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**HARNESSING THE ‘ESSENTIAL TENSION’ OF DESIGN:
THE COMPLEX RELATIONSHIP BETWEEN THE FIRM AND DESIGNER
CONSULTANTS¹**

WORKING PAPER

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¹ Part of this research has been developed during my visiting period at Birkbeck College – University of London as a DIME Fellow.

ABSTRACT

A central factor which characterizes design-related innovative activities is that a major source of knowledge – that is designers – is very often located outside the firm. This raises a central management issue for the firm and unavoidably generates a tension between designer consultants and the firm which I name *the essential tension*. The aim of this paper is to shed some light on this complex relationship on the ground of the evidence provided by a multiple case study. The findings confirm that designer consultants can make a substantial contribution in enhancing firms' innovation capabilities. We show that a better understanding of the types of knowledge that designers need for their activity is key. This affects the way designer consultants are integrated within the organizational structure of the firm, and it also impinges on the strategies put forward by firms to manage this relationship in order to gain a competitive advantage driven by innovation. Implications include the crucial role played by the product manager, the strategies to foster trust and to coordinate designers.

Keywords: industrial design, innovation, product development, case study

“The heads of the marketing office always repeat the same stuff the product must be simple to manufacture, original, innovative, and cheap!”.
(Designer)

“The idea that a designer may step in with a sketch on a piece of paper and tell you this is a lamp is no longer acceptable for us”
(Marketing responsible of a lighting company)

1. INTRODUCTION

In the prominent essay “The Essential Tension” the philosopher of science Thomas Khun (1977) describes conflicting tendencies of innovation and tradition in science. He states that “very often the successful scientist must simultaneously display the characteristics of the traditionalist and of the iconoclast” (Kuhn 1977). The *essential tension* is the balance between conservative and innovative approaches, tried-and tested or new directions. Crucially these two attitudes are both appropriate and need to coexist.

A central factor which characterizes design-related innovative activities is that a major source of knowledge – that is designers – is very often located outside the firm. As Walsh put it “unlike the institutionalisation of R&D, in general an increasingly in-house phenomenon over the past century, the institutionalisation of design *in a separate, service sector* has increased over the century.” (Walsh, 1996, p. 523). This poses some demanding challenges for the firm in terms of management, organization and strategy. First, designers belong to a different environment and have a diverse background and philosophy vis-à-vis firms’ managers. According to Walker (1990, p. 146) designers and managers belong to “two different tribes” anthropologically different. Secondly, firms need to maintain their style which is often unique and identified with the brand (i.e. Apple, Bang & Olufsen, Artemide etc.) across the different designer consultants they collaborate with. However, designer consultants can play a paramount – say essential - role in bringing fresh ideas and competences within the firm, as well as experimenting new processes, concepts and solutions. Therefore, the relationship between external designers and the firm is complex and unavoidably generates some form of tension which I shall refer to the *essential tension*. It is “essential” as firms which succeed in managing this relationship might be able to gain a sustainable competitive advantage within fast-changing environments.

The role of external designers has been addressed by some studies along two main directions: *i.* the complex interaction between designers and managers (Bruce and Cooper, 1997; Ravasi and Lojacono, 2004; Ravasi et al., 2008); *ii.* the strategic choice between in-house and outsourced design (Bruce and Cooper, 1997; von Stamm, 2003). This literature is reviewed in depth in the next section. Notwithstanding scholars have acknowledged the fundamental importance of the role played by designer consultants, the empirical research has been so far quite scarce and not systematic. The aim of this paper is to shed some light on the complex relationship between designer consultants and the firm on the ground of the evidence provided by a multiple case study. Specifically, the analysis is carried out along the following dimensions: *i.* the types of knowledge involved in the generation of design innovation; *ii.* the integration of designer consultants along the product development process of the firm; *iii.* the strategies put forward by firms to manage this relationship.

This study's findings confirm that external designers can make a substantial contribution in enhancing firms' innovation capabilities. I will show that a better understanding of the types of knowledge (firms-specific and industry-specific) that designers need for their activity is key. This affects the way designer consultants are integrated within the organizational structure of the firm, and it also impinges on the strategies followed by firms to manage this relationship in order to gain a competitive advantage driven by innovation.

The empirical analysis is based on a multiple case study covering several industries carried out in Italy in 2009. Eighteen direct interviews with designers, consultants and firms that are leaders in design across several industries were carried out focusing in particular on *product design* in the manufacturing sector. The study begins by reviewing the literature. Next a description is given of the research method, followed by a presentation and discussion of the results. Finally, the last section discusses the managerial implications and suggests some further research.

2. LITERATURE REVIEW

The role of design in business has received attention mostly by the management-related literature. Since the 1980s scholars have started investigating the relationship between design and companies performance (Kotler and Rath, 1984), as well as competitive advantage (Lorenz, 1986), both based on case studies. In the last decade, a significant number of studies carried out by the "Design Innovation Group" at the Open University (Walsh et al., 1992; Roy, 1994; Roy and Potter, 1997b; Roy and Potter, 1997a; Roy and Riedel, 1997; Roy, 2000; Whyte et al., 2007) and other scholars (Gemser and Leenders, 2001; Mozota, 2002; Perks et al., 2005) have investigated the relationship between design activities and firm performance in a more systematic fashion.

