Design Management in Small- and Medium-Sized Mexican Enterprises
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Introduction

This article examines and documents the current approaches to design management of certain small and medium-sized enterprises (SMEs) in Mexico. The article resumes the follow up on the results obtained in a study that aimed to understand how design services are used in the context of Mexican SMEs and their integration into the general business process. Literature concerning design management practices in SMEs was reviewed to develop a general idea about it. The literature highlighted three main aspects for the success of the design management process: briefing, sourcing, and evaluation. Based on this data, a semi-structured interview was developed to examine current approaches of Mexican SMEs to design management. We interviewed 20 managers of manufacturing Mexican SMEs that were chosen according to their representativeness, importance, and effect on the Mexican economy. Results showed design management practices emerged into a complex reality where design existed most of the time as an improvised intervention. The study also showed the limited value assigned to design in improving general business performance. Although the main objective of this study was to identify design management practices in Mexican SMEs, the results also showed that design practitioners demonstrate a lack of preparation in this subject.

Design Management in SMEs

SMEs are recognized as being an important component in industrial development and its consequent social benefits. SMEs play an essential role in advancing economic growth; they are also a significant source of new job opportunities and have a critical role in the development and spread of innovation. Fast-moving and flexible, SMEs might have an advantage compared to large enterprises as a source of innovation. They often show a greater tolerance for higher risk initiatives, a collegial organizational context that values ideas and originality, a capacity to reap substantial rewards from market share in small niche markets, improved capacity for integrating complex sets of information and technologies to create a useful outcome, and greatly increased cohesion and a sense of collective purpose, where all may profit directly from a successful, new innovation.[1]

1   European Union, "Competitiveness. Lisbon Strategy." (Czech Republic: 2009). OECD, *SMEs: Employment, Innovation and Growyh* (Paris: OECD, 1996)

The OECD states that SMEs that survive in the future might do so because of substantial changes they make to their business. Most of these changes reflect an increasing capacity in the small businesses for technology, production, services, and design. The increasing demand for speed and the need for competitive advantages for any kind of enterprise should ensure a bright future for industrial design consultants.[2]

Many business owners have recognized that design is an increasingly important aspect of their business and that in many cases design makes the difference in product success. However, the role of design and design consultants is often stated in vague or superficial terms. Brazier[3] suggests that most of the time design services are viewed somewhat skeptically. Design consultants, big and small, are retained on a work-for-hire basis and paid to complete a specific assignment—a project—with a fairly well-defined beginning, middle, and end; they generally are not given enough time or resources to get to know the client's business better.

The effective use of design by SMEs can contribute positively to business performance and competitiveness. Although product development can be a successful strategy for any organization,[4] many small companies lack awareness of the commercial impact that investments in design can have on their business performance.[5] As a result, SMEs have been less likely to take advantage of design as a business resource. These days, companies both large and small are desperately looking for any possible source of competitive advantage, and it's astonishing that design is still as misunderstood and overlooked as it is.

At the heart of any successful, competitive business strategy lies a set of distinctive competencies that form the basis of a firm's source of sustainable advantage. An increasingly valued but still frequently overlooked source of advantage is design. Only few managers truly understand how the process of design can be consistently and successfully managed, and even fewer managers have contemplated the potential benefits that might accrue to their firms through design initiatives.[6]

The findings of a study conducted[7] with small businesses in the UK suggest a need to enhance design awareness among small firms. The firms that used design effectively found that it contributed to their business success. However, expertise in sourcing, briefing, and evaluating design efforts was varied, so that training small companies in design management skills was suggested.

The general approach to design management includes three basic steps:

Sourcing: This step refers to the method the company uses to source the designer, which might include personal recommendation, a recommendation from a government agency source, past experience, etc. Bruce points out that sourcing design is a critical aspect of design management.[8]

2 Annaleena Hakatie, Toni Ryynänen, "Managing Creativity: A Gap Analysis Approach to Identifying Challenges for Industrial Design Consultancy Services" Design Issues 23:1 (Winter 2007), 28-46.

3 Sally Brazier, "Walking Backward into Design: Support for the SME." *Design Management Review* 15:4 (Autumn 2004), 61–70.

4 Sabine Junginger, "Product Development as a Vehicle for Organizational Change" *Design Issues* 24:1 (Winter 2008), 26–35.

5 Gavin Cawood, Alan Lewis, and Gisele Raulik, "International perspectives on Design support for SMEs" *Design Management Review* 15:4 (Autumn 2004), 71–76.

