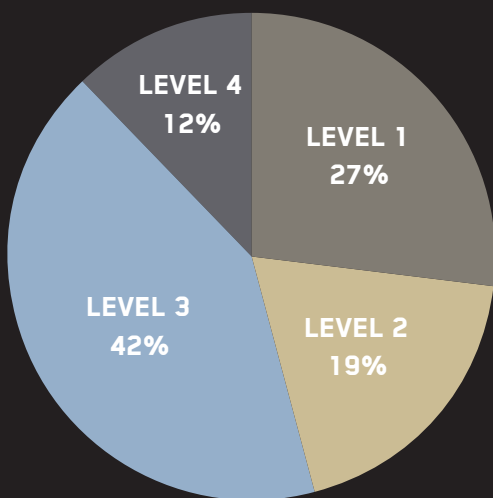

Fig. 3.8 Factor results for 'planning' (n=421)

The answers to the following four questions were used to compile the score of this factor:
- 'Is design part of business or marketing plans and objectives?' (Q19: choice of statement)
- 'Are (end) user needs and requirements assessed and fed into the design process when developing products or services? Please indicate for the following statements to what extent they describe the current situation' (Q20/21: rating of 10 items)
- 'Is an analysis of competitors part of the design planning process in your company?' (Q22: choice of statement)
- 'To what extent are design activities being coordinated?' (Q17: choice of statement)

The pie chart depicts the results.

The first step in the design management process consists of conveying business strategy, including targets, and therefore the design performance required to achieve those targets to the designers. When design is part of a company's long-term planning, its deployment will be far more effective.

When asked 'to what extent design is a carefully planned activity within their company', a large majority of respondents (nearly half) answer that 'design is part of strategic plans, and that design planning is a dynamic process driving the business'.
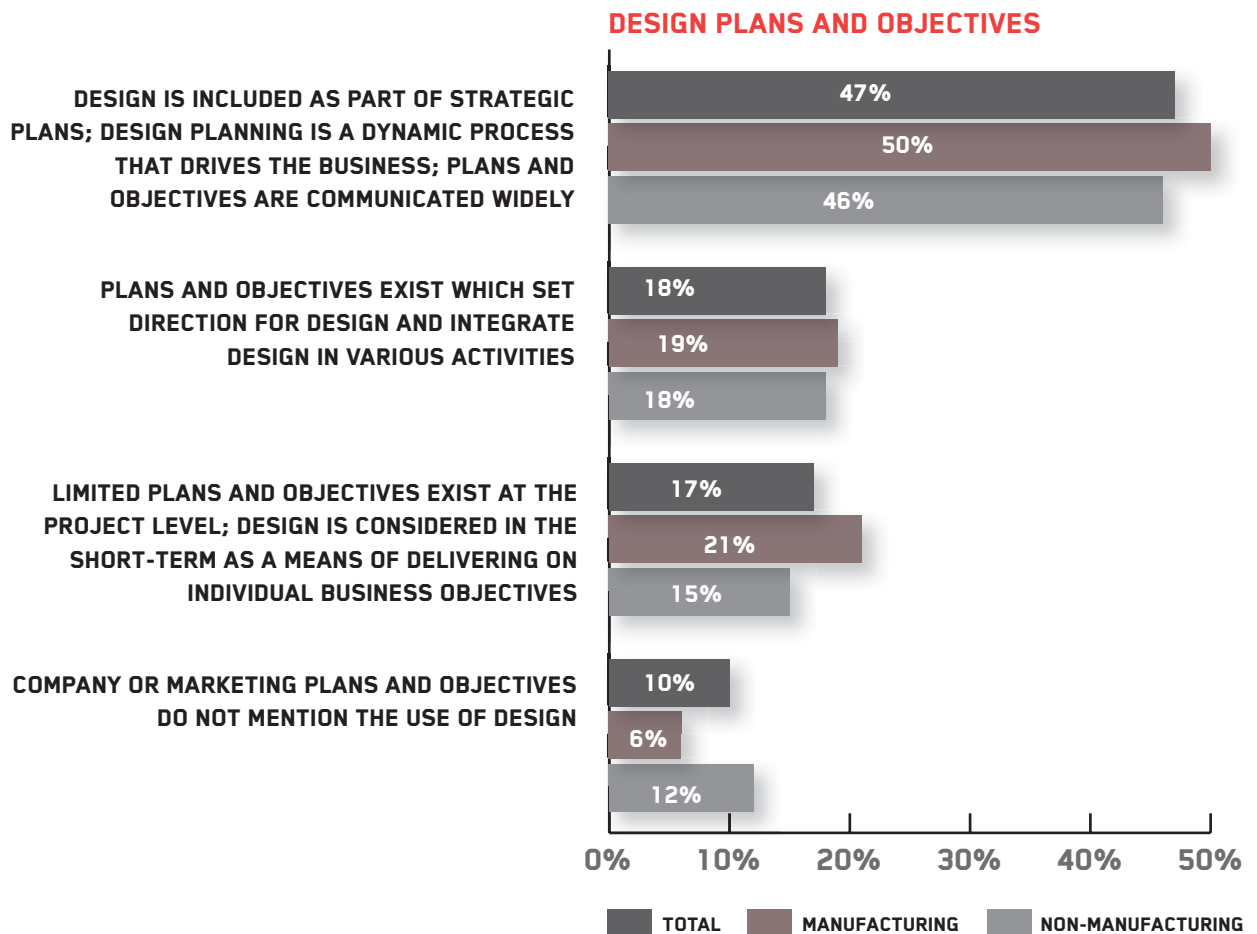
DESIGN PLANS AND OBJECTIVES

DESIGN IS INCLUDED AS PART OF STRATEGIC PLANS; DESIGN PLANNING IS A DYNAMIC PROCESS THAT DRIVES THE BUSINESS; PLANS AND OBJECTIVES ARE COMMUNICATED WIDELY
- 47%
- 50%
- 46%

PLANS AND OBJECTIVES EXIST WHICH SET DIRECTION FOR DESIGN AND INTEGRATE DESIGN IN VARIOUS ACTIVITIES
- 18%
- 19%
- 18%

LIMITED PLANS AND OBJECTIVES EXIST AT THE PROJECT LEVEL; DESIGN IS CONSIDERED IN THE SHORT-TERM AS A MEANS OF DELIVERING ON INDIVIDUAL BUSINESS OBJECTIVES
- 17%
- 21%
- 15%

COMPANY OR MARKETING PLANS AND OBJECTIVES DO NOT MENTION THE USE OF DESIGN
- 10%
- 6%
- 12%

0% 10% 20% 30% 40% 50%

■ TOTAL   ■ MANUFACTURING   ■ NON-MANUFACTURING

Fig. 3.9 Design planning and targets (Q19, n=441)

At micro companies (0-9 employees) that percentage is even as high as 60%. Although that sounds promising, this finding is not backed up by other results. If design really were part of strategic plans, this should be reflected in the number of level 4 companies, but the factor score for planning shows that it only concerns a small group (12.5%). It also proved impossible to find a link between this statement and the country group of 'innovation leaders'.

Previous research has pointed out that design planning capacity is not so much connected to the size of the company, but rather to the number of years of design experience a company has (a.o. Borja de Mozota, 2002). Strategic and effective use of design seems to be subject to a certain learning curve. The findings from our research confirm that: the longer a company has been active in the realm of design, the better it is at making plans for design.

Our research looked at two planning aspects; using consumer information and using competitor informa-

tion as input for design plans. The degree to which companies are able to use this kind of information will influence the quality of their plans.

USING CONSUMER INFORMATION
Design is increasingly seen as a strategic tool for user-centred innovation. This approach entails actions and a focus based on the needs, aspirations and possibilities of users. Several authors have pointed out that companies should tune into what drives consumers, and learn to understand their needs in order to be able to come up with successful innovations. Others underline the need to have users participate in the design process (in order to ensure new products / services are relevant for customer needs). However the survey results now show that actively involving (end) users is not a common practice in design planning processes. 32% of respondents claim to involve users now and again, while 25% claim to do so regularly, with 22% stating that it is standard procedure at their companies. A notable fact is that small

companies employ such user-centred innovation tactics more often than large companies (30% and 14% respectively). That may be down to the fact that it is easier to do for smaller companies, because they have a less formal structure.

Asking users for feedback when testing prototypes seems to be a more common practice. 29% of respondents claim to do that as standard.

And others generally use *'expert knowledge on consumer needs provided by engineers or marketing professionals'*. There is evidence that large companies (250+) in particular draw on experts to provide input relating to consumer needs for design plans. This observation throws up the possibility that large companies struggle to directly involve users in their development processes.

Companies are generally oblivious to the existence of more advanced methods, such as 'Personas'* and the 'Lead User'** method. This suggests that new concepts emerging from science do indeed struggle to make it out onto the market, as various academics have claimed. Internet platforms (virtual communities) are another modern medium for end user contacts that is only seldomly used.

USING COMPETITOR INFORMATION

A good design briefing must contain information about direct competitors; who they are, why consumers buy their products, what means they use, and what advantages and weaknesses they have.

When asked whether they analyse the competition, a large chunk of respondents (33%) state that they collect some information about competitors when developing design activities. A nearly equally large group (27%) claims to *'systematically monitor the design policy and market performance of their competitors'*. When subjecting these results to closer scrutiny, it becomes apparent that this mainly concerns large companies (250+) and the country group of 'innovation leaders'.
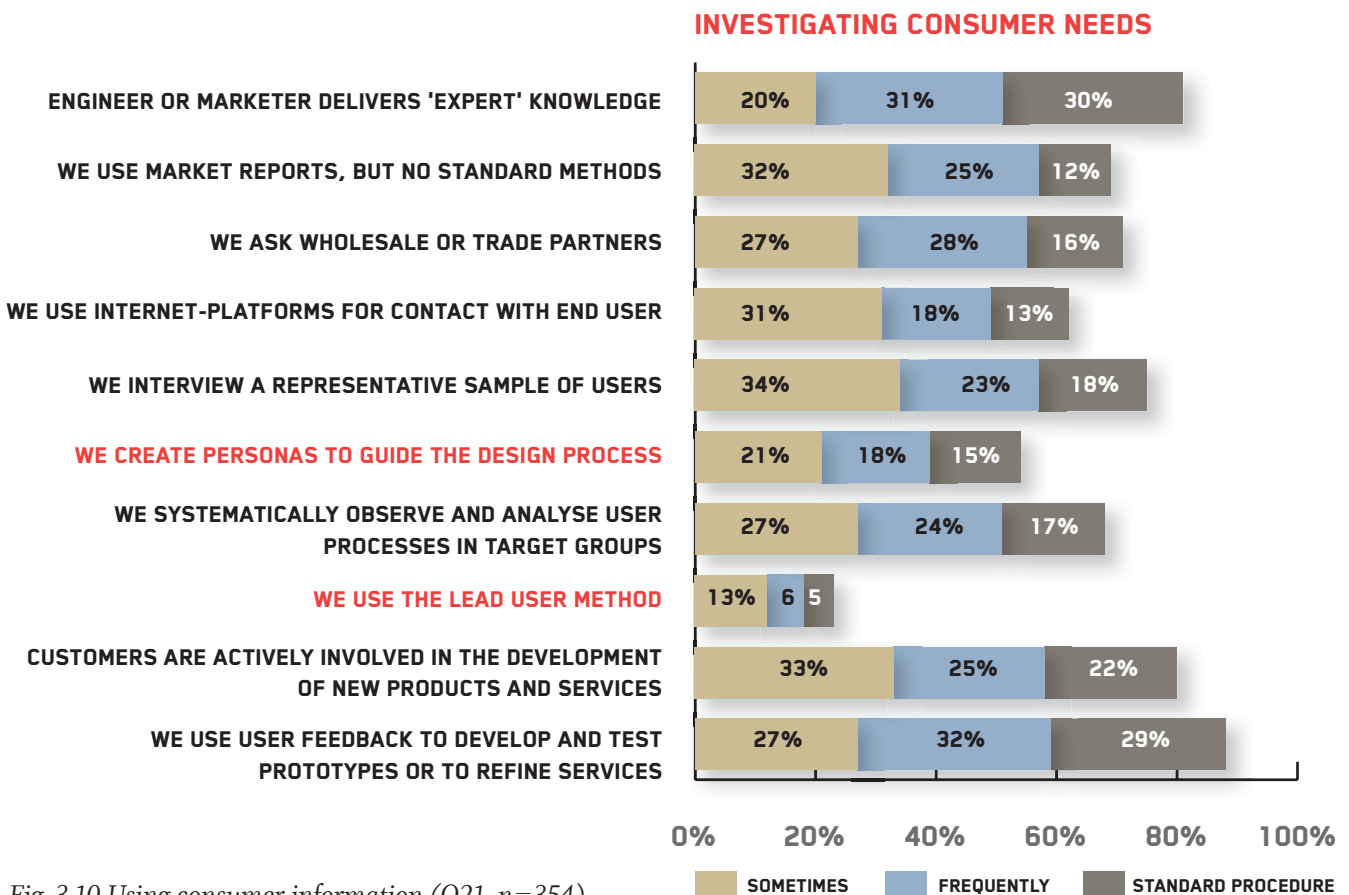