The impact of design activities and their collaborative pattern on a firm's innovation performance has been explored using micro-level data from the Community Innovation Survey in Belgium (Czarnitzki and Thorwarth, 2009). Another recent study based on more than 5,000 European firms shows that clusters of firms in which design is carried out together with technological and organizational innovation exhibit a better economic performance (Filippetti, 2010). The importance of design has been also explored in relation to the economic competitiveness across different countries (Gisele et al., 2008). The authors show that more advanced economies have been exploiting design as an asset for their economic advantage while developing countries have disregarded design as a tool for economic and social development. In general, what these studies try to demonstrate, is that there exists a positive effect of design activity and innovative design on different measures of competitiveness, competitive advantage and performance at the firm (and in one case at the country) level.

In the last decade some studies have also been focusing on important aspects in design management, such as the integration of the design activities within the firm's organizational structure. (Walsh, 1996; Bruce and Cooper, 1997; von Stamm, 2003; Perks et al., 2005; Utterback et al., 2006; Whyte et al., 2007). Other scholars have explored the capabilities associated with successful design in global product markets along four dimensions: *i.* functional; *ii.* aesthetic; *iii.* technological; and *iv.* quality (Scott Swan et al., 2005). Other studies focused on identifying the success factors for design management, ranging from organizational structure's measures, to the presence of support technologies and knowledge management factors (Bessant and Francis, 1997; Bruce and Bessant, 2001). This issue has been also addressed by a case study centred on the ceramic tiles industry in Italy and Spain (Chiva and Alegre, 2007; 2009) More

recently Talke et al. (2009) have argued that design newness should be considered as a dimension of product innovativeness. In addition to providing conceptual rationale, the authors also offer empirical evidence on the influence of design newness on sales performance across a product's life cycle in the car industry. The results emphasize that both design and technical newness are important drivers of sales. However, while design newness has a positive impact right after the introduction and persists in strength over time, technical newness drives sales decreases toward the end of the life cycle.

As already mentioned, some scholar have addressed the relationship between designers and firms' managers (Von Stamm, 1998; Ravasi and Lojacono, 2005). One of the problem seems to be the fact that it is not so easy to identify design activities and its role within the company (Dumas and Whitfield, 1989). A number of explanations have been put forward ranging from the illiteracy of the managers, tradition-bound behaviour, risk aversion and cost constraints (Kotler and Rath, 1984). The "anthropological" issue has also been raised as a possible explanation for the complexity of managing the *essential tension* (Walker, 1990; Bruce and Cooper, 1997). According to Walker (1990, p. 146) designers and managers belong to "two different tribes" characterized by different education and background as well as different philosophy. With this respect, managers are more inclined to think in economic and financial terms. Whilst designers tend more to experiment, try new solutions and see their product in broader terms including social factors, tastes and cultural trends. Some authors (Bernsen, 1990; Mozota, 2002) have also proposed the role of the "design manager" as a facilitator between designers and managers. A related issue which has received some attention is the choice between in-house and outsourced designers (Bruce and Cooper, 1997; von Stamm, 2003). More recently, Ravasi et al. (2008) explore the conditions of success and failure in collaborations between business firms and design consultancies trough a survey-based study of design consultancies in Italy.

3. RESEARCH METHODOLOGY: RATIONALE, DESIGN AND LIMITATIONS

The choice of a case study based research was dictated by the consideration that inquiry in this area is still at a preliminary stage. Thus, we felt it was useful to "go and see" what happens within firms and designer consultant studios. The first and most important consideration in choosing among the various possible research strategies is to identify the type of research question being asked. "How" and "why" questions are likely to favor the use of case studies or histories. Given that this case study seeks to answer a "how" research question, this makes it, according to a well-established taxonomy, an *explanatory* case study (Yin, 2003), and specifically a *multiple case study*.

It has been acknowledged that multiple-case design is more compelling, and this kind of study is regarded overall as being more robust. Eighteen direct interviews were carried out with both design consultants and firms which put design at the centre of their innovation activities and rely on external designers. The interviews were carried out between November 2008 and June 2009 in Italy. The focus was on *product design* in manufacturing firms, thus not taking into account design in the service sector which is, however, increasing in importance. The study covers those manufacturing industries in which design plays an important role in innovation activities including furniture, lighting, electrical equipment, interior design, yachts, sailing boats and fashion (see Appendix).

The units of analysis are both firms and designers. In case studies, the choice of cases does not follow a statistical sampling rule as for surveys analysis. In other words, it is not possible to select a “representative” case or set of cases. The selection of the firms and designer consultancies was based on the following criteria:

- i. different industries were chosen in order to avoid industry-biased findings and to allow to point out cross-industry differences;
- ii. the sample includes industries in which design plays a crucial role in product innovation and competitiveness;
- iii. the decision to also interview designers is based on the consideration that they can contribute to answering our research questions from another standpoint. Moreover, their experience is not limited to one industry – as is inherently true of firms – but spans different industries.

Regarding the interviews within firms, I spoke both to the product development manager, R&D manager, as well as the marketing and innovation manager depending on the organizational structure of the firm.² However, the interlocutors were always people in charge of the development of new products and thus were able to explain how design – and the relationships with designers – are integrated in their firm’s innovation process. The interviews were conducted on site and lasted an hour and half on average. The interview was open-ended and assumed a conversational tone but was based on a set of previously prepared questions. However, the questions were slightly different according to whether the interviewee was a design consultant or a firm’s manager.