6 Ibid. See also Brazier, "Walking backward into Design: Support for the SME.".

7 Margaret Bruce, Rachel Cooper, and Delia Vazquez, "Effective Design Management for Small Businesses." *Design Studies* 20:3 (July 1999), 297–315.

8 Ibid.

The acquisition of design services that are appropriate for the creation and implementation of new products, for the development of new corporate identities, for packaging, and so on, can be risky. Buying design services demands some skill by the design buyer to discern the appropriate expertise required. Some degree of "personal chemistry" and trust is needed between the designer and the client to allow for an open and creative dialogue.

Briefing: This step refers to the method the company uses to brief the designer, which should include both verbal and written methods. The briefing is a written description of what the project is all about: its purpose, target audience, proposed content, format, and schedule. The client typically provides a brief at the start of the project. However, a design firm sometimes prepares its own brief to confirm what it heard in the initial meeting, especially if it differs from what the client said in writing.[9]

Brazier states that designers encounter problems if the brief is not correctly prepared. Designers need a great deal of information to produce an effective solution for the client. The designer needs to have marketing information, such as details of the target market, the competition, the intended price points, and the objectives underlying the proposed design, details of the mode of production, and plans and timelines for implementation. Otherwise, problems are likely to arise that might result in valuable resources being wasted. Thus, both business managers and designers must prepare and read briefs very carefully. Lack of clear objectives and imperfect recognition of the plans by either party can generate a "quality specifications gap," to which Hakatie[10] refers in her description of gaps in the design consultancy process.

Evaluation: This step refers to the method the company uses to evaluate the design process. The evaluation might consider an assessment of the concept against the brief, any resulting reduction in production costs, the analysis of the design's market success, measured by criteria such as sales performance or increased awareness of the service, the brand, or the company, or the access to a new market sector.

As these examples show, there are several ways to measure design effectiveness. Aspects that influence how to measure effectiveness include the following: first consider whether the design group objectives as specified in the design brief were achieved. Second, analyze whether the resulting design adequately supported the adopted competitive strategy. Third, discuss whether the design process proceeded as planned and according to the expected timeline. Fourth, consider whether

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9 Brazier. "Walking backward into Design: Support for the SME."
10 Hakatie, Ryynänen. "Managing Creativity: A Gap Analysis Approach to Identifying Challenges for Industrial Design Consultancy Services."

11 Eric Olson, S. Slater, and R. Cooper, "Managing Design for Competitive Advantage." *Design Management Journal* 11:4 (Autumn 2000), 10–17.

12 Hakatie and Ryynänen, "Managing Creativity: A Gap Analysis Approach to Identifying Challenges for Industrial Design Consultancy Services."

13 Keith Jeffrey, D. Hunt. "Design in Small Manufacturing Companies in Scotland." *Design Studies* 6:1 (Winter 1985), 18-24; Bruce, Cooper, and Vazquez. "Effective Design Management for Small Businesses."; Olson, Slater, and Cooper. "Managing Design for Competitive Advantage."; Elias Gaona. *Micro, Small and Medium Sized Mexican Enterprises and their participation in the International Commerce* Proceedings of the Second International Symposium of Micro, Small and Medium Sized Enterprises, (Malaga: Malaga University, 2007); Turkka Keinonen, "Design in Business: Views from the Nucleus and the Periphery." *Design Management Review* 19:3 (Summer 2008), 30–36; Richard Boland Jr., Fred Collopy, Kalle Lyytinen, and Youngjin Yoo, "Managing as Designing: Lessons for Organization Leaders from the Design Practice of Frank O. Gehry." *Design Issues* 24:1 (Winter 2008), 10–25.

14 William R. Daniels, "Meetings Build Strategic Relationships." *Design Management Journal* 11:2 (Spring 2000), 63–71.

15 Anna Grzecznowska, and Emilia Mostowicz. "Industrial Design: A Competitive Strategy." *Design Management Review* 15:4 (Autumn 2004), 55–60.

16 Ibid. See also Ross Turner, "Design and Business." *Design Management Journal* 11:4 (Autumn 2000), 42–47.

17 Boland, Collopy, Lyytinen, and Yoo, "Managing as Designing: Lessons for Organization Leaders from the Design Practice of Frank O. Gehry."