INVESTIGATING CONSUMER NEEDS

	SOMETIMES	FREQUENTLY	STANDARD PROCEDURE
ENGINEER OR MARKETER DELIVERS 'EXPERT' KNOWLEDGE	20%	31%	30%
WE USE MARKET REPORTS, BUT NO STANDARD METHODS	32%	25%	12%
WE ASK WHOLESALE OR TRADE PARTNERS	27%	28%	16%
WE USE INTERNET-PLATFORMS FOR CONTACT WITH END USER	31%	18%	13%
WE INTERVIEW A REPRESENTATIVE SAMPLE OF USERS	34%	23%	18%
WE CREATE PERSONAS TO GUIDE THE DESIGN PROCESS	21%	18%	15%
WE SYSTEMATICALLY OBSERVE AND ANALYSE USER PROCESSES IN TARGET GROUPS	27%	24%	17%
WE USE THE LEAD USER METHOD	13%	6	5
CUSTOMERS ARE ACTIVELY INVOLVED IN THE DEVELOPMENT OF NEW PRODUCTS AND SERVICES	33%	25%	22%
WE USE USER FEEDBACK TO DEVELOP AND TEST PROTOTYPES OR TO REFINE SERVICES	27%	32%	29%

Fig. 3.10 Using consumer information (Q21, n=354)

INVESTIGATING COMPETITION

WE GATHER SOME KNOWLEDGE ABOUT OUR COMPETITORS WHEN DEVELOPING OUR OWN DESIGNS AND DESIGN USAGE — 33% / 31% / 34%

WE SYSTEMATICALLY OBSERVE OUR COMPETITORS; THEIR DESIGN POLICIES, USAGE AND MARKET PERFORMANCE — 27% / 34% / 23%

WE FORMALLY CONSIDER COMPETITIVE STRENGTHS AND WEAKNESSES AT THE START OF A DESIGN PROJECT — 19% / 22% / 17%

WE ARE NOT SURE ABOUT OUR COMPETITORS DESIGNS AND DESIGN USAGE; WE HAVE LITTLE OR NO COMPETITIVE INFORMATION — 12% / 9% / 14%

TOTAL   MANUFACTURING   NON-MANUFACTURING

Fig. 3.11 Using competitor information (Q22, n=399)

LEVEL OF COORDINATION

The level of coordination can be an indication of planning capacity. A low level of coordination will, in practice, point at little strategic use of design. As design takes on an increasingly important role within a company, that company's efforts to coordinate the different design activities will also be stepped up, with the final aim being to deliver coherent and consistent results. Analysis of the results shows that level of coordination and level of planning are indeed significantly aligned.

When asked to pick the statement that best reflects their situation, nearly a quarter of respondents select the one referring to a high level of coordination (*'continuous coordination at a high level to achieve design management excellence'*).
35% of respondents state that there is coordination in place at company level (*'coordination of total design process in the company, including design outputs'*), but there is also a considerable group (26%) where coordination does not go beyond the boundaries of the different departments (*'limited coordination within boundaries of departments or functions'*). And 10% of respondents are of the opinion that it is not even necessary to coordinate design activities.

*Personas are fictitious characters created to represent the different user types within a targeted demographic that might use a site or product. Personas are useful in considering the goals, desires, and limitations of the users in order to help to guide decisions about a product, such as features, interactions, and visual design. Personas are most often used as part of a user-centred design process for designing software, for interaction design and in industrial design. (Source: Wikipedia).

**The Lead User Method (Von Hippel, 1988, 2005) is built around the idea that the richest understanding of new product and service needs is held by just a few 'lead users'. They can be identified and drawn into a process of joint development of new product or service concepts with manufacturer personnel.

FACTOR 4: EXPERTISE

The level of experience, skills, and knowledge in the area of design management, and the level on which design management tools and methods are used.

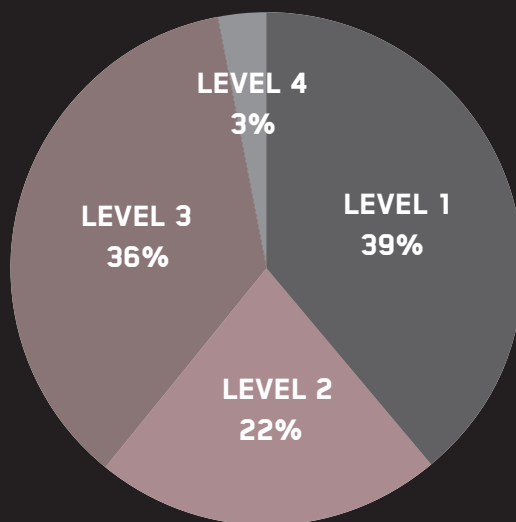| LEVEL OF DM	LEVEL 1: NO DM	LEVEL 2: DM AS PROJECT	LEVEL 3: DM AS FUNCTION	LEVEL 4: DM AS CULTURE
FACTOR 4: DM EXPERTISE	Little or no skills to handle design activity internally; no DM tools applied	Some skills; basic DM tools applied inconsistently with lots of room for improvement	Sufficient skills; standard DM tools applied consistently; some room for improvement	Appropriate team of experts; use of broad range of approaches and advanced DM tools; appropriate metrics used

LEVEL 4
3%

LEVEL 3
36%

LEVEL 1
39%

LEVEL 2
22%

The answers to the following three questions were used to compile the factor score for expertise:
- 'Which of the following does your company exploit to optimize/maximize design capacity?' (Q14: nine possible answers)
- 'How do evaluation and selection of the best design solutions – to satisfy business, market and consumer needs – take place?' (Q23: choice of statement) 'Which of the listed tools and methods are applied with regard to design activities in your company? (Q27: rating of 13 items)

The results are depicted in the pie chart.

Fig. 3.12 Factor results for 'expertise' (n=421)

The top three selected items for the question what companies' design capacity is made up of is as follows: 'in-house design department' (55%), 'freelance designers' (46%), and 'external design firms' (43%). In-house design departments are mainly found at manufacturing companies (65%) and these also use the services of external design agencies (54%) more often than non-manufacturing companies. Having an in-house design department does, therefore, not automatically mean design activities cannot also partly be outsourced.

Another noteworthy outcome comes in the form of low scores on the use of subsidy schemes (6%) and design support centres (8%). The latter may be down to the random sample being a group of relatively active and experienced design users that simply do not
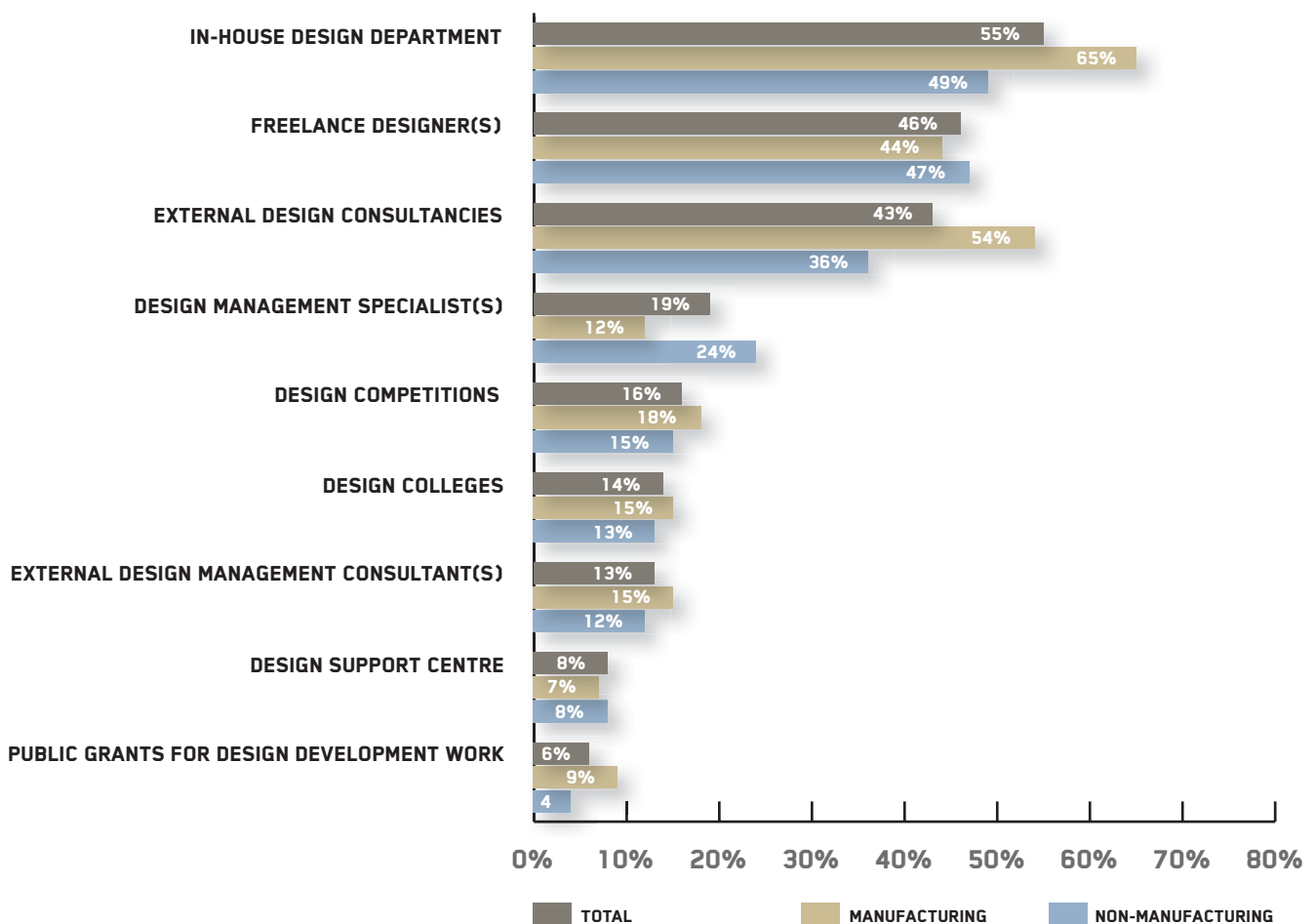
DESIGN CAPABILITY

Fig. 3.13 Companies' design capacity maximization efforts (Q14, n=412)

need any support, but it may also be that they do not know what is on offer.

Design managers are considerably less common (19%), and external design management consultants are also only used on a small scale (13%). That goes to show that design management as an independent field is still in its infancy and little known, or perhaps does not have enough to offer yet.

Following on from that it becomes interesting to

check whether level 4 companies make greater use of external design management consultants. And that does indeed turn out to be the case to a certain extent; 22% of level 4 companies testify to using the services of design management consultants. At both level 2 and level 3 companies this percentage is 19%. As to be expected, the percentage is a lot lower for level 1 companies (7%).

DM RATING AND USE OF DESIGN MANAGERS

CATEGORY	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Design management specialists	11,7%	13,5%	29,5%	43,5%
External design management consultants	7,1%	16,7%	16,8%	21,7%
Total	153	96	149	23

Table 3.2 Bringing in design managers (Q14, contingency table, n=421)

DESIGN SELECTION

DOMINANT MANAGER OR DESIGN TEAM MEMBER CHOOSES;
DECISIONS ARE SUBJECTIVE AND BASED UPON
PERSONAL PREFERENCES
- 33%
- 36%
- 31%

EXTERNAL AND INTERNAL STAKEHOLDERS INVOLVED; ALL
ASPECTS CONSIDERED; A RANGE OF SELECTION METHODS /
TOOLS MAY BE APPLIED; DATA DRIVEN DECISIONS
- 28%
- 28%
- 27%

INTERNAL STAKEHOLDERS INVOLVED, AIMING
TOWARDS CONSENSUS; USE OF STANDARD
CHECKLIST; SENIOR MANAGER STILL HOLDS VETO RIGHTS
- 20%
- 22%
- 19%

THERE IS ONLY ONE CONCEPT TO CHOOSE FROM –
NO PROCESS IS NEEDED
- 9%
- 6%
- 10%

0%   5%   10%   15%   20%   25%   30%   35%   40%

TOTAL   MANUFACTURING   NON-MANUFACTURING

Fig. 3.14 Selecting the best design pitch (Q23, n=399)

When looking at the deployment of design management specialists (internally), the link is significant. 44% of level 4 companies do, while this percentages ranges from 12% (level 1) to 14% (level 2) and 30% (level 3) for the other levels.

Design selection
One of the trickiest management tasks during the design process is the selection of the best design from a series of design pitches. Assessment of these pitches happens by way of a series of criteria; aside from the quality of the design, it is, for example, also about its functional and symbolic value (signification), user-friendliness, production feasibility, and cost price. When asked how evaluation and selection of the best design solution takes place at their company, 10% of respondents answer that 'there is no need for a selection process as there is always only one design to choose from'. A third of respondents state that 'the decision is made by a dominant manager or a dominant team member – and that decisions are purely subjective and based on personal preferences'. Only just over a quarter of companies claim to have a professional selection process in place, 'involving both external and internal stakeholders, and weighing up

all aspects, with the option of using a string of selection methods and tools'.