From a methodological point of view, when dealing with case studies the issue of generalization is a common concern (Yin, 2003). Three major strategies have been adopted here to address this issue. First, as already explained, the most relevant manufacturing industries in which design plays a central role were covered. Second, when interviews were carried out within the firms I always asked to what extent their answers reflected a specific feature of the company or represented a common characteristic of their whole industry. Finally, an added value of interviewing designer consultants is that they never work for a single firm or industry. Thus they help me to generalize the results arising from the firms’ interviews. Additionally, complementary sources of information to the direct interviews have been used, i.e. specialized journals, newspaper articles and a recent book including more than fifty interviews with famous designers (Follesca, 2009). These sources were important as they acted both as a test for the findings at the firm level and as a means for generalization.

The limit of this approach is that it focuses only on a number of medium and large firms which represent excellence in product design in Italy. From a methodological standpoint this can be defined as an issue of *external validity*, that is the problem of knowing whether a study’s findings are generalizable beyond the immediate case study. The extent to which the findings can be extended to other typologies of firms – i.e. small and service firms – is something which we cannot take as given and needs additional research.

² In the remainder of this paper, we will refer to the interviewee within the firms as firm’s manager.

4. THE CASE STUDY FINDINGS

The presentation of the results is divided into three main parts. In the first, the types of knowledge involved in the generation of design innovation is explored divided in firm-specific knowledge and industry-specific knowledge. This is key to understand the nature of the relationship between the firm and designers as well as the extent of their involvement within the firm. In the second part, the role of the designer consultants is investigated within the firms' organizational structure along the product development process. Finally, the third part discusses how firms manage this complex relationship in terms of the rationale, major problems encountered and the strategies put into practice.

4.1. Knowledge for design: production factors and market factors

As a designer said “the heads of the marketing office always repeat the same stuff: the product must be *simple* to manufacture, *original*, *innovative*, and *cheap!*”. This amusing sentence is extremely effective in summarizing the range of knowledge designers need in order to develop design innovation. While back in 1925 in Europe Le Corbusier titled his book “*L’art décorative d’aujourd’hui*”, the expression “industrial design” was coined in the United States, which at that time embodied the spirit of the industrial revolution (De Fusco, 1985). Industrial design has always been intimately intertwined with the *production process*. The technical-functional factors of design are in fact strictly linked not only to the aesthetic aspect of a product, but also to its materials and production techniques. In the words of a designer, “if we limit our focus to the aesthetic element, we are talking about style and art, not design”. As another designer explained, product design includes three elements with the same weight: *styling* (form), *function* and *technique*.

Moreover, as for technological innovation, design also needs to be “legitimized” by facing *market demand*. A designer told the story of a terrible coat rack he designed which has basically never sold, but is shown as part of the permanent collection at the *MoMA* of New York (Follesca, 2009). This clearly distinguishes design from art. Additionally, we need to broaden the meaning of market demand beyond the strictly economic definition to include a concept resembling some form of *social acceptability*. The fact that design is no longer limited to meeting the functional and aesthetic needs of the consumer, but rather also aims at meeting the sociological – some said ethical – needs of the people was commonly asserted during the interviews. I will show how this enters in the design process.

The market factors

The designer always has to be aware of the cost-objective³ of the product and of the market segment to target. A designer argued that in order to start working, he first needs to know a number of specific elements regarding the firm: the catalogue, the distribution system, the competitors, the reference market, the productive potential and lastly, the economic potential (if and how they are willing to invest). “Behind every project there is the work of collecting all this information which is equal to seventy per cent of the final total effort” he added. The cost-

³ Product manager usually refers to cost-objective as the full production cost of the product before the mark-up is applied.

objective, the market segment, the competitors, as well as the technical elements, are discussed at large and usually also specified in the engagement letter provided by the Product Management Direction to the designer.

As a designer explained, the production volumes foreseen by the firm are also quite relevant to the choice of the design solutions. If the firm is expected to produce a large number of products the designer can choose to use expensive production processes and techniques. On the contrary, in the case of niche products, they have to consider a very different – and cheaper - approach in terms of production process. This bears fundamental implications in terms of initial fixed investments which represent an important factor in design activity. Products are in fact produced using presswork requiring large investments for machineries and moulds which are not entirely reusable. Consequently, the different solutions that a designer can explore are bounded by the amount of investment of the firm which in turn depends on the marketing strategy.