18 Ricardo Skertchly, *Micro Enterprises, Finance and Development. Mexico Case Study*. (México: Anahuac University, 2000).

the public for which the design effort was actually conducted appreciates it. And finally, review whether the product performs as expected in the marketplace (e.g., with respect to sales volume and/or market share).[11] When there is an inconsistency between expected and experienced design service, another quality gap appears in the design consultancy.[12]

Previous research[13] supports the premise that design skills positively affect small business performance, but only if they are effectively managed. These studies suggest that one of the major causes of design project failure is the lack of senior management commitment to design. Further, Daniels[14] points out that the most common cause of project failure is the inability of the company manager to define the project's requirements at the outset.

In reference to management's understanding and commitment to design, Grzecznowska and Mostowicz[15] surveyed small manufacturing Polish companies. The survey revealed that more than forty percent of the enterprises recognized design to be one of the main factors contributing to commercial success. Interestingly, this opinion was also expressed by managers from companies that rarely made use of design services. These findings suggest that many companies used *ad hoc* or unstructured methods to design and develop their products. In sum, it is assumed that many companies, mainly SMEs, have no formal method to control design development.

Managers frequently have an enormous misunderstanding about design. Most business people perceive design as superficial, irrelevant, and expensive.[16] A closer relationship is needed between design and business strategy, but for that to happen, designers and business people must first understand each other. Business owners and managers should see design as a value-added activity that can, if properly managed, create an all-important point of differentiation in a world in which most products and services are becoming commodities. Design can influence the way customers view a company's products and services and the way staff members view their employer. Design can make clear what a company stands for and what makes it different from the rest.

Raising design awareness among businesses is the biggest challenge for the design world. Managers who open themselves to an appreciation for design's expansive influence will find that organization change comes more easily, is more effective, and reinforces itself over time. In short, it´s worth trying to get involved.[17]

Mexican Context for SMEs

In Mexico, SMEs have several characteristics in common. For example, SMEs are very important in job creation, providing more than fifty percent of the national employment.[18]

As a result of the North American Free Trade Agreement (NAFTA), the trade between Mexico and its most important partner, the United States, has grown exponentially, and this growth has had a significant effect on most business sectors, including industrial and service sectors. As a result more competition and consolidation have forced SMEs to seek out professional consultants, such as designers and marketing experts.[19]

Mexico is a country where the cost of design is still perceived as an expense and not as an investment. Although there are several professional design consultancies, clients need some design culture. We could say that services are there but businesses have to have some degree of a design culture to use them. Clients need to understand the importance of a professional design system.

Ivy and Chao[20] suggest that supporting SMEs is important because they have positive effects on political and social stability. The distribution of economic power through a system of SMEs leads to a more favorable distribution of power in society in general. The Mexican government has noticed these positive effects and has recently started to establish and support programs assisting SMEs to make them more competitive.

A great deal of research already exists on design management in small and medium U.S., European, and Asian firms and the commercial effect that design investment has on their business performance.[21] However, there is very little research on how Mexican SMEs manage design. The assumption is that many small and medium-sized Mexican companies, like many small and medium-sized companies all over the world, lack awareness of the influence that design investment can have on their business performance. certainly, the Mexican context presents some other particularities related to design management. Therefore, the aim of this article[22] is to document how certain Mexican SMEs use professional design services and to examine their current approaches to design management.

Mexican Enterprises and Selection Criteria
The Mexican National Institute of Statistics, Geography, and Informatics (INEGI) classifies the micro, small, medium, and large enterprises by the number of people employed, which is usually divided as follows:

Micro-enterprise: from 1 to 15 persons
Small enterprise:from 16 to 100 persons
Medium enterprise: from 101 to 250 persons
Large enterprise: more than 251 persons

According to Gaona,[23] on average, 99 percent of the total number of economic units in Mexico are micro, small, or medium size enterprises. They generate 79.6 percent of the country's jobs and contribute 52 percent of its Gross Domestic Product.

19   The Economist, "Optimism in Mexico for SMEs Goes Down." *The Economist*, 5/31/2009.

20   Ivy Chan, and Chee-Kwon Chao, "Knowledge Management in Small and Medium Sized Enterprises." *Communications of the Association of Computing Machinery* 51:4 (Autumn 2008), 83–88.

21   Jeffrey, Hunt, "Design in Small Manufacturing Companies in Scotland."; Bruce, Cooper, and Vazquez, "Effective Design Management for Small Businesses."; Olson, Slater, and Cooper, "Managing Design For Competitive Advantage." ; Brazier. "Walking backward into Design: Support for the SME."; Cawood, Lewis, and Raulik, "International Perspectives on Design Support for SMEs."; Grzecznowska, Mostowicz, "Industrial Design: A Competitive Strategy."; Chan, Chao. "Knowledge Management in Small and Medium Sized Enterprises."