Methods and tools
Respondents were presented with a list of tools and methods for design and design management. It turned out that many of the respondents are not familiar with most of these tools and methods (see diagram below). A surprisingly large group ticked the '*not applicable/don't know*' box.
'*Design process audit*' and '*design policy awareness training (employee training)*' in particular stand out as less frequently selected, which highlights the little attention that goes into the cultural aspect (as in a culture of design within a company) and the quality of the organisation's total design process. And 30% of respondents furthermore state that 'research on and registration of intellectual property rights' does not apply to them, or not to know whether it does or not.
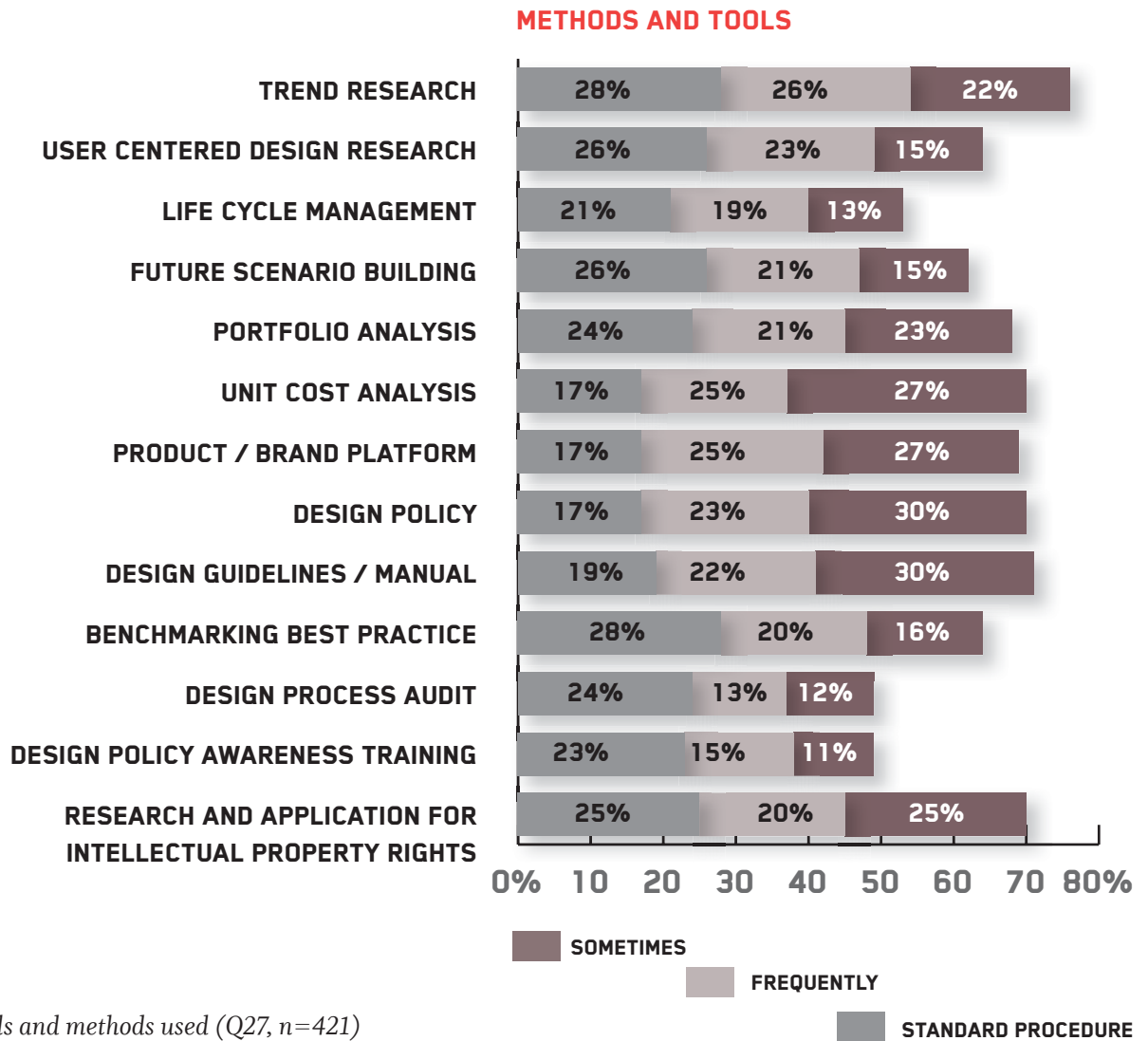
METHODS AND TOOLS

	SOMETIMES	FREQUENTLY	STANDARD PROCEDURE
TREND RESEARCH	28%	26%	22%
USER CENTERED DESIGN RESEARCH	26%	23%	15%
LIFE CYCLE MANAGEMENT	21%	19%	13%
FUTURE SCENARIO BUILDING	26%	21%	15%
PORTFOLIO ANALYSIS	24%	21%	23%
UNIT COST ANALYSIS	17%	25%	27%
PRODUCT / BRAND PLATFORM	17%	25%	27%
DESIGN POLICY	17%	23%	30%
DESIGN GUIDELINES / MANUAL	19%	22%	30%
BENCHMARKING BEST PRACTICE	28%	20%	16%
DESIGN PROCESS AUDIT	24%	13%	12%
DESIGN POLICY AWARENESS TRAINING	23%	15%	11%
RESEARCH AND APPLICATION FOR INTELLECTUAL PROPERTY RIGHTS	25%	20%	25%

Fig. 3.15 Tools and methods used (Q27, n=421)

FACTOR 5: RESOURCES

The extent to which a company invests in design activities and deploys an appropriate design staff. Also if it invests in a creative working environment, hard- and software for design, etc. Resources are considered as the sum of all design investment.

LEVEL OF DM	LEVEL 1: NO DM	LEVEL 2: DM AS PROJECT	LEVEL 3: DM AS FUNCTION	LEVEL 4: DM AS CULTURE
FACTOR 5: DESIGN RESOURCES	The business has not committed resources to design activity (may not appreciate the potential return of design investment)	Limited resources are allocated for individual projects; one-off design investments with no review of potential returns	Sufficient resources are allocated on the basis of potential return, but with limited procedures in place to assist in decision making	Appropriate resources are allocated on the basis of potential return, with financial procedures in place to help assist in appraising investments, assessing risk and tracking returns
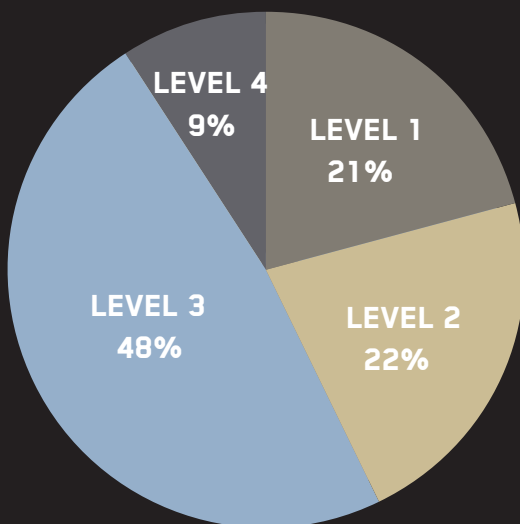
Fig. 3.16 Factor results for 'resources' (n=421)

This factor score is based on answers to the following four questions:
- 'Has your company over the last 3 years engaged in design activities with regard to the following?' (Q12: multiple choice with 6 options)
- 'What level of resources (staff, budgets and means of production or implementation) are allocated to design activity and how?' (Q15: choice of statement)
- 'Which statement best describes who is managing design activities at your company?' (Q16: choice of statement)
- 'To what extent does your company foster a design culture & environment that encourages creativity, originality and novelty?' (Q31: choice of statement. The results are depicted in the pie chart.

Managers need to be able to assess how long it takes to generate an adequate design solution (in order to keep track of development and turnaround times), and what capacity and financial means are required.

Expectations are that as the importance of design to the company increases (and with that the company's activities in that area), the level of available means will also rise.

In order to be able to reliably pronounce on this matter, an indication of a company's investment level was needed. This is made up of a number of areas in which a company uses design (in the last three years)*. The definitions of these areas are as outlined in the text box. The results point at a rather high level of design intensity, and a considerable level of design investment across the board. The following will first show to what degree companies use design in these six areas (Fig. 3.17).

Note: We chose this approach because directly asking how much a company invests in design will not lead to reliable results, and also carries a risk of under-reporting (Tether, 2005).

- **Corporate identity/branding** *(e.g. logo, house style, graphics, communication, website, work wear, vehicle, signage)*
- **Organisational** *(e.g. architecture, workplace design, interior design, signage / lighting systems)*
- **Production/service** *(e.g. product design or styling, service design, industrial design, engineering design)*
- **Packaging** *(e.g. graphic design [printing/layout], structural design [shape, materials])*
- **Promotion** *(e.g. marketing communications, publications)*
- **Market exploitation** *(e.g. displays, retail (shop) environment, point of information/point of sale, digital & multimedia design)*
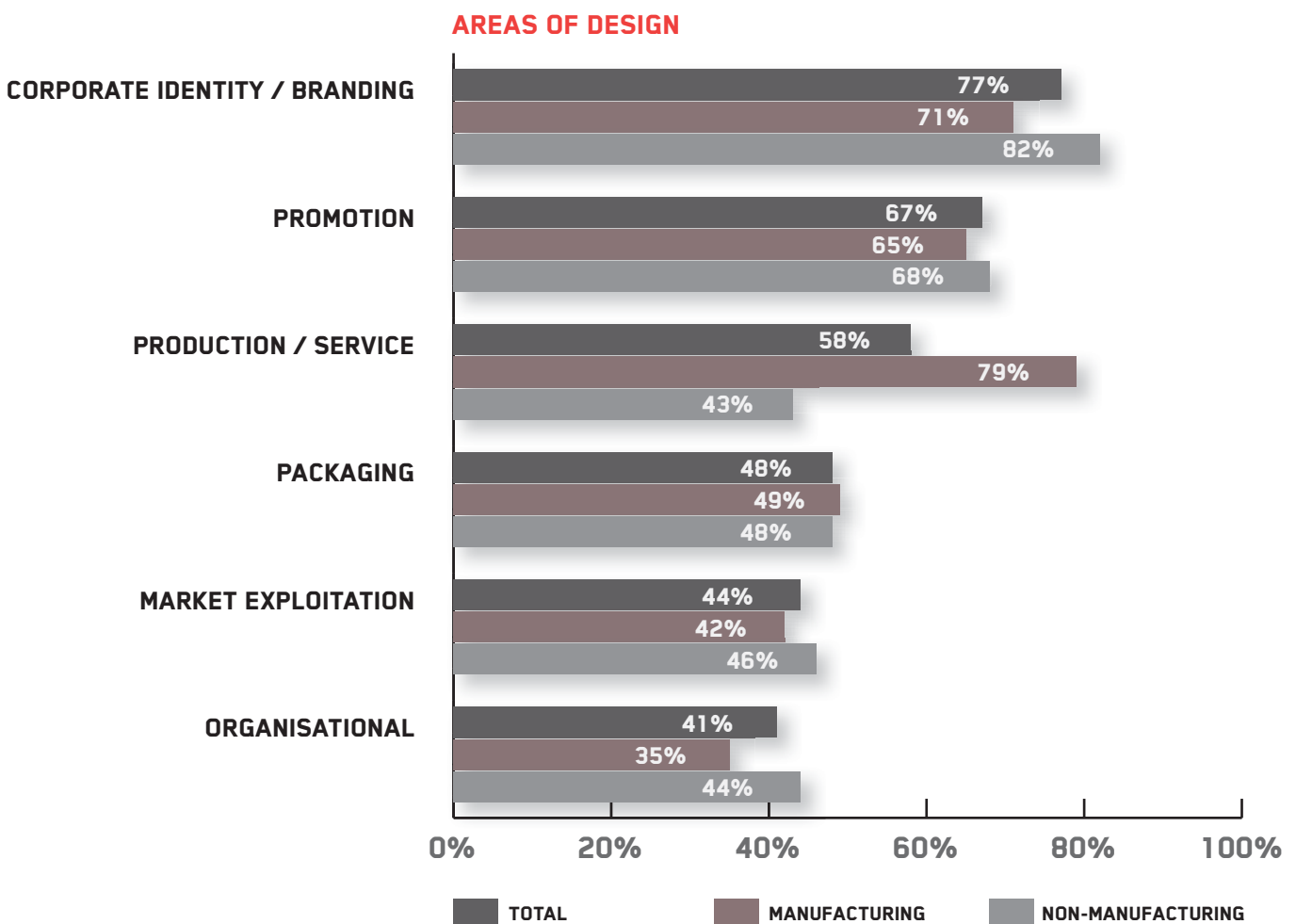
AREAS OF DESIGN