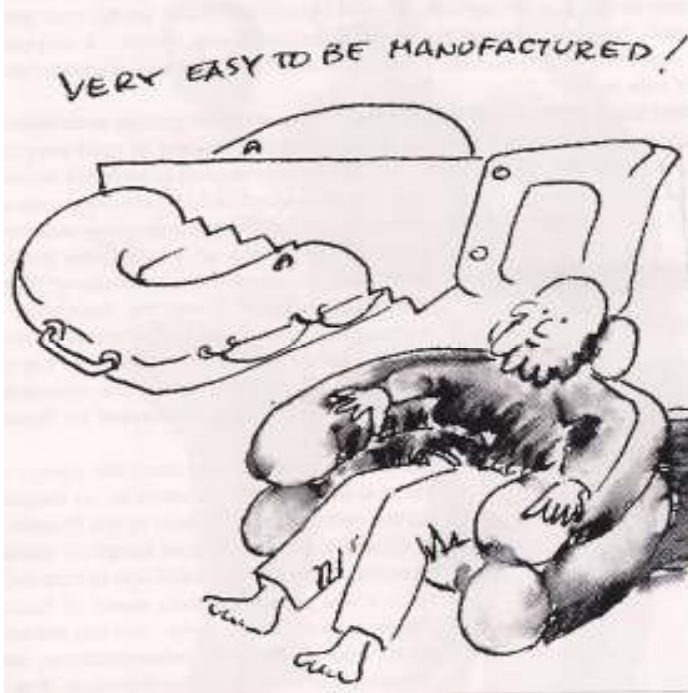
I also found some specific cases in which the main aim of a new design solution was to solve a specific cost problem. In the case of the lighting design, the use of some new materials with a memory⁴ within large spaces like churches or museums aims at saving a considerable part of maintenance costs. The story of design in the packaging and container industries are two cases in point of the contribution that design can explicitly provide to reduce costs. As a designer explained, there are three main strategies to save costs: the choice of materials, the technological production choice and the simplification of the project. Simplicity is often a deliberate goal of design. In the Apple industry the research for simplicity in the design activity is recognized to be a real obsession of the founder Steve Jobs (Kahney, 2008).⁵ However, simplicity does not mean trivial design. On the contrary, as a designer put it “*designing a complex project is easier than designing a simple one*”. I found just one field in which designers were free to design with loose cost constraints, that is, a few cases in the luxury yacht industry. In this case, given the huge amount of money some clients have, the designer is said to feel free to design regardless of costs. However, this case clearly represents the exception rather than the rule.

Finally, *social acceptability* needs to be included amongst the elements shaping market demand. In this regard a case in point is represented by the increasing importance of the impact of a product in terms of energy-consumption, degree of recycling and environmental impact. These are already key components of the design process. Specifically, the use of particular materials as well as the possibility to separate the different materials once the life of the product is over represents today a new variable that designers need to take into account. Thus, as the designers explained to us, taking environmental impact into account profoundly affects the design process. In the sense that now designers have to consider not only the way users will use an object, but their “design horizon” needs to broaden to consider the “use” of the object after its life. This affects the choice of the materials and the possibility to disassemble it at the end of its life, as well as the energy-intensity of the production process.

⁴ These are materials, usually alloys, which are able to assume different forms depending on the input given during the production process. In this way, they are said to have a memory of a previous form.

⁵ For straightforward reasons I was not able to directly interview the Apple’s manager. However, this recent book is pretty much focused on design in the way I am looking at, so I refer to it throughout this paper as an important source of information.

Picture 1 Sketch representing a designer thinking to a design solution*



* Taken from Follesca 2009.

The technical factors

In general, it can be claimed that *if you cannot manufacture it, it is not design* (see Picture 1). As a designer clearly explained “the profession of the designer is open to whoever can handle a project and has opportunities *to be in contact with production*”. In this section I will consider the technical factors linked to the production process at both firm-level and industry-level a designer must take into account in carrying out design innovation.

In order to develop a design project feasible from both the technical and cost standpoints, a “*good design project must be developed in strict contact with the company, you cannot develop a project on your own*” a designer said. This point has been stressed by *all* the interviewed companies and designers. The marketing manager of a lighting company put it straight “we try to work with designers who go beyond the concept and make us understand how an object is made in terms of materials, paintings and technologies. *The idea of the designer who steps in with a sketch on a paper and tells you ‘this is a lamp’ is no longer acceptable for us*”. This feature is crucial in the fashion industry where companies have to be ready for each collection on a seasonal basis. In some cases companies prefer to maintain a balance by avoiding too deep an involvement of the designer in the productive process in order to leave both the company and the designer some degree of autonomy. As a manager of another lighting company said “*there is the risk that our designer may become a “technologist” or an engineering and we do not want this to happen*”. We will see that in what follows that the autonomy of designer consultants is a fundamental factor for the firm itself. In general, a number of production-related factors specific of the firm need to be taken into deep account by the designer, ranging from the production capacity to the available technologies and production techniques. This is closely related to the amount of fixed investment already addressed above.

While the firm-level technical factors a designer needs to take into consideration are key and mainly related to the firm's production processes, there are also technical factors which are not specific to the firm but rather refer to the industry as a whole. A case in point is represented by the navigation industry, both engine boats and sailing boats, in which design plays a major role. In the words of the manager of a company which works in the field of yachts, "these boats are an object of ostentation, *and design is thereby their best ally*". Usually in this sector the designer responsible for designing the boat is not also involved for the interior as they are two separate projects. Once the first boat has been made, with heavy fixed investments for the production process, the interior can change depending on the models and in some cases as a result of a *customization* process for a specific client. As the R&D manager of another yacht company explained, there are several fundamental constraints you need to take into consideration in designing a boat. The most obvious is the criterion of hydrodynamics, even though designers are usually helped by firms' engineers for the part of the boat "under the water".⁶ But there are also other, less obvious, constraints which must be taken into consideration. Some are of a technical nature, such as the positioning of technical spaces and of the various slopes of the boat. Others have a more *internal* nature, such as the design of beveled edges and the consideration that people will walk barefoot onboard.

The involvement of the designer in technical elements typical of the industry is well established also in the lighting engineering sector. As the *Guzzini Lighting* R&D department manager explained, with regards to their industry, there are a number of technical elements which play a crucial part in the development phase: temperature, components, wiring, dimensional characteristics, safety standards, and life span of the luminous source. The characteristics of all these elements and their interactions have to be taken into consideration all together in the design of the product and require deep and specific knowledge and competences of the designer. The link between design and production is also a distinctive feature of the way the *Fiat* automotive company has carried out design since 1958, when their "Centro Stile" (style centre) was established. In order to begin designing a new model, the designers needed to be aware of a set of technical elements of the new model such as the dimensions, the guide, the habitability, the cubic capacity and the weight (Busoni, 1986).