22   This article is the result of a masters thesis project carried out at Arizona State University under the direction of Dr. Jacques Giard. The study started with a small sample of Mexican SMEs and has been continuously actualized, increasing the sample from 9 to 20 interviews with managers.

23   Gaona, *Micro, Small and Medium Sized Mexican Enterprises and Their Participation in the International Commerce.*

The micro-enterprises in Mexico have been a consequence of the recurring economic crises and limited employment opportunities. When people lose their job or find no job, they turn to self-employment. Therefore, they create temporary enterprises that last until the owner finds another job and becomes a salaried worker again.[24] Thus, the micro enterprises in Mexico are usually ephemeral and have low rates of innovation because the entrepreneurs of such companies have no intention of devoting their lives to the entrepreneurial activity. In contrast to micro enterprises, the SMEs are usually created under specific goals of consolidation and with several purposes of growth, competitiveness, and innovation.

Considering these characteristics of Mexican companies, it is logical to assume that design activity in micro enterprises must be very low and that design activity is likely much higher in SMEs. Despite the differences in the numbers of employees, the SMEs in Mexico have several characteristics in common: they tend to be managed by their owners in a personalized way and not through the medium of a formalized management structure, they rely on a small number of clients, they likely face significant competition, and they operate in a single market or in a limited range of markets.[25]

The study included a specific sample of SMEs, with regard to the importance that these kinds of companies have on the Mexican economy and the commonalities in their features, with the assumption that the design activity and innovation are important elements of the company's performance.

The INEGI classifies companies in the following sectors: manufacturing enterprises, private service enterprises, public service enterprises, and commerce. Manufacturing enterprises are an important source of jobs, with 435,436 economic units and 4,522,799 employees (INEGI, 2008). Furthermore, manufacturing enterprises in Mexico are more concerned about innovation, compared to other companies. Thus, we assume that these companies are more involved in professional design activities, and design would find its most logical position in these firms.

The manufacturing enterprises are divided into several subsectors according to the main activity of the company. Food, textile, and wood products are the most important in terms of the number of economic units and of employees. Therefore, the study was mainly oriented toward Mexican SMEs in the food, textile, and wood product subsectors of the manufacturing sector. More specifically, the sample of the study consisted of twenty small and medium-sized manufacturing enterprises located in the State of Mexico[26] and selected according to the following criteria:

Enterprises that have between 16 and 250 employees
Manager-owned
Enterprises located in the State of Mexico
Enterprises that have used design services
Manufacturing companies from the food, textile, and wood product subsectors

24 Emilio Zevallos, "Small and Medium Sized Enterprises. Rethinking Concepts." *Free Enterprises*, 2001, 16–18."

25 Julio Frías, "Strategic Design Management" *a! Diseño*, 2008, 70–72.

26 Mexico is geographically a very large country divided into 32 states. The State of Mexico is one of the most industrialized states in the country. (INEGI, Economic census of 2008).

Methodology

After selecting the Mexican SMEs according to the criteria given, data collection began using semi-structured interviews focused on the following topics:

Company information: Products and services
Size (number of employees)
Age of company
Product specifications: Sources of new ideas
Innovation
Market strategy and research
Life between redesigns
Design process: Formal procedures for sourcing and briefing
Budgets
Prototypes and testing
Design project: Why was it carried out?
Was it successful?
How is the success measured?
Attitudes toward design: Plans for future products
Appreciation about costs and payback of design
Importance of design for performance

The study analyzed the design process in three parts:

1. Concept (generation, definition, objective, and direction)
2. Development (sourcing, briefing, communication, resources)
3. Final design (success evaluation criteria, deficiencies, and assets)

For the interview, the SMEs' owner-managers were selected because they are the decision-makers in the Mexican context. There is a clear bias in the selection of the companies: they were chosen because of their known association with designers or design firms. All the respondents were interviewed at their work place; all were allowed to expand on themes.

Findings

The study presents information of the twenty[27] design projects that were carried out by the twenty Mexican SMEs. The research findings are based on the data collected through the interviews and the data found in the literature review. Based on these data sources, the study tried to compare the Mexican SMEs' design management practices with the literature review to draw conclusions about the issues facing Mexican SMEs and the integration of design into the general business process.

Some of the relevant issues of the data collected are summarized in a quantitative way:

27   Because of confidentiality agreements with the managers, the companies' information and the specific design projects are not provided.