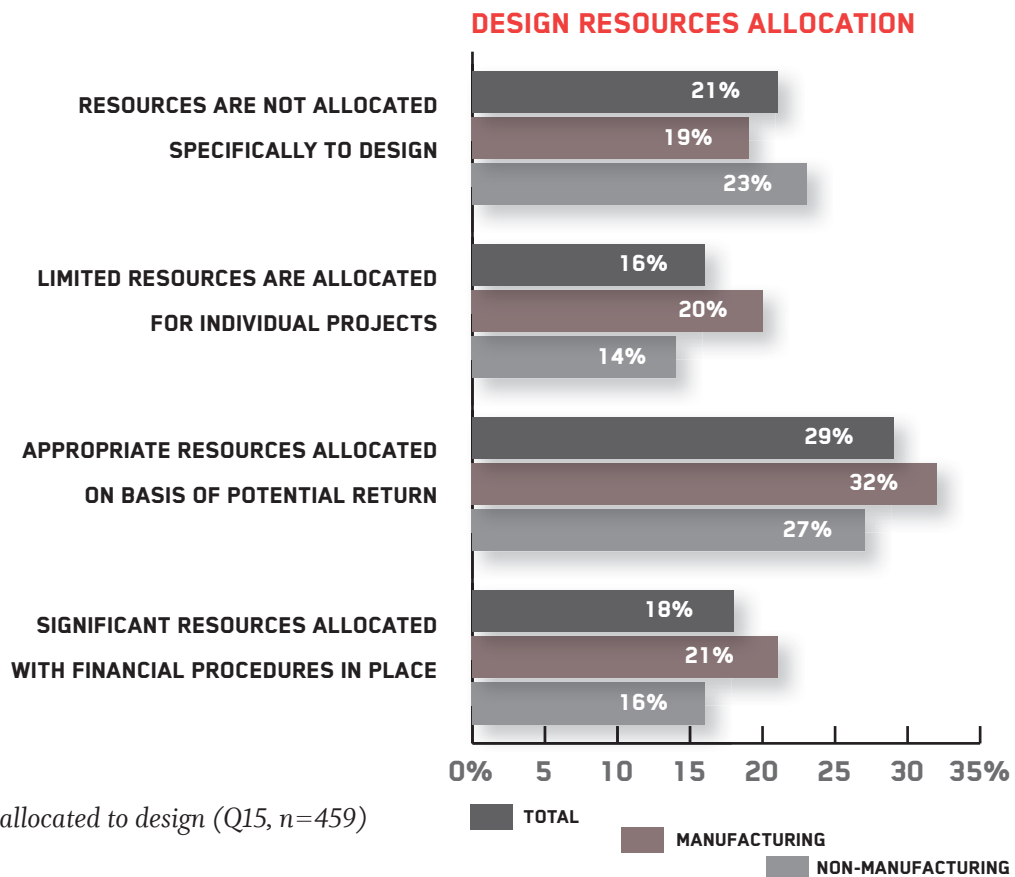|	TOTAL	MANUFACTURING	NON-MANUFACTURING
CORPORATE IDENTITY / BRANDING	77%	71%	82%
PROMOTION	67%	65%	68%
PRODUCTION / SERVICE	58%	79%	43%
PACKAGING	48%	49%	48%
MARKET EXPLOITATION	44%	42%	46%
ORGANISATIONAL	41%	35%	44%

Fig. 3.17 Areas of application of design (Q12, n=412)

DESIGN RESOURCES ALLOCATION

RESOURCES ARE NOT ALLOCATED SPECIFICALLY TO DESIGN
- 21%
- 19%
- 23%

LIMITED RESOURCES ARE ALLOCATED FOR INDIVIDUAL PROJECTS
- 16%
- 20%
- 14%

APPROPRIATE RESOURCES ALLOCATED ON BASIS OF POTENTIAL RETURN
- 29%
- 32%
- 27%

SIGNIFICANT RESOURCES ALLOCATED WITH FINANCIAL PROCEDURES IN PLACE
- 18%
- 21%
- 16%

0% 5 10 15 20 25 30 35%

TOTAL

MANUFACTURING

NON-MANUFACTURING

Fig. 3.18 Resources allocated to design (Q15, n=459)

Most companies have dabbled in 'corporate identity/ branding' at some point, though this mainly goes for non-manufacturing companies (82%) against 71% of manufacturing companies. That makes this the most prominent design activity for the group of non-manufacturing companies. As expected, 'product/ service design' is the most widespread design activity at manufacturing companies, with 79% of such companies reporting to be active in this area. This percentage is far lower for non-manufacturing companies, namely 43%. Another salient result is that large companies show considerably higher scores on all areas of application; ranging from 10 to 21 percent above the average. Large companies (250+) hence appear to be bulk consumers of design.

The number of areas of application is not only indicative of the level of design investment, but can also be indicative of the extent to which design has been integrated into a company's activities. Regardless of company size, respondents listed an average number of 3.4 areas of application. When only looking at large companies (250+), this average turns out to rise further to 4.2 areas of application. This kind of correlation is, however, lacking for the country group of 'innovation leaders'. There is no difference between country

groups; all groups report an average of 3.4 areas of application. This result reaffirms that the random sample is made up of active users.

When asked to indicate the level of resources allocated to design activities, 29% of respondents select the following answer: *'appropriate resources are allocated on the basis of potential return, but with limited procedures in place to assist in decision making'*. But another significant number of respondents, i.e. 21%, say: *'resources are not allocated specifically to design'*. That is a notably high percentage, considering we are dealing with a group of relatively active and experienced design users. Not allocating any resources to design could possibly also point at a lack of design plans and targets.

Only 18% of respondents selected the following statement: *'significant resources are allocated on the basis of potential return, with financial procedures in place to help assist in appraising investments, assessing risks and monitoring returns'*.

When compared to the country group of 'innovation followers', the group of 'innovation leaders' puts in a considerably higher score. The same goes for large companies (250+).

AWARENESS OF BENEFITS
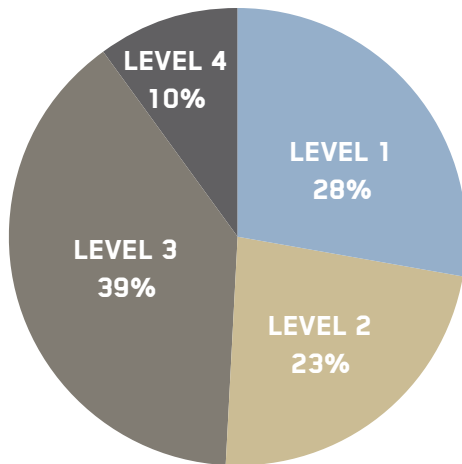
EXPERTISE
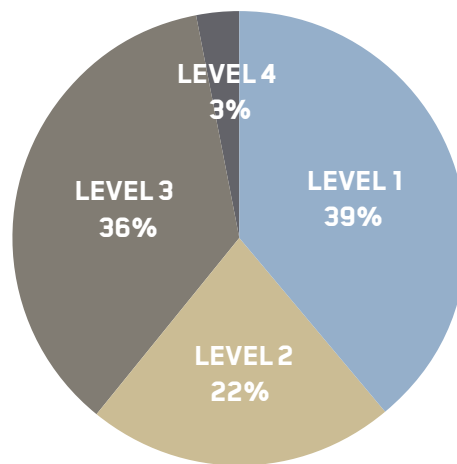
PROCESS

RESOURCES

PLANNING

Fig. 3.19 Results for all five factors combined (n=421)
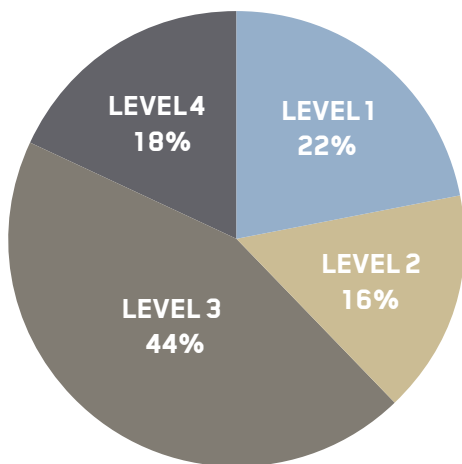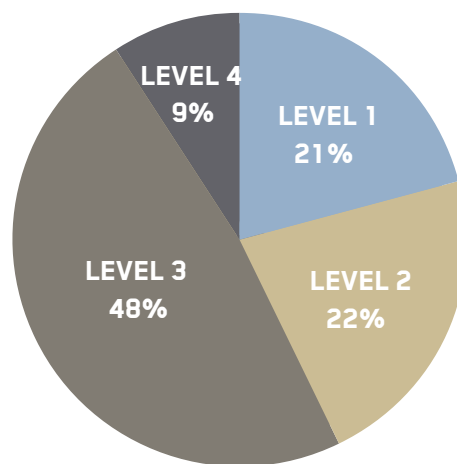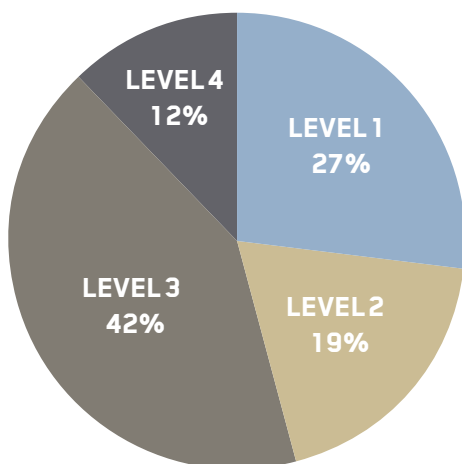
SUMMARY

The results of all five factors are summarized below, and combined in Figure 3.19.

The factor 'expertise' in particular shows a divergent twofold result: over-representation on level 1 and under-representation on level 4. Nearly 40% of respondents do not make it past level 1 on expertise, and only 3.3% make it into level 4. That makes this the most critical factor.
A second critical factor is 'awareness', where nearly 30% of respondents put in level 1 scores, and only 10% reach level 4. However, this factor is less critical than 'expertise' because nearly 40% of respondents make it into level 3.

A relatively strong factor is 'resources', where nearly half of participating companies achieve a level 3 score. But still, over 20% of respondents do not make it beyond level 1.
The same goes for the 'process' factor, where the greatest number of respondents make it into levels 3 and 4. In fact, these make up a large majority.

However the following should be noted: there is a suspicion that the limited development of the 'process side of design' in respondents' thinking (as observed in a number of items) is leading to a more positive valuation of this factor than would have been the case had respondents had a more developed picture of the design process.

In order to check which five factors have the greatest influence on the final DM rating, the study applied a statistical technique known as a regression analysis. Such an analysis can identify the relative strength of the different factors in terms of their impact on the overall DM rating. 'Expertise' emerges as the factor with the greatest impact, followed by 'awareness'. Therefore companies with a strong level of expertise tend to excel in the other factors as well, thus making their DM rating high. The spider's web figure below depicts these relative strengths.
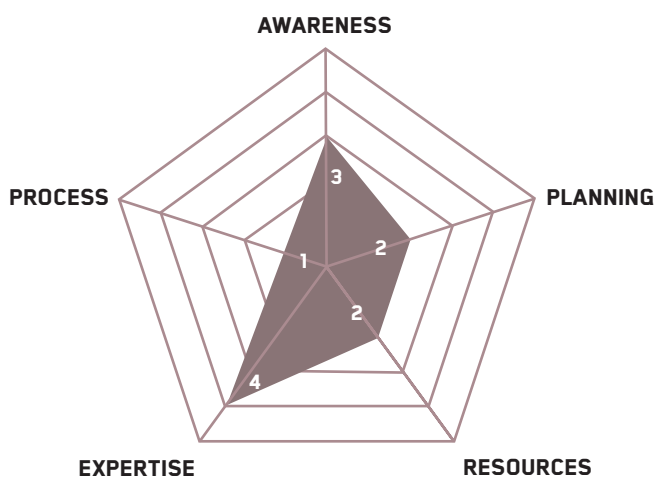
DM SCORE PROFILE

Fig. 3.20 The five factors' impact on the DM rating
(n=421)

CHAPTER 4 – OVERALL DESIGN MANAGEMENT RATING

When merging the five scores produced by the research, we get one final score; the DM rating. Results are captured in the diagram below.
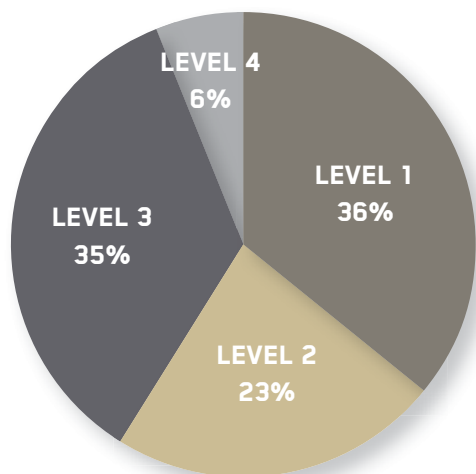
DM STAIRCASE RATING

Fig. 4.1 DM rating results (n=421)

The largest percentage of companies does not score beyond level 1. Considering the fact that this research is based on a random sample of relatively active and experienced users, that is a remarkable outcome. And the fact that only a small percentage makes it into level 4 is equally remarkable; only 6%. This indicates that only a very small number has embraced design as part of the core of their strategy.

The analysis of DME Award 2008 nominees had already brought this to light: no more than 11% managed a level 4 score (Lewis et al., 2009). A slightly better score, but that is down to the fact that this group of nominees should be considered the European 'premier league' when it comes to the uptake of design.
Evidently, only a very small group has managed to implement design management on a strategic level. Regardless of the fact that over sixty percent of respondents confess that the CEO or managing director manages design activities him/herself, or that this happens on a strategic level (*'extended team including design specialist(s) on strategic level with fully integrated directorship'*).