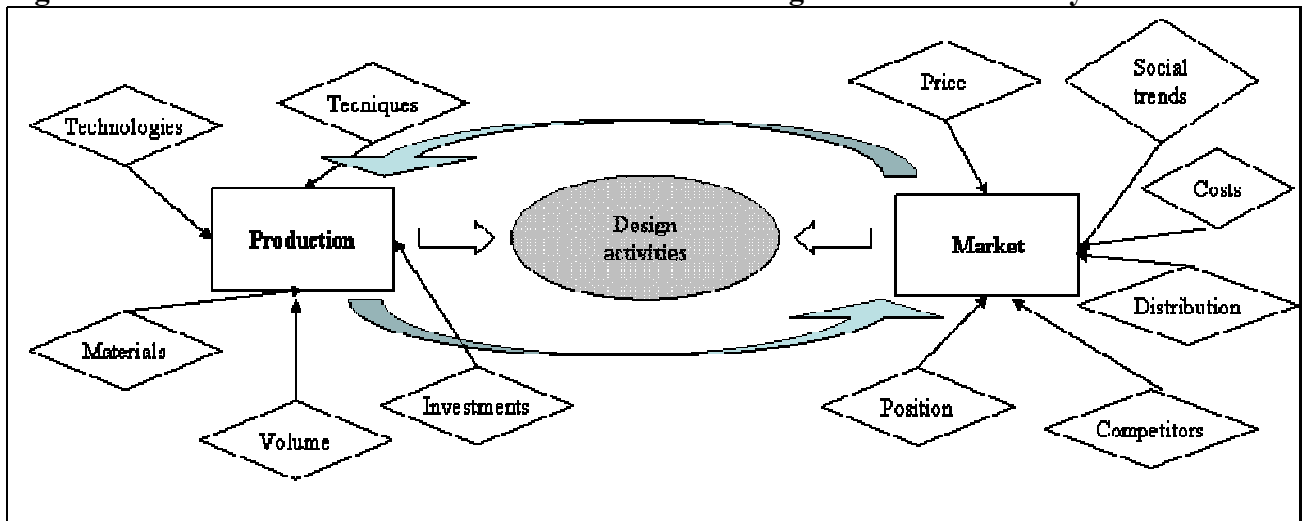
Finally, the legal framework and its evolution also represents a case in which industry-specific elements affect design. For example, in the case of the kitchen hood industry, they explained to us that by 2012 kitchen hoods will need the "energy label" as happens today with household electrical appliances, thus introducing new constraints into the design activity, i.e. safety distances. This already applies in the boating industry and the electrical components industry in which regulations regarding safety are quite strict.

Summing up, I have shown in this section how the knowledge related to market and production factors of the firm and the industry is key in the design innovation process. Even though they have been treated them separately, it should be clear that the two sets of factors are closely interrelated and the design process is a matter of putting all these things together, in a word, it is a matter of *coordination*. We have seen how the technologies, materials and production processes are chosen depending on a number of market factors, in particular the reference market, the expected price, the production volumes and the initial and foreseen investment in fixed capital. In carrying out design innovation, designers need to take into consideration all these elements as a whole as summarized in Figure 1. This remarkably affects the nature of the

⁶ Aerodynamics does not play an important role due to the low speed they can reach.

relationship between designer consultants and the firm. In the next section I will show how these competences are organized along the product development process of the firm.

Figure 1. Technical factors and market factors in the design innovation activity



4.2. The integration of designer consultants along the product development process

We now turn our attention to exploring how the design activity of the external designers is managed along the product development of the firm. Across all the interviewed companies, it clearly arises that external designers work in tandem with the product development department from the very beginning of the conceptual phase. Also in the case of the Apple company, close collaboration with the software production manager from the beginning of a new project is a distinctive feature of the company (Kahney, 2008). During the conceptual phase, the designer continuously interacts with at least three functions of the firm: marketing, product managers and R&D department (when present).⁷ This was well explained by a project manager: “During development, a model is usually changed depending on materials and other technical problems. In this phase the designer is deeply involved in searching for new materials or developing a new solution to solve these problems. However, all the modifications need to be evaluated in terms of cost impact”.⁸ The never ending *querelle* on costs between designers on one side and product managers on the other was by and large confirmed.

The output of the conceptual-phase process is generally a prototype. The designer plays an important role in evaluating the consistency of the final results with respect to the original idea. Once the model is approved and it passes to the engineering and production process, typically the involvement of the designer is over, unless the model needs to be heavily changed for some reason. Some small contribution by designers can be required during the engineering phase if any important changes to the product are needed.

In a few other cases I found that designers were asked to “dress” a product already developed from the technical standpoint. In the case of *Faber*, in the conceptual phase the first step is the *technical design* and secondly the designer is required to *dress it*. For example, they developed a new kitchen hood with a new silencer system, but the engine resulted quite cumbersome. Then a

⁷ Of course this depends on the internal organizational structure and division of labour of the firm. What is important here are the three sets of competences of the three areas which designers need to work with.

⁸ Again, the interplay between the technical factors and market factors is here pretty evident.

designer was asked to make a “dress” to cover it which would also give the idea of soundless softness (see picture 2). Another similar example comes from *Guzzini Lighting*, where the development of a new product was triggered by an explicit strategy of reducing energy-consumption costs. Once the technical solution was developed a designer was asked to put it into a complete solution.