Projects

Most of the projects undertaken by the managers (85%), which in some cases were the only design project conducted with professionals, consisted of graphic design projects. Projects included logos, labels, catalogs, and signage design projects.

Objective

About two-thirds (66.6%) of respondents pointed out that one of the main objectives of the project was to build up a good image of the company, which in some way suggests that managers consider that image is an important factor for the company's success.

Sourcing

About three-quarters (77.7%) of respondents pointed out that the method to source their designer was by personal contact (e.g., friends, relatives, personal recommendation, or students).

Almost half (44.4%) of respondents based the selection criteria in the confidence they had on designers, and one-third (33.3%) based their selection criteria on the experience and ability of designers. Only in one case was the selection based on the portfolio of the designer.

Briefing

All of the briefings were mainly verbal: in just two cases was it also written, and in two other cases sketches were used (22.2% total).

All of the respondents claimed that the designers did not rewrite the briefing, and none of the companies used external help for the briefing process.

In almost all cases (88.8%), the manager explained the characteristics of the project to the designer.

Almost all of the companies (88.8%) pointed out that the briefing included the general characteristics of the project and the company needs.

Design Concept

In almost all of the cases (88.8%), managers were the ones who defined the rough concept of the project, which clearly shows that managers have a great influence in the company's activities and decisions.

Two-thirds of respondents (66.6%) declared that they had weekly meetings with designers to approve the design concept.

Almost all of the final design concepts (88.8%) were approved by the managers of the companies.

Two-thirds of respondents (66.6%) declared that they did not use external help in defining the design concept, and one-third (33.3%) said they used market surveys and external help to decide the final design concept.

Evaluation

> About three-quarters of managers (77.7%) responded that the product of the design process was successful.

> Nearly half of the participants (44.4%) used clients' opinions as evaluation criteria; almost one-quarter (22.2%) based the evaluation on sales; another 22.2% based the evaluation on the fulfillment of project requirements.

> Approximately half of participants (44.4%) used clients' opinions as external help for the evaluation; the rest of participants didn't use external help at all.

> All participants considered design to be either very important or important for the company; however, most of the companies (88.8%) have no established budget for design.

Companies

> About two-thirds of the companies (66.6%) that participated in the study are completely family managed.

Conclusions

The data collected clearly show that certain Mexican SMEs have a range of business needs for design. The data also show that SMEs have varying levels of awareness and competency to manage design effectively.

The companies included in this study are clearly differentiated. On the one hand, there are medium-sized companies that have had more experience with design projects; they have a better process in place to manage design than small companies, despite the fact that the knowledge has been mainly intuitive. On the other hand, some of the small companies have had little experience with design and therefore show a deficient design management process. Based on this data, we can conjecture that the awareness of design management might be related to the size of the company and therefore with the economic situation of the firm; the bigger the company, the greater the awareness of design management.

All the companies of the study recognized the benefits of design. They all consider design to be a useful tool to increase sales and to create a better image and, therefore, presence in the market. Nevertheless, there seemed to be a limited understanding and commitment to design by management, despite the fact that most of the interviewees responded that design was very important. In some cases the company uses design services but without cost, and it seems that the manager has no intention of investing more money in the process of design. Furthermore, these companies do not have a department focused on new product development; instead, the sales department adds this task to its various functions. In other companies, the manager believes that graphic design is a simple task that can be undertaken by himself or by a non-professional designer. In other cases, the companies use design constantly

because the owners are designers, but there is no well-developed method to apply and evaluate the design process and its results. The evaluation of projects is frequently conducted according to the owner's perceptions.

The data presented a clear pattern related to the sourcing of design services. Design services are usually obtained through the collaboration of design students or through friends, relatives, or personal recommendations. According to responses, owners apparently look mainly for someone whom they already know and therefore whom they can trust.

Some companies have used design services, but the owner then executes most of the designs, and a few others accept that the need for design has been the result of some production mistakes. Although owners seem to recognize that design is a very important asset for their business, they have not implemented any strategy or method to incorporate design management, innovation, and evaluation of design outcome. In some ways, as Hakatie[28] states, this lack of strategy is symptomatic of a limited perception of the industrial design services process as an accumulating, long-term investment.

The data also showed that much of the design work is done by the owners, who often have no design training. This phenomenon has been described as "silent design," which means that the work of designers is done by other people, like company managers. According to the data, this situation may arise because of a false sense of expertise developed by the managers. This phenomenon may be promoted by the ease of use of design software or by the proximity of owners and clients, which makes the managers think that they know all their clients' needs and preferences.