It is at the same time encouraging to see that a large number of companies make it up to level 3. After all, these companies have attained a good design management level, and managed to integrate design into their main business processes. But the question remains whether they also manage to keep up in terms of the strategic alignment of their design activities.

When spreading the final DM rating out over the five factors, we can draw a uniform conclusion. Independent of the overall DM level, companies score highest on the 'process' factor, and lowest on the 'expertise' factor. These are the weakest and strongest factor scores ('the weakest and strongest link'), in relative terms, within the series of five factors.

EXPLANATORY VARIABLES FOR THE DM RATING
Different background variables were tested for their impact on the overall DM rating. Six variables were found to indeed impact on this rating: (1) market type, (2) numbers of years the company has been using design, (3) turnover level, (4) company size (number of employees), (5) whether respondent has had education/training in the area of design management, and (6) the number of years the respondent has been personally involved in design, or the management thereof. The following provides a detailed breakdown of each of these variables:

Impacting variable 1: market type
Respondents were asked which markets they mainly operate in. Differences are not major, but a few things do stand out. The results show that level 1 companies have a relatively stronger representation in the business-to-business category. Companies with a high DM rating (level 3 and 4) were found to operate relatively more frequently in consumer markets (business-to-consumer), as well as in combined markets (both B-to-B and B-to-C). Companies indicating that their operations are equally spread out across both these markets are mostly found in the group of level 4 companies. But it should be noted that the number of observations of level 4 companies is limited.
This result can be explained by taking into account that the deployment of design is, in reality, often

targeted at positively influencing consumer behaviour. It may be that the demands and expectations of consumers are more developed in consumer markets, meaning that companies have to go to greater lengths to meets these, or to carve out a preferential position for themselves in consumers' perception.

Impacting variable 2: design experience
There is a positive link between the number of years a company has been using design, and the level of design management. A large majority (76%) of companies with level 4 design management have 10 years,

or more, of experience with design.
This finding highlights the importance of so-called personal empirical knowledge (also: tacit knowledge). Tether (2005) already pointed out that the effectiveness of the use of design depends greatly on the degree of this kind of knowledge available within a company, which is difficult to acquire and use. Such tacit knowledge is a form of individual subconscious knowledge, and hence difficult to pass on (Baumard, 1999). One indicator of the ability to use design effectively is therefore the level of experience the company has at its disposal (specific know-how).
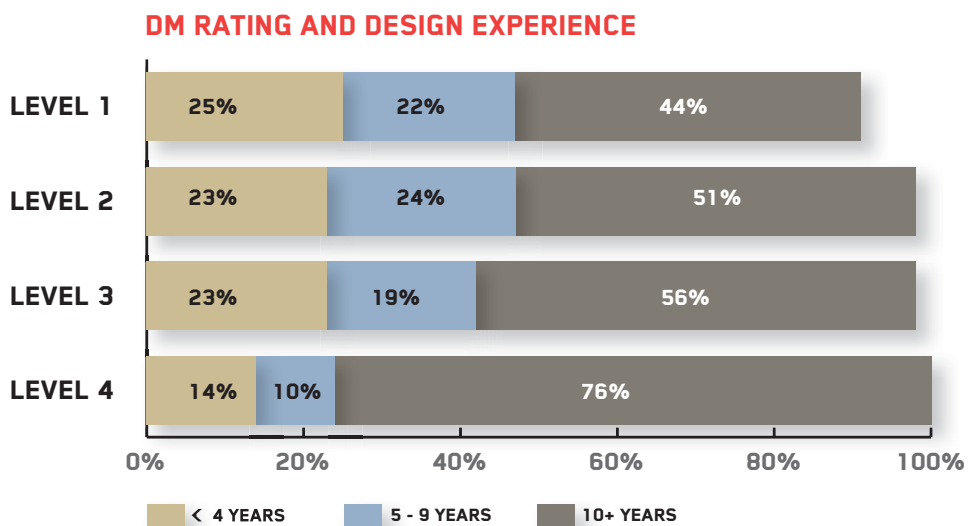
DM RATING AND DESIGN EXPERIENCE

Fig. 4.2 DM rating and years of experience (contingency table, n=411)

DM RATING AND TURNOVER
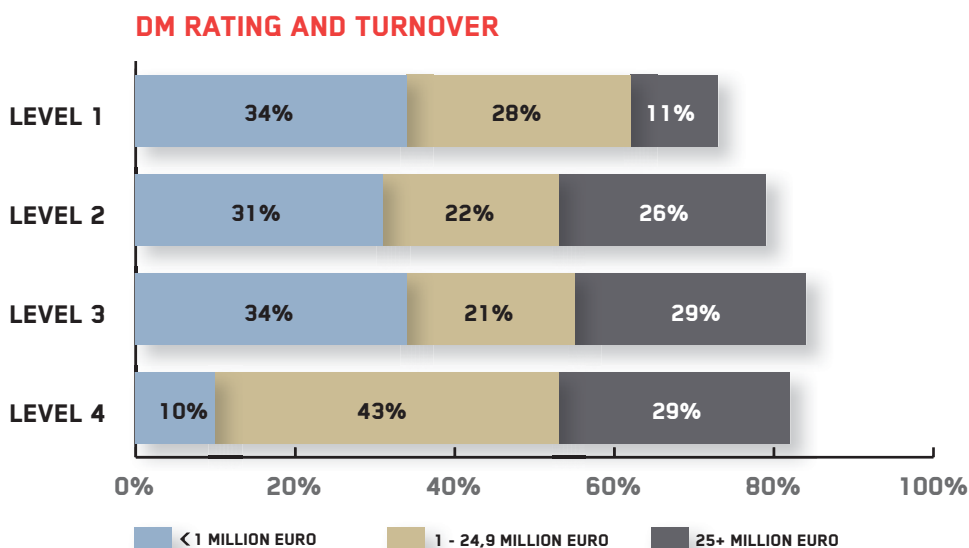
Fig. 4.3 DM rating and turnover (contingency table, n=386)

DM RATING AND NUMBER OF EMPLOYEES

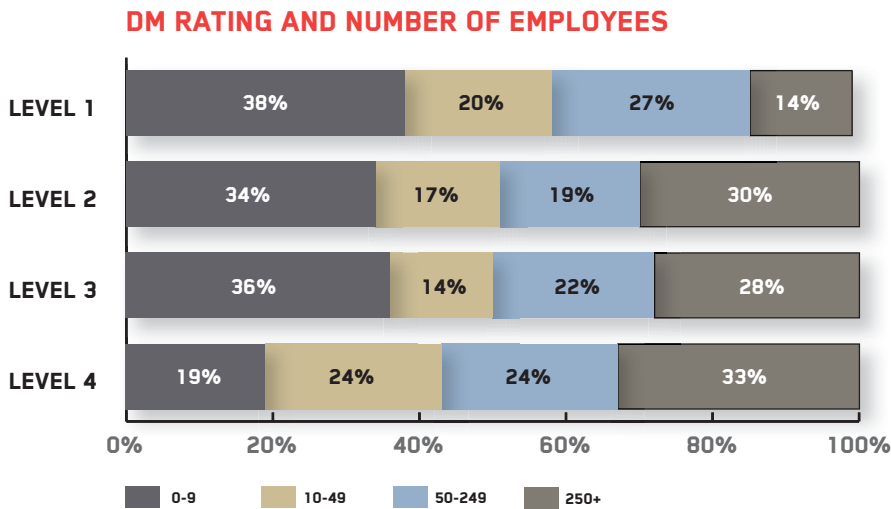|	0-9	10-49	50-249	250+
LEVEL 1	38%	20%	27%	14%
LEVEL 2	34%	17%	19%	30%
LEVEL 3	36%	14%	22%	28%
LEVEL 4	19%	24%	24%	33%

Fig. 4.4 DM rating and company size (contingency table, n=421)

Impacting variable 3: turnover
Companies with a high DM rating tend to be large ones (turnover over 25 million euros). Level 1 companies mainly fall into the category of 'turnover up to one million'.

Impacting variable 4:
company size (number of employees)
Although differences are only minor, it can still be said that larger companies (250+ employees) are slightly over-represented in the higher DM rating levels. Albeit that there are also large companies with a level 1 DM rating. Large companies seem over-represented in level 4, but bearing in mind that the total number of level 4 companies is limited, inferring anything from that should be done with a certain level of restraint. A possible hypothesis can be that micro companies and small companies are subject to different standards than medium-sized and large companies, considering that these will, in practice, not have an equally structured management system in place. This hypothesis is corroborated by scrutiny of the results to a limited degree. The link between company size and DM rating is only statistically significant for two factors, i.e. 'awareness' and 'resources' (see annex). This is because large companies do better on these aspects (resources and awareness), and lag behind on others. On the whole, this does not flag a clear difference. Another possible explanation is that small companies (and start-ups) may be very design-driven, as seen among DME Award nominees.

Impacting variable 5:
training/education in design management
Design management training affects the DM rating in a positive way. Companies with respondents who have had relevant training achieve higher DM ratings. But what also stands out is that about two thirds of respondents **have not** enjoyed specific design management training.
Another striking observation is that the selection made for the statement 'design training yes/no' does not affect the overall results at all.

Impacting variable 6:
personal experience with design
The number of years of experience someone has with design, logically, affects the overall DM rating. Respondents with 10 or more years of experience appear at level 3 and level 4 companies relatively more often.
In short, companies with a higher DM rating tend to be active in consumer markets. And these companies' design history often date back further, and they tend to be large in size (turnover over EUR 25m). The latter could possibly also be down to the fact that companies with a higher turnover will find it easier to find funds for design management.
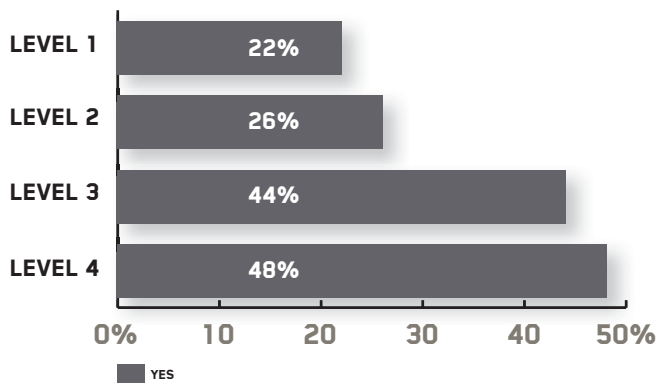
DM RATING AND DM TRAINING / EDUCATION

Fig. 4.5 DM rating and design management training/ education (contingency table, n=421)

DM SCORE AND BUSINESS PERFORMANCE

The introduction (Chapter 1) already made reference to a recent study that demonstrated that good design management practices at SMEs engender more effective use of design. This study looked at the effect of design investment on business performance, and the role design management plays in that. Design management was claimed to boost business performance, and investing in design was thought to be related to design management (Chiva & Alegre, 2009). This section will further assess the assumption that good design management can give a company a greater competitive edge, and raise business performance.

In order to gather information about companies' business performance, the questionnaire included the following two questions:
- 'How has your company's turnover changed in the last five years?' (Respondents were asked to pick one of the following: dropped, no change, rise of under 25%, rise of 25% or over)
- 'What proportion of your company's turnover is export?' (Respondents were asked to pick 0%, 1-24%, 25-49%, 50-74% or 75-100%)

Aside from these two questions, respondents were also asked to enter their company's number of employees and last year's turnover.

DM rating and turnover growth
A commonly heard assumption is that companies that invest in design grow faster than companies that do not. That in itself is, of course, an interesting thought that would be a great boost for the design sector. It could, after all, increase companies' willingness to invest in design. That is why the results were further scrutinized to see whether they could underpin this assumed causal link between design investment and turnover growth.

The results show that companies with a higher DM rating report faster turnover growth (by over 25%) more than companies with a lower DM rating. Dropping or unchanged turnover is more often reported by level 1 and level 2 companies. Barely 18% of level 1 companies report faster turnover growth, while this is more widely reported by level 3 companies (29%) and level 4 companies (33%). It therefore does seem to be the case that the higher a company's DM rating, the faster its turnover grows. Companies with the highest DM rating tend to be the ones stating that their turnover has risen in the past 5 years.

Turnover of companies with a low DM rating has largely remained unchanged, or even fallen.
It can be noted here that design management capability is, of course, not the only factor driving business performance. The results from this research do not provide a basis from which to pass judgement on the strength of the correlation between DM rating and business performance.

DM rating and export share
When comparing the reported export share in a company's total turnover to the DM rating that company achieved, a positive causal link between these two variables emerges. Companies with a higher DM rating report higher export percentages. This rather interesting finding could be a sign that international competition is more demanding in the area of design (both relating to marketing, complying to different national standards, and product development), leading to companies simply not being able to do without design management capability. This link has been put forward before; increasing international competition

leads to companies stepping up their innovation drive. A fine example of this phenomenon is the European banking sector after the European market opened up.