Picture 2. Faber “Pearl” kitchen hood with silent technology: the design aims at hiding the engine and providing an impression of silence and quite

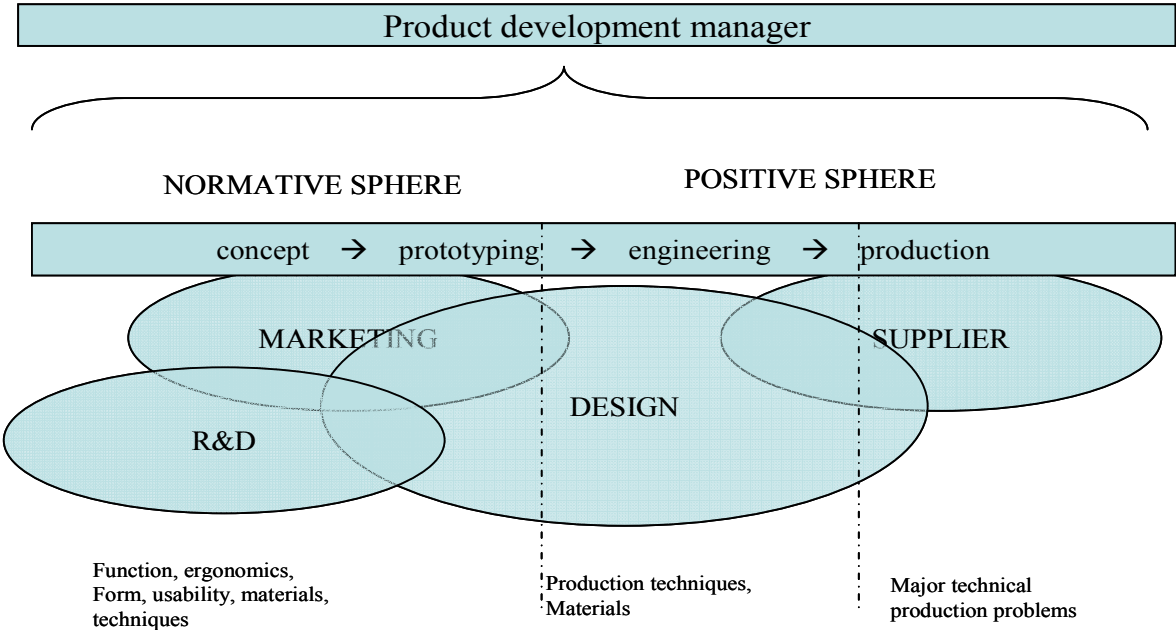


However, what clearly emerges is that designers certainly prefer to get involved from the very beginning of the conceptual phase. During this phase, the design innovation process needs to be coordinated with the production department, the marketing department and the R&D lab. These on-going relationships are recognized to be crucial. As a designer told us, “when you see that a product which looked very promising in the conceptual phase does not come out as expected, in 99 per cent of the cases it is because there was a *lack of coordination* with the production during the conceptual phase”.

Figure 2 summarizes the role of designers along the phases of the product development process, in terms of interactions with the other firm’s functions and the types of knowledge involved. The process has been roughly divided into four main parts and two macro-categories: the normative sphere (how the product should be) and the positive sphere (how the project will be). External designers are involved especially in the positive sphere, in both the concept and prototyping phases. In these phases, all the types of knowledge discussed in the previous section play a part. Along with the production department, designers interact with both the marketing and R&D department if present. Designers are less likely to be involved during the engineering and production phases. This happens only whether some major technical problems arise related to the production process. In these cases designer are asked to look for a solution quite often in

collaboration with specialized suppliers. The kitchen hood in Picture 3 is a case in point. In this case the firm and the designer consultant collaborated with a supplier to introduce a new process to shade glass. Finally, the product development manager plays a crucial role in coordinating all the actors involved along the process.

Figure 2. Design along the product development process



Picture 3. A new process to shade glass was developed in collaboration with a supplier



4.3. Managing the essential tension: rationale, problems and strategies

So far the importance for designers to work in tandem with the company production and marketing areas has been largely emphasized. It arises that a close relationship is a *condition sine qua non* to put forward reliable design solutions across every sector. In principle, this should lead to a simple choice for the firm on whether to internalize designers or not: firms should obviously be inclined to internalize designers. In fact, this is not true in many cases concerning design-driven companies. In the following the main rationale for the adoption of the external strategy is first explained. Secondly, the major problems which arise in relation to the management of the relationship and the strategic solutions adopted by firms are addressed.

Designer consultants as gatekeepers

It is difficult to exaggerate the importance of the role of gatekeepers played by designer consultants. Thanks to the fact that they are involved in a number of firms across many industries they can bring a great deal of knowledge and fresh ideas into every firm they work for. This is also linked to the way design innovation is carried out. As designers like to emphasize, the creative side of design innovation is very often based on a process of re-combination of existing elements, i.e. ideas, concepts, materials and technologies. In the words of a designer “the designer often acts by linking new solutions and areas of applicability. Innovation in design is putting things together, this is the creative part of design innovation”.