Another important issue revealed by the interviews is that most of the companies use verbal briefings to explain the design project to designers, and many of these briefings are not well developed. In all the cases, there was neither a written design brief nor a rewritten design brief by the designer to confirm that a common understanding had been achieved before the project began. Therefore, we can suggest that the lack of a common understanding may be the reason that the design outcome in some cases did not meet the expectations of the client.

Some of the recurring deficiencies found by managers during the design process were the lack of understanding of the managers' needs, delays in the design process, and lack of experience. Based on these responses, it becomes clear that communication, whether written or oral, is a very important aspect in the design management process. According to Sánchez,[29] designers have three challenges when participating in strategic management processes. They must clearly understand the important issues to managers, they must identify the ways in which they could most usefully contribute to managers' strategic decision processes, and they also must learn how

28   Hakatie and Ryynânen, "Managing Creativity: A Gap Analysis Approach to Identifying Challenges for Industrial Design Consultancy Services." *Design Issues* 23:1 (Winter 2007), 28–46.

29   Ron Sánchez, "Integrating Design into Strategic Management Processes." *Design Management Review* 17:4 (Autumn 2006), 10–17.

30 Some of these characteristics appear in a study by Michlewski about design attitude, which reading is highly recommended to increase and reinforce the design abilities that managers most appreciate. Kamil Michlewski, "Uncovering Design Attitude: Inside the Culture of Designers." *Organization Studies* 29:3 (Summer 2008), 373–392.

to communicate their potential contributions using language and concepts that managers understand. Only in this way can communication allow managers and designers to work together to achieve a common understanding of the project's needs and aspirations.

Some of the assets identified by managers of the study were the willingness and collaboration of the designers. These positive aspects, plus an efficient performance and immediate resolutions to problems, were some of the most appreciated elements of the design process.[30]

The data collected show that the skill levels of design management between companies vary. Therefore, the differences suggest that some companies may need extensive training in the design management process—planning, organizing, implementing, monitoring, and evaluating design—while others may need training mainly in the designer's sourcing, the briefing process, and the evaluation procedure.

The data created a pattern related to the kind of design developed in the various companies. There is a clear tendency to use graphic design, but not industrial or product design services. Despite the fact that the companies manufacture products, the participation of designers in this process is absent. This tendency may suggest that managers, even though some are industrial designers, have neither enough time nor enough knowledge to implement a good product design management process. Further, the fact that they do not consider it important to hire professional designers to develop new products reflects a deficient knowledge of the benefits that the effective use of industrial and product design may bring to the company's performance.

In general terms, what the data suggested was that design is seen in terms of a buy-in stylistic commodity—an external process that may be bought, sometimes inexpensively, and used when required rather than being an integrated and necessary business resource. Therefore, most of the Mexican SMEs interviewed indicated that design exists as an improvised intervention within a complex reality, where owners-managers have to develop a multiplicity of roles, working as sales agents, in marketing, as operatives in manufacturing, or even doing design for their companies. Thus, it is evident that owners-managers do not have enough time and do not give enough value to design to develop methods or strategies related to design management.

The first priority of the companies, of course, remained the same: get the product(s) out to the customer. Consequently, these SMEs, mainly in the small firms, operated on a crisis management basis, where managers were often too busy dealing with short-term pressures to develop an appropriate design management process. It is pertinent to mention here that all the companies of the study were companies with local markets, where the benefits of the use of design are not seen as a competitive advantage.

31 Hakatie, Ryynänen, "Managing Creativity: A Gap Analysis Approach to Identifying Challenges for Industrial Design Consultancy Services."; Jeremy Alexis, and Zia Hassan. "Launching the Dual Degree: Creating Business-Savvy Designers." *Design Management Review* 18:3 (Summer 2007), 49–54; Boland, Collopy, Lyytinen, and Yoo, "Managing as Designing: Lessons for Organization Leaders from the Design Practice of Frank O. Gehry."

The data also suggested that the designers who did work with the companies showed a passive attitude. They seemed not to pay careful attention to business needs. Therefore, some designers were unprepared and inexperienced in business affairs and had a limited knowledge of design management. The design education system might be part of the problem here, promoting industrial design programs of study that are product focused without considering broader business matters. Some studies[31] put a special emphasis on this problem. They argue that professional motivation and education are mainly focused on producing design solutions, limiting the effort toward network management issues. It is undeniable, however, that the entrepreneurial world today is demanding business-savvy designers.