STUMBLING BLOCKS

The survey not only charts favourable factors, but also seeks to uncover those that could hinder the implementation of design management. This was analysed by confronting respondents with five possible design management implementation stumbling blocks (see

DM RATING AND TURNOVER GROWTH

Fig. 4.6 DM rating and turnover growth (contingency table, n=386)

DM RATING AND EXPORTS
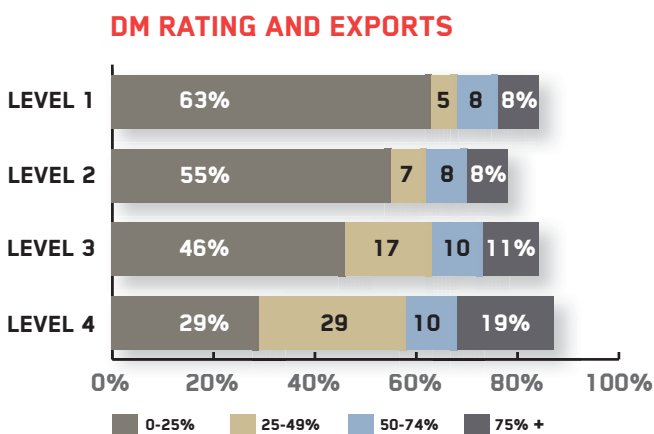
Fig. 4.7 DM rating and export share of turnover (contingency table, n=385)

textbox). Respondents were asked to indicate to what extent the listed factors actually hinder their design management efforts. The outcome is presented in Figure 4.8.

- **Cost factors** (e.g. cost too high, lack of funds, doubtful R.O.I)
- **Knowledge factors** (e.g. lack of qualified personnel, lack of information on design cases and best practices, internal designers not qualified for management)
- **Cultural factors** (e.g. organisational rigidities within the enterprise, attitude towards design, design is isolated function, traditional non-design culture)
- **Market factors** (e.g. uncertain demand for designed goods or services, limited pressure from competitors)
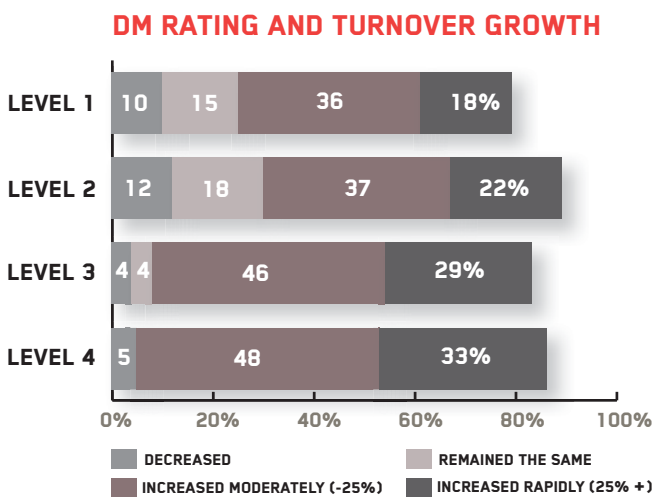- **Other factors** (e.g. company size, deficiencies in the availability of external design services)

Cost factors were cited on most occasions; 26% of respondents list cost as the main thing standing in the way of their company implementing design management. Companies' assessment of knowledge factors and cultural factors are largely on a par. Market factors, however, appear not to be a hinderance for companies. Companies with a low DM rating (level 1 and 2) report being impeded by one or several of the abovementioned stumbling blocks on more occasions than other companies. A number of companies may therefore see these stumbling blocks looming in the distance before even hitting them, causing them to tone down their design management efforts. These companies may need further convincing so that they will actually try to overcome such obstacles.

Stating cost factors as the main impediment can be down to different reasons. It may be tied to a perception of great expenditure (design costs are more likely to be labelled expenditure than investment) and companies not being convinced that money spent on design will yield sufficient benefit.
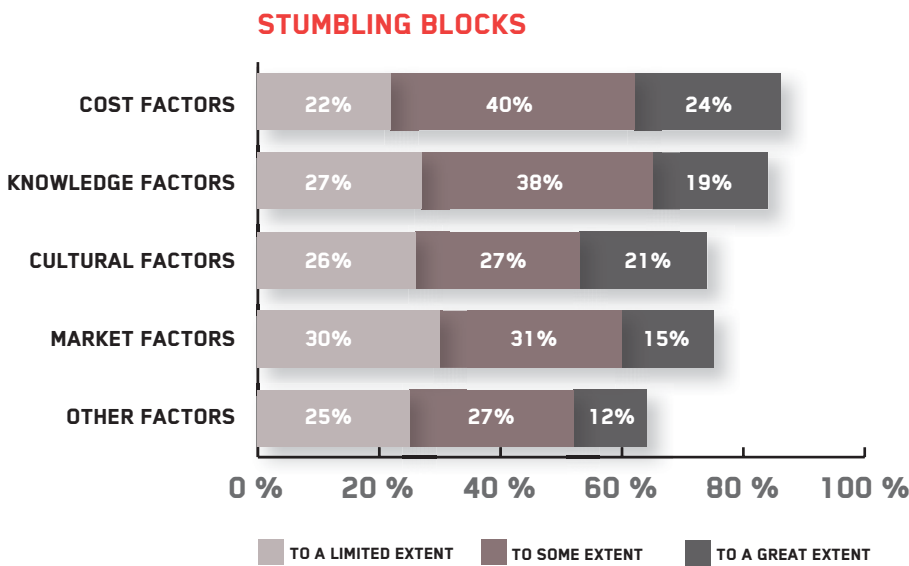
STUMBLING BLOCKS

	To a limited extent	To some extent	To a great extent
COST FACTORS	22%	40%	24%
KNOWLEDGE FACTORS	27%	38%	19%
CULTURAL FACTORS	26%	27%	21%
MARKET FACTORS	30%	31%	15%
OTHER FACTORS	25%	27%	12%

TO A LIMITED EXTENT   TO SOME EXTENT   TO A GREAT EXTENT

Fig. 4.8 Stumbling blocks for effective design management (Q34, n=393)

DM STAIRCASE AND TOOL VALIDITY

We will end this chapter with a brief outline of methodology-related findings. These findings are important with a view to accounting for the methodological approach that was used.

One of the main objectives of this study is to assess the validity of the tool. This assessment consisted of an analysis of the extent to which the overall DM rating matches how companies see their own actual design management practice.

The last question of the questionnaire (Q 35) asked respondents to judge themselves on the five Staircase factors – and to rate their own design management capability. The answer categories were as follows throughout: 'poor, average, good, very good, excellent, don't know'.
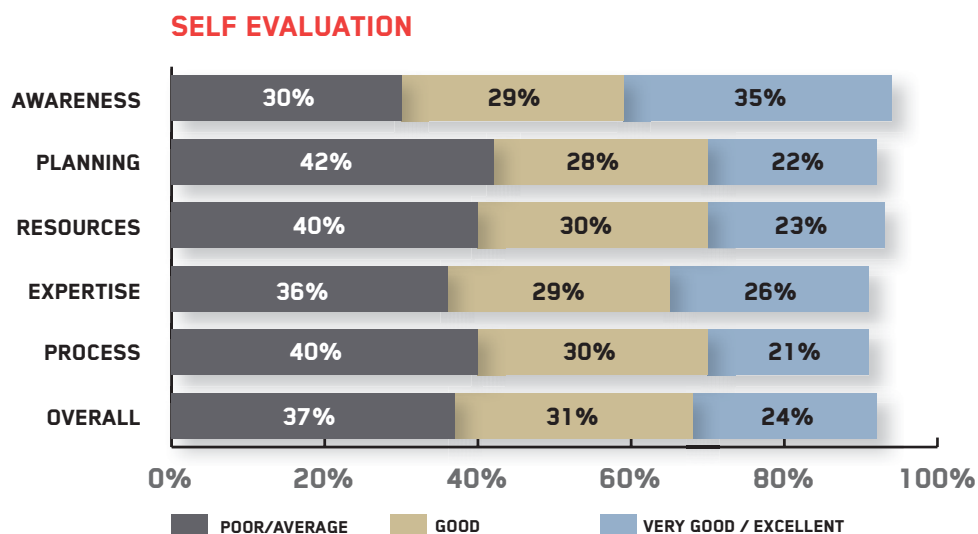
SELF EVALUATION

	Poor/average	Good	Very good / excellent
AWARENESS	30%	29%	35%
PLANNING	42%	28%	22%
RESOURCES	40%	30%	23%
EXPERTISE	36%	29%	26%
PROCESS	40%	30%	21%
OVERALL	37%	31%	24%

POOR/AVERAGE   GOOD   VERY GOOD / EXCELLENT

Fig. 4.9 Self evaluation of current design management level (Q35, n=392)

DM RATING AND SELF EVALUATION

(SIGNIFICANT)					
CATEGORY	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	TOTAL
Poor/Average	65,8%	51,7%	17,2%	0,0%	40,2%
Good	21,4%	40,2%	43,9%	10,0%	33,9%
Very good/Excellent	12,8%	8,0%	38,8%	90,0%	25,9%
TOTAL	117	87	139	20	363

Table 4.1 DM rating and self evaluation (contingency table, n=363)

The DM Staircase model enables companies to assess their own design management capability. The table below shows that companies with a lower DM rating are often well aware of their design management inadequacy. 66% of level 1 companies state, for example, that they fall short on design management. Companies with higher DM ratings actually over-rate their capability. Over 82% of level 3 companies and 100% of level 4 companies think they are doing very well or even excellently when it comes to design management. Level 2 companies sometimes overestimate themselves as well, while there is also a section of level 3 companies that underestimate themselves. When averaging the answers to this question we get a clear picture.

Apart from the above analysis, a regression analysis was used to check to what degree companies' own idea of their performance in the five factors is reflected by the DM Staircase rating (Fig. 4.10). In other words, can we predict the DM rating by the results from the self evaluation? This turns out to only partly be the case. About one third of the DM rating runs parallel with the self evaluation. 'Awareness', 'resources' and 'expertise' are the self evaluation factors that have the greatest impact on the DM rating (Fig. 4.11). That means companies' self image regarding these three factors most closely matches the rating our measurements produced.
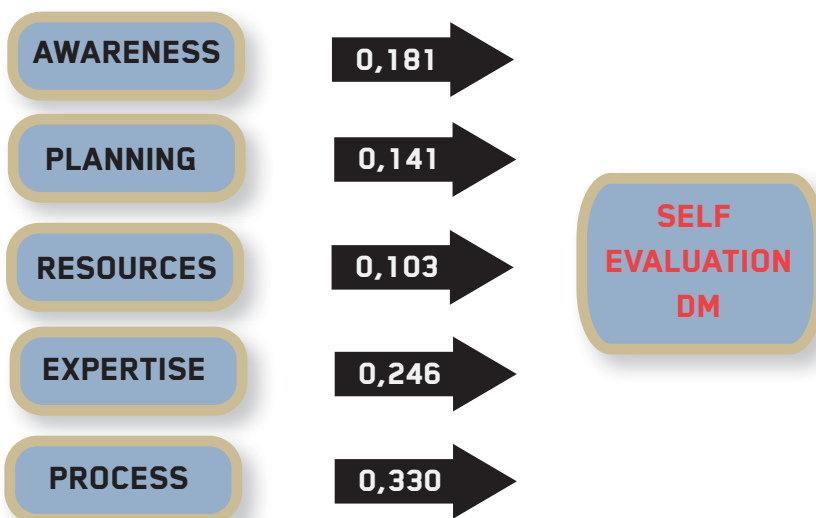
REGRESSION SELF EVALUATION

AWARENESS → 0,181

PLANNING → 0,141

RESOURCES → 0,103

EXPERTISE → 0,246

PROCESS → 0,330

SELF EVALUATION DM

Fig. 4.10 Regression of self evaluation (n=421)

REGRESSION SELF EVALUATION FACTORS AND DM RATING

MODEL SELF EVALUATION FACTORS AND TOTAL DM SCORE (R² = 30%)

Fig. 4.11 Regression of self evaluation factors and DM rating (n=421)

The above shows that the compiled Staircase scores are required input for the calculation of the total DM rating. Determining DM capability on the basis of the self evaluation (question 35) alone is not enough to guarantee reliable results.

Additional considerations
Choices made in terms of the questionnaire and the random sample can have affected the final results. Each question yielded sufficient response to be able to analyse the level of design management capability at companies in Europe. However there are a number of issues that may have impacted negatively on the model's reliability and validity.
One concern is the relative high drop-out rate. Even though a pretest was run, a proportion of the respondents failed to fill the questionnaire out completely. As a result, DM ratings were not calculated for all respondents, only for the ones who answered the underlying Staircase questions. The questionnaire was rather lengthy. This may have been the reason why not all respondents went to the trouble of completing the whole thing (despite the incentive offered). The high drop-out rate can possibly also be explained by the complex nature of the subject.

During the drafting process of the questionnaire we decided only to make an English language version. Considering the complexity of the subject, and the fact that the English language is not mastered equally well everywhere, this may have put respondents off. We think this choice has led to the relatively high level of education/development among respondents. This can have a positive effect on the results, as the respondents had a better grasp of the complex subject owing to a high level of education.
We did not manage to find sufficient respondents for every country. The results apply to all participating countries as a unit. They may therefore not be representative of individual European countries.