Designers are untiring observers of the world. Many designers emphasized the fact that they are continuously observing reality to get inspiration for their work. When we asked designers where they get their inspiration for developing new ideas and solutions, they always answered that they get it basically from everything that surrounds them. A designer who has worked in many different industries reported that she gets inspiration from the most disparate sources ranging from Formula 1 to Big Brother. Curiously, she told us that she is used to visiting pharmacies when she travels to observe how they manage their spaces and advertisements. This factor was also stressed by the firms standpoint. An R&D manager explained they have never decided to create an in-house design centre, because “*design needs to stay open to the tide of ideas outside*”.

All the firm’s manager emphasize the importance of the *autonomy* of both the designers and the firms. As a marketing manager claimed “*they must be free to suggest but we also want to be free to accept or not!*”. On the other hand, an interviewed designer also argued that designers prefer to work as consultants in order to keep a greater degree of autonomy. She explained that the opportunity to work in – and I would add to *learn from* - different industries is an essential characteristic of their job.

The broad role that a designer can play for a company was well explained by a designer who told us that “the designer is a privileged person, because she deals with several firms, from different industries and different processes of production [...] so you know which are the sectors which work and those which do not, what are the best systems of production, marketing and distribution. *The great added-value that a designer can give to the firm is not limited to designing a nice or ugly object, but extends to understanding what they need and what they do not, which are the unexplored sectors and the good markets*”. In brief, a designer can play a role which is far from being limited to the “form and function” idea of design, but she can give the firm fundamental suggestions in terms of new technologies, production processes, materials,

concepts and languages, thanks to their broad experiences across fields of application and sectors.

I found several of these cases basically in every firm we visited and every designer we interviewed. A designer explained that the role played by external designers with regards to cross-fertilization is not limited to *technological transfer* but can also be *conceptual*. She recently used technologies and conceptual solutions she developed for the airplane industry in a completely different sector. Similarly, *Teuco* has recently implemented solutions for their shower glasses developed in the building industry for skyscrapers and sports helmet visors. *Poltrona Frau* has implemented, for their sofas, solutions developed in the interior automotive and yacht industries. Conceptual cross-fertilization is also evident in the yacht industry, where I was explained that the birth of “open” yachts and those provided with a hard top were proposed by a designer who used to work in the automotive sector and was explicitly inspired by the convertible car model. Also in the interior design of yachts, a number of new solutions are derived from house interior design. In the lighting industry, the most relevant case is that of the Light Emitting Diode (LED) technology which is today revolutionizing this industry having been taken from the automotive sector. In all these cases, the role played by external designers is widely recognized to be crucial.

Managing the essential tension: problems and strategies

During the interviews, both firms and designer consultants have reported a number of problems concerning the designer-firm relationship. I have grouped them into two main groups.

Problem no. 1: “so far so close”. As already explained, a design project needs to be closely coordinated with a number of specific factors and competences internal to the firm. Both designers and firms confirmed that the best way to address this problem is to establish long-lasting collaborations, ranging from ten to over twenty years. In several cases firms’ responsible told me that their designer consultants are practically “internal” given the long-lasting relationship and the profound knowledge of the firm’s processes and strategies, as well as of the industry. As a firm manager said, referring to their main designer, “we do not even need to talk to her, she already knows what we want, what we need, how we work and which are our main marketing strategies and competitors”. In those industries in which the link between design and technical development is close, this is not considered an option but rather a necessity.

At the same time, most of the firms interviewed have also internal design-related competences and skills that have the role of adapting the design project developed from the external designer to the firm-specific context. This is a crucial means to establish a reliable and effective link between designer consultants and the firm insofar as they belong the same “tribe”. By the same token, it is worth noting that the product development responsible of one of the leader company in Italy in the interior design got a PhD in contemporary American literature in New York. He himself stressed the importance of this factor in making his relationship with designers easier and effective. It might tell us something about the importance for those who are in charge of managing the *essential tension* within the firm to share a common cultural ground with designer consultants.

It is difficult to exaggerate the prominence of *trust* as a means of making the relationship effective and fruitful. The importance of trust within the organization has been well recognized in the literature (Nonaka et al., 2000). However, beyond the claim that organization should foster it, it is not easy to identify the very mechanisms behind its creation. Across the firms we

interviewed, trust is fostered through a three-tier strategy: *i.* deep involvement of the designer within the firm; *ii.* stable long-term relationship; *iii.* exclusive contract with the single firm within the industry. The three elements of the strategy are complementary, as they have demonstrated to work when all are present at the same time.

Problem no. 2: elective affinity and creative diversity. The strategy of choosing long-lasting collaboration is also linked to the second main problem, that is the conservation of the firm-specific style when a company decides to collaborate with a number of external designers. The choice of collaborating with more than one designer is very common with the only exception of the boat industry.⁹ Introducing elements of creative diversity and creative chaos is recognized as an important ingredient to fostering innovative capabilities within organizations (Quinn, 1985; Nonaka et al., 2000). However, this raises an immediate problem: that is the conservation of the firm-specific style and the sharing of the firm's philosophy. Designers can have different backgrounds, way of working as well as diverse styles and philosophy. This is often the result of an explicit choice of the firm. A firm manager explained that in their case they "do not have many designers, we chose to have a precise image for our product, as happens also in the Apple and Sony cases, in these companies the brand reflects a specific design image. *Our designers need to have a sort of elective affinity with our philosophy*".

In the yacht industry this phenomenon is called *family styling*. That is, there are some features which make a yacht clearly associable with a firm's brand as happens for cars. These features are the result of a particular design that makes a yacht different from all the others. Designer consultants' models need to be consistent with the firm's family styling. Crucially, this process is a dynamic one. In the sense that designers are requested to develop new and updated design solutions but maintaining a clear recognizability of the firm's style and brand. It is not a case that in this industry the relationships between firm and designer are particularly strong and durable. Very often, a specific period of life of a company is associated to a specific designer.