CHAPTER 5 - DESIGN MANAGEMENT AND INNOVATION

The European Commission has linked design management to innovation management and has included DM under the innovation policy agenda, not as an independent policy item. That is the reason behind this separate chapter to deal with the research question about the relationship between design management and innovation. The introduction (Chapter 1) referred to a number of recent studies that demonstrated that design-driven companies are more innovative than others. That would mean that level 3 and level 4 companies show a greater drive to innovate, or that companies with high innovation capability achieve high DM ratings. This chapter will outline whether the DME Survey corroborates these assumptions.

This issue was tackled by reviewing the correlation between DM ratings and country groupings. There turns out to be no significant alignment of the two. That means the country grouping, as part of the European Innovation Scorecard 2008, does not run parallel with the research results. Although the group of 'innovation leaders' does indeed achieve level 4 scores, the difference is too small to be significant. The number of level 4 companies identified is, furthermore, too small to be able to draw any conclusions on the country grouping link.
The largest group of 'innovation followers' is over-

represented on the two lowest DM levels. That result is inferior to what was to be expected from this group. The group of 'moderate innovators', on the other hand, performs better than expected. This country group's relatively good performance may be down to the composition of the random sample (see Chapter 2).

The link between innovation, design and creativity has been described by a number of authors (including Von Stamm, 2003). Tidd & Bessant (2002) even go so far as to define design as: 'The purposive application of creativity throughout the process of innovation'. In order to find out to what extent respondents concur on this, they were asked what they make of this link, and what role creativity plays at their company.

Awareness
Five statements about design and innovation were put to respondents (Fig. 5.2). 60% to nearly 70% of respondents are in 'full agreement' with these statements. The overall conclusion is that the majority thinks there is a strong link between design and companies' innovation power. This opinion is put forward regardless of DM rating or companies' nature.
This high score came as a pleasant surprise to the researchers, but does invoke the question why reality is lagging so far behind in relation to this insight.
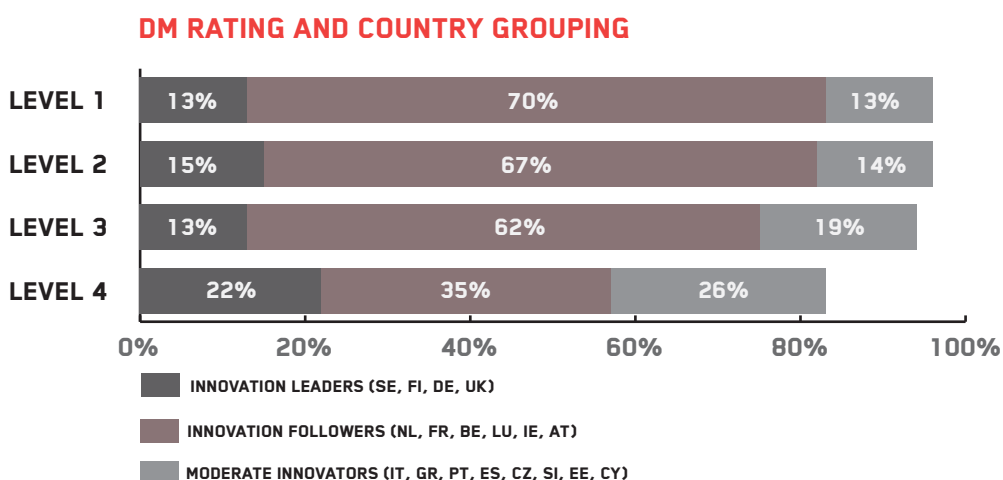
DM RATING AND COUNTRY GROUPING

	INNOVATION LEADERS	INNOVATION FOLLOWERS	MODERATE INNOVATORS
LEVEL 1	13%	70%	13%
LEVEL 2	15%	67%	14%
LEVEL 3	13%	62%	19%
LEVEL 4	22%	35%	26%

INNOVATION LEADERS (SE, FI, DE, UK)

INNOVATION FOLLOWERS (NL, FR, BE, LU, IE, AT)

MODERATE INNOVATORS (IT, GR, PT, ES, CZ, SI, EE, CY)

Fig. 5.1 DM rating and country grouping EIS 2008 (contingency table, n=411)
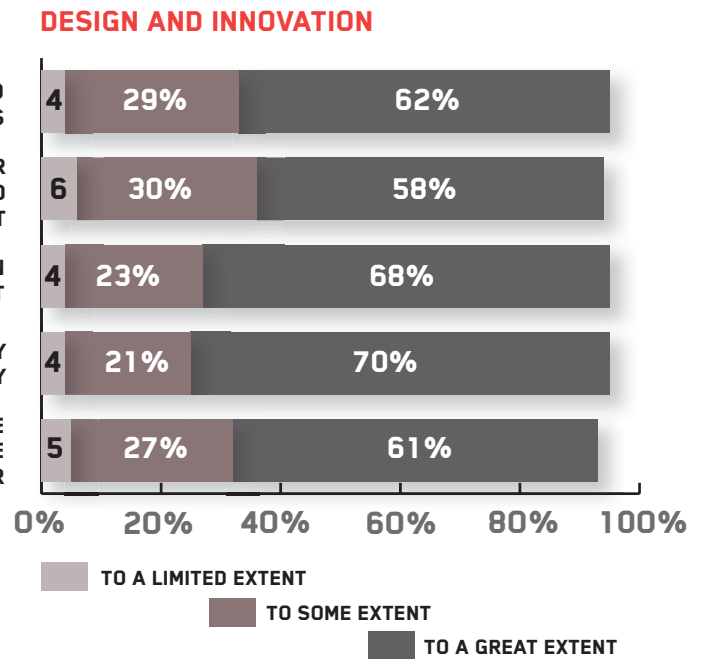
DESIGN AND INNOVATION

Fig. 5.2 Design and innovation (Q30, n=394)

Creativity

Companies' innovation capability is often linked to their ability to unleash their employees' creativity. An important factor is to nourish a corporate culture that encourages creativity. In order to gauge this among respondents, they were presented with four statements (see textbox), from which they had to select the one that best matched the situation at their companies. Results are logged in figure 5.3.

The largest group of respondents (44%) went for statement 4. A further 14% chose statement 3, meaning that a total of nearly sixty percent of respondents said their company pursues an active creativity policy. Of the remaining percentage of companies, 32% state creativity is expected, but not explicitly encouraged or rewarded (statement 2).

These companies assume a passive attitude towards creativity management. A small group of only 4% selects the negative statement.

When looking at the spread of these scores, we can discern significant alignment between a company's size and the extent to which it pursues a creative corporate culture. Small companies go for statement 4 more often than large companies (68% and 28% respectively) – and as companies grow this percentage drops sharply.

Further notable results include that nearly 51% of 'innovation leaders' and 48% of 'innovation followers' selected statement 4. Despite these high scores there is no significant link.

Where sectors are concerned, far more non-manufacturing companies selected statement 4 than manufacturing companies did. Manufacturing companies and large companies might be more traditional when it comes to a creative corporate culture.

1. 'We don't rely on creativity from our employees'
2. 'Creativity is expected but not explicitly encouraged or rewarded'
3. 'Staff has some managed time for creativity; ideas are fed into the product development process; best ideas are rewarded'
4. 'Creativity is expected and rewarded; there are no restrictions on creativity – provided agreed deadlines are met; time and money is available; physical environments support creativity'

INNOVATION AND THE RESEARCH TOOL

The DME Survey does not focus on innovation capability. But it still brings up a number of innovation skills that relate to design management. The ability to manage innovation was identified as one of the five design management skills (Dickson et al. 1995). This
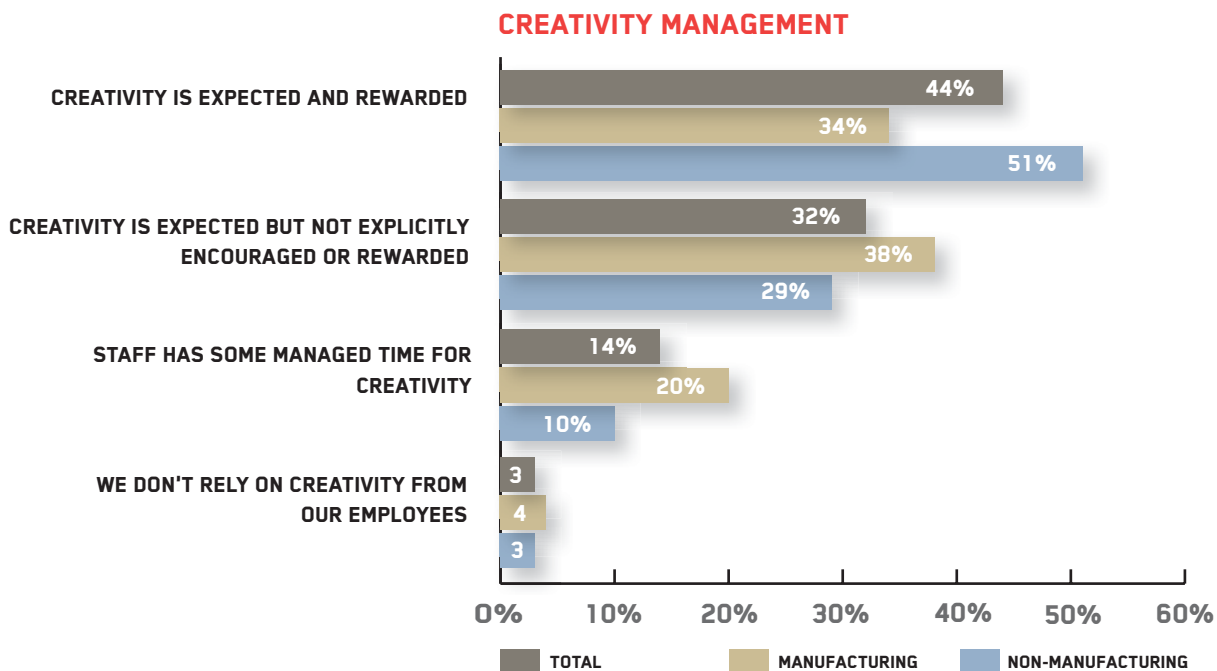
CREATIVITY MANAGEMENT

Fig. 5.3 Creativity management (Q31, n=374)

study among CEOs of fast-growing US enterprises resulted, among other things, in a list of innovation skills that relate to design management. These CEOs listed the following specific skills (ranked in order of importance):

- 'Quickly becoming aware of competitor innovations and imitations'
- 'Finding new ideas – not just me-too imitations'
- 'Designing and launching new products faster'
- 'Finding people with excellent design skills'
- 'Estimating the true costs of new product/services during the design process'
- 'Getting new product/service ideas from customers/dealers'
- 'Designing low cost into products'
- 'Changing traditional ways of doing things'

As the research project progressed, the focus on the role of design management in innovation management gradually increased. But at that stage it was too late to modify the set up of the research project. The above list was therefore not incorporated into the research tool in full. There are, nonetheless, a number of questionnaire items that (partly) overlap with abovementioned aspects:

- 'Are (end) user needs and requirements assessed and fed into the design process when developing products or services? Please indicate the following statements that best describe the current situation' (Q20/21)
- 'Is analysis of competitors part of the design planning process in your company?' (Q22)
- 'To what extent does your company foster a design culture & environment that encourages creativity, originality and novelty?' (Q31)
- Question 18 ('What place does design have in the process when something new is developed; when are designers typically involved?') includes the following option: 'as a central aspect; as a means of encouraging innovation; driving the development process'.
- Question 29 ('Over the last 5 years, to what extent would you say that design has improved the following within your company?') includes the option: 'development of new products/services'.
- Question 32 ('In your view, what are the benefits for your company when managing design effectively?') includes the following option: 'improved product and marketing innovation activities'.

This survey shows that a number of critical aspects are indeed covered by the research tool. Calculating a compound score based on the answers to the above questions could therefore in fact yield a kind of 'innovation management rating'. But since this rating would be compiled using the same variables as the DM rating, it would make little sense to actually produce an IM rating. It would, after all, be a Dutch treat; a high innovation management rating would automatically also pull up the DM rating.

CHAPTER 6 – CONCLUSIONS AND RECOMMENDATIONS

This study has unearthed a great deal of information to tackle the key question ('How do European SMEs manage design in practice, and how can they further develop their (design management) skills in order to increase the effectiveness of their design activities?'). The DM Staircase model has proven to be a usable model to chart differences between companies, even though this model (like any other model) can only be used to present a simplified reflection of reality. Companies can also use the DM Staircase to work out whether their current performance is on the desired level, and what steps they can take to boost their performance. The model offers a range of starting points for such an improvement drive.

SUMMARY OF MAIN FINDINGS

The main findings are outlined using the research questions:

1. What is the link between design management capability and business performance?
2. To what degree does the level of design management depend on specific company characteristics or respondent characteristics?
3. What are the main stumbling blocks for the implementation of effective design management?
4. To what degree are companies able to assess their own design management capability?
5. What is the relative importance of the five underlying factors of the Design Management Staircase?
6. How can we evaluate the reliability and validity of the DM Staircase model?

Question 1: What is the link between DM rating and business performance?
High-turnover companies (over 25 million) often score higher when it comes to the level of design management. One possible reason for that is that these companies generally have greater scope for investment in design; and the more a company invests in design, the higher its level of design management. Execution and the right expertise do also come into

it, of course. The outcome of the study also shows that companies that make it high onto the DM Staircase report greater turnover increases in the past five years. Sometimes even by over 25%. Investing in design therefore seems to bear fruit. It should, however, still be noted that design management is not the only factor that can positively influence a company's turnover.

The study does uncover positive correlation between DM rating and business performance, although causal links have yet to be determined. While design possibly breeds success, it could also be that more successful companies tend to invest more heavily in design – and with that develop greater capability for the effective management of design.

Question 2: To what degree does the DM rating depend on specific company characteristics?
The work that went into the DM Staircase also included an analysis of the extent to which respondent characteristics and company characteristics influence design management capability. In a number of cases, large companies (more employees) also have higher DM ratings. Company size seems to matter. A large company will have a greater number of specialized departments and complex business processes in place, which increases the chances of them calling in design management specialists.

Respondents' design experience and education/ training logically also affect their companies' design management rating. It is key for companies to attract experienced design professionals (or call in external design experts), and to offer sufficient room for personal development. This will benefit the effective use of design.

Question 3: What are the main stumbling blocks for the implementation of effective design management?
Various factors can stand in the way of the development of effective design management within a company. In order to be able to make the most of companies' growth opportunities, it may be a good idea to identify these obstacles and remove them wherever possible.

Cost factors are most often identified as a barrier. Apparently, companies are not convinced of design management's ability to generate added value. Despite the fact that investing in design can indeed provide great benefit. Apart from costs, knowledge factors and cultural factors are also listed as stumbling blocks. A culture change can be brought about by convincing companies of the added value of design. Adequate investment in design management will also increase knowledge levels within companies. Although the latter does depend on the supply of trained and experienced design managers, which in turn will be determined by the availability of suitable training programmes for design managers.

Question 4: To what degree are companies able to assess their own design management capability?
The results show that the DM Staircase model is suited as a tool to chart design management capability. Companies that consider themselves good at design do often also turn in a high DM rating. This means that the DM Staircase is indeed a suitable model for the assessment of the design management capability of companies, and in the future also to assist SMEs to perform their own self evaluation of design management in their business practice.

Question 5: What is the relative inportance of the five underlying factors of the Design Management Staircase?
The main underlying factors of the DM Staircase rating are 'expertise' and 'awareness'. A closer focus on these two will enable companies to realize greater improvements in their DM rating. That makes knowledge of the right methods and techniques the primary driver of DM rating. Companies need convincing of the benefits and added value that effective design can bring. The factors 'planning', 'resources' and 'process' play a less prominent role, although the research highlights the need to review them in more detail in the future.

Question 6: How can we evaluate the reliability and validity of the DM Staircase model?
The main objective of this study is to develop a model and tool that can be used to assess companies' ability to manage design. The degree of design uptake and experience – and respondents' level of education in the area of design/design management was found to be conducive to reliable data. As pointed out earlier, there was also a certain level of drop-out. The drop-out rate may have had a negative effect on the reliability and validity of the results. The question here is whether the features of design management capability (as described in the DM Staircase) can actually be used as criterion for effective use of design by SMEs. These features are taken from literature on the subject as well as from the experiential knowledge of research team members.

In order to check whether the rating is affected by other factors indicating the level of design management, a second criterion was devised. This was realized using a self evaluation. A positive result required the answers to these self evaluation questions to have a positive link with the factor scores and final DM rating calculated by the tool. The outcome shows that this is indeed the case. Respondents proved very capable of evaluating themselves. But this self evaluation cannot fully support the model. These results only partly show the tool's validity.

CONCLUSIONS
Chapter 1 posited the hypothesis that 'many companies fail to use design in a conscious, systematic or strategic manner'. The research provides a solid foundation for this hypothesis. A range of shortcomings were flagged. The study has also painted a clear picture of the extent to which these shortcomings manifest themselves, as well as a rough picture of the sectors and types of businesses where these shortcomings manifest themselves most often. It remains to be seen to what extent the findings apply to SMEs in general, or in the different European countries*. The random sample simply was not sufficiently representative for that. However when taking into consideration that the findings relate to a group of relatively active and experienced design users, these results should provide sufficient cause for action.

A widely heard statement is that European companies can no longer compete on price. Only by developing

products and services that offer customers and users a high level of added value can European companies be competitive. Design is an important and indispensable tool for such development. That makes the effective use of design an economic necessity, and an incentive for policy, which is vital to national and even European interests.

It seems risky to assume companies will eventually find their own way to design. The stumbling blocks and ignorance seem to be too great for that.

* The results of the study apply to all participating countries as a unit. They cannot be used to define the design management capability of specific countries.

too slowly. There is little structural focus on design in management courses. There also appears to be a lack of specific training options for experienced designers with sufficient management skills who want targeted design management training.

This situation can only be turned around, and the necessary progress can only be sustained, through common efforts by broad groups: the design sector itself, the training/education sector, trade associations, business and design support organisations and the government.

- **MANY COMPANIES FAIL TO USE DESIGN IN A CONSCIOUS, SYSTEMATIC OR STRATEGIC MANNER**
- **DESIGN IS UNDER EMPLOYED AND UNDER VALUED BUSINESS TOOL**
- **NOT ENOUGH AWARENESS OF BENEFITS**
- **EMPHASIS TOO MUCH ON COST INSTEAD OF RETURN ON INVESTMENT**

One of this study's findings is that good design management can lead to turnover growth. But at the same time, cost factors are widely cited as the main obstacle standing in the way of companies implementing design management. Companies need to be made aware of the added value of design and design management. Design should cease to be seen as expenditure, and be considered an investment for the future instead. The most critical success factor here is the awareness of benefits. This throws up a serious challenge for any policy, and opens up a world of opportunity for creative service providers (the design sector).

Alongside cost factors, knowledge factors also constitute a considerable obstacle. Education is a second critical success factor. Design courses spend little time on business implications and management skills. Although the rise to prominence of new methods such as 'design thinking' does show movement in the management world, things seem to be happening far

RECOMMENDATIONS FOR FURTHER RESEARCH

This study did not set out to come to conclusions on the European SME sector as a whole, or on SMEs in specific countries. Further research would have to target such conclusions, in order to generate input for European or national policymakers.

It would also be particularly interesting to run longitudinal research into whether and how the design management capability of the European SME sector evolves. Repeated assessments can, for example, offer policymakers insight into whether their efforts are paying off, or facilitate benchmarking.

Chapter 5 claimed that effective investment in design management will bolster companies' innovation capability (innovation management). It would be up to follow-up studies to further look into the direction of this link, by scrutinizing those innovation skills that relate to design management.

For the further fine-tuning of the DM Staircase model and tool, with the intention of making in an even better targeted tool, three recommendations have been formulated:

The first recommendation concerns the questionnaire. As outlined earlier, a number of respondents failed to fill out the whole questionnaire. This may have been down to the complexity, length, or language of the questionnaire. Although we did run a pretest (with the first draft) in the early stages of the research project, it would be recommended to also pretest the final online tool among users. Personal interviews can then be used to find out which questions users struggle with. It would also be advisable to also offer the questionnaire in other languages, such as Spanish, French and German.

A second recommendation concerns the random sample. In order to achieve a representative reflection of the population (European SME sector), proportionally stratified sampling would be advisable. This would highlight the proportions between the sectors in the countries in question. Desk research can be used to figure out how such a random sample should be compiled - and select the right companies per country.

Reliability and validity can only be guaranteed, and conclusions can be drawn per country, when at least 100 respondents per country (with a good sector-based spread per country) complete the questionnaire in full.

Practically every single study that focuses on design has to cope with the complex nature of the subject and the relative ignorance about the subject among respondents. In practice, people have highly divergent notions of design; an unequivocal conceptual basis and clear definitions are lacking. It is therefore advisable to use pretesting in any further research to assess the suitability of respondents. Additionally it would be advisable to split the questionnaire into two, which could also remove the problem of the questionnaire being too long. Only those respondents with sufficient knowledge of the subject would be asked to answer follow-up questions. This could eliminate the risk of respondents answering questions on issues that they know little to nothing about, or failing to complete because they do not understand the questions.

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ANNEXES

DM STAIRCASE: FACTOR AWARENESS (N=394)				
CATEGORY	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**
BUSINESS SECTOR				
MANUFACTURING	41,4%	32,8%	38,5%	61,1%
NON-MANUFACTURING	64,6%	63,1%	61,5%	38,9%
COUNTRY GROUPING				
INNOVATION LEADERS (SE, FI, DE, DK, UK)	13,6%	7,9%	16,1%	22,2%
INNOVATION FOLLOWERS (FR, BE, NL, LU, IE, AT)	69,1%	75,3%	59,7%	41,7%
MODERATE INNOVATORS (IT, GR, PT, ES, CZ, SI, EE, CY)	11,8%	11,2%	20,8%	16,7%
NUMBER OF EMPLOYEES				
0 - 9	35,5%	34,8%	34,2%	33,3%
10 - 49	19,1%	10,1%	17,4%	27,8%
50 - 249	27,3%	20,2%	22,1%	16,7%
250+	13,6%	33,7%	25,5%	22,2%
TOTAL	112	91	154	37

DM STAIRCASE: FACTOR 'PROCESS' (N=421)				
CATEGORY	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**
BUSINESS SECTOR				
MANUFACTURING	N.S.	N.S.	N.S.	N.S.
NON-MANUFACTURING	N.S.	N.S.	N.S.	N.S.
COUNTRY GROUPING				
INNOVATION LEADERS (SE, FI, DE, DK, UK)	19,4%	6,2%	12,4%	17,3%
INNOVATION FOLLOWERS (FR, BE, NL, LU, IE, AT)	61,3%	86,2%	66,1%	46,7%
MODERATE INNOVATORS (IT, GR, PT, ES, CZ, SI, EE, CY)	15,1%	6,2%	15,8%	25,3%
NUMBER OF EMPLOYEES				
0 - 9	N.S.	N.S.	N.S.	N.S.
10 - 49	N.S.	N.S.	N.S.	N.S.
50 - 249	N.S.	N.S.	N.S.	N.S.
250+	N.S.	N.S.	N.S.	N.S.
TOTAL	94	68	184	75

DM STAIRCASE: FACTOR 'PLANNING' (N=421)				
CATEGORY	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**
BUSINESS SECTOR				
MANUFACTURING	36,3%	28,2%.	41,1%	54,9%
NON-MANUFACTURING	63,7%	71,8%	58,9%	45,1%
COUNTRY GROUPING				
INNOVATION LEADERS (SE, FI, DE, DK, UK)	15,6%	11,7%	14,0%	13,2%
INNOVATION FOLLOWERS (FR, BE, NL, LU, IE, AT)	67,0%	80,5%	61,4%	47,2%
MODERATE INNOVATORS (IT, GR, PT, ES, CZ, SI, EE, CY)	11,9%	5,2%	18,7%	30,2%
NUMBER OF EMPLOYEES				
0 - 9	N.S.	N.S.	N.S.	N.S.
10 - 49	N.S.	N.S.	N.S.	N.S.
50 - 249	N.S.	N.S.	N.S.	N.S.
250+	N.S.	N.S.	N.S.	N.S.
TOTAL	112	81	175	53

DM STAIRCASE: FACTOR 'EXPERTISE' (N=421)				
CATEGORY	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**
BUSINESS SECTOR				
MANUFACTURING	31,2%	40,7%	45,1%	57,1%
NON-MANUFACTURING	68,8%	59,3%	54,9%	42,9%
COUNTRY GROUPING				
INNOVATION LEADERS (SE, FI, DE, DK, UK)	N.S.	N.S.	N.S.	N.S.
INNOVATION FOLLOWERS (FR, BE, NL, LU, IE, AT)	N.S.	N.S.	N.S.	N.S.
MODERATE INNOVATORS (IT, GR, PT, ES, CZ, SI, EE, CY)	N.S.	N.S.	N.S.	N.S.
NUMBER OF EMPLOYEES				
0 - 9	N.S.	N.S.	N.S.	N.S.
10 - 49	N.S.	N.S.	N.S.	N.S.
50 - 249	N.S.	N.S.	N.S.	N.S.
250+	N.S.	N.S.	N.S.	N.S.
TOTAL	166	91	150	14

DM STAIRCASE: FACTOR 'RESOURCES' (N=421)				
CATEGORY	**LEVEL 1**	**LEVEL 2**	**LEVEL 3**	**LEVEL 4**
BUSINESS SECTOR				
MANUFACTURING	N.S.	N.S.	N.S.	N.S.
NON-MANUFACTURING	N.S.	N.S.	N.S.	N.S.
COUNTRY GROUPING				
INNOVATION LEADERS (SE, FI, DE, DK, UK)	N.S.	N.S.	N.S.	N.S.
INNOVATION FOLLOWERS (FR, BE, NL, LU, IE, AT)	N.S.	N.S.	N.S.	N.S.
MODERATE INNOVATORS (IT, GR, PT, ES, CZ, SI, EE, CY)	N.S.	N.S.	N.S.	N.S.
NUMBER OF EMPLOYEES				
0 - 9	39,2%	20,5%	39,9%	31,4%
10 - 49	20,3%	10,8%	16,6%	28,6%
50 - 249	23,0%	39,8%	16,6%	14,3%
250+	13,5%	25,3%	26,9%	22,9%
TOTAL	**88**	**93**	**202**	**38**