A more complex strategy is the one put in place by the a typical design-driven firm (Verganti, 2010), that is the lighting company *Nemo*, of the *Cassina Group*, which has a long-standing tradition in interior design. They have established a sort of three-tier strategy as their team of external designers includes three groups: *i.* long-term team of designers; *ii.* some "big name" like the "*Foster Studio*"; *iii.* new, young emergent designers. The first are responsible for the bulk of their new products. This group of designers have a long-lasting relationship with the firm and are in tune with firm's style and philosophy. The second plays the role of designing flagship products which are usually exposed at important fairs across the world and produced in limited numbers. Finally, the third tier represents an attempt to introduce innovative design solutions by looking at young talents and assuring a turnover over time. They made explicitly that the aim of this strategy is to introduce an inherent tension across designers by introducing young and emergent people, with a very different background and preferably foreigner. In this way the firm manages to balance the tension between the need to conserve a uniformity of style and at the same time fostering creativity by introducing fresh ideas from outside. Table 1 summarizes this section's findings.

⁹ This depends on the fact that in this industry companies develop a few new models in a decade.

Table 1. Advantages, criticalities and solutions of the external designer strategy

Advantages	Problems	Solutions
<p>Autonomy of the designer</p> <p>Openness of the designer “ <i>to the tide of ideas outside</i>”</p> <p>Designers are key in transferring solutions (concepts, technologies, ideas and languages developed in other industries</p>	<p>Close coordination with specific firm factors (market and production factors)</p> <p>Conservation of firm style and philosophy over time across different design consultants</p>	<p>Long-term relationships</p> <p>Deep involvement of the designers in the firm’s processes</p> <p>Exclusive contracts</p> <p>Creation of a shared ground in terms of cultural background and language</p> <p>→ Trust</p>

5. DISCUSSION AND MANAGERIAL IMPLICATIONS

This study’s aim was to explore how firms manage the relationship with designer consultants along three main dimensions: *i.* the types of knowledge involved in the generation of design innovation; *ii.* the integration of designer consultants along the product development process of the firm; *iii.* the strategies put forward by firms to manage this relationship. In this last section the most important managerial implications arised from this study’s findings are discussed.

The results show that in order to develop successful design solutions, external designers need to have a profound knowledge about several aspects of the firm, ranging from production processes to marketing strategies. As a result they need to deeply interact within the organization. Specifically, while different practices emerged, by and large designers emphasize the importance to be involved since the very beginning of the product development process.

This is key in understanding the peculiarities which characterize the relationship with external designers with respect to outsourcing activities. First, in developing a new project the designer has to deeply interact with the firm and needs to have a deep knowledge of several firm-specific aspects. Second, successful collaboration are the result of long-term collaboration instead of spot activities. The relationship between the designer and the firm can therefore be considered as *a process of mutual understanding and mutual learning* which takes place over time. Crucially, the designer and the firm’s managers are profoundly different. This generates those problems already pointed out in the literature. In what follows I briefly discuss some solutions adopted by the firm to address this crucial problem.

I showed that the product manager responsible plays a fundamental part here as she represents the *trait d’union* between the designers and the firm. I already noticed that the fact the project manager of a company leader in Italy in interior design has also a humanistic background is worth-stressing. This represents an interesting attempt to address the communication problems which characterize the relationship between external designer and the firm’s managers. It is difficult to exaggerate the prominence of the firm’s product development responsible regarding the relationship with external designers. Hence, the choice of this person and the definition of her role within the firm’s organizational structure is crucial. Another example of building a shared context and language is represented by the fact that in several cases firms have people with specific competences in design. Inasmuch as they interact with external designers this represents an effective strategy of managing the relationship.

As far as the conditions to successfully manage this complex relationship are concerned, *trust* resulted to make the most important contribution. I showed that trust arises as a results of a strategy combining three complementary elements: *i.* a deep involvement of the designer in firms' processes; *ii.* a durable long-term relationship; *iii.* an exclusive contract with the firm within the industry. The fundamental contribution of trust was underlined by and large by both designers and firms' managers. Inasmuch designers need to have a profound knowledge of a number of aspects of the firm, such as processes, investment plan, costs and marketing strategies, firms are more likely to disclosure relevant information if designers are trustworthy. Additionally, longer relationships are key to build the *elective affinity* between the firm and designers which is a distinctive requirement for successful collaborations.

I have also showed that firms are used to collaborate with several external designers at the same time. One the one side, this represents an explicit way to introduce some form of creative variety within the organization. Firms recognized that designer consultants with different backgrounds can have a fundamental part in enriching their innovation capabilities. On the other hand, this poses a challenge in terms of coordination. This is even more complicated as it occurs in a dynamic fashion. The strategy carried out by *Nemo – Cassina* described in the previous section is a case in point. Through their three-tier strategy they manage to balance the tension between the need to conserve a uniformity of style and at the same time fostering creativity by continuously introducing elements of creative chaos and variety. This has both the result of stimulating the incumbents designers and at the same time of continuously enriching the innovative environment of the firm. However, firms need to put into practice mechanisms of coordination aiming at consistently integrating the solutions proposed by all the designers with the style of the firm. Also in this case the product development manager has proved to represent the key actor.

To conclude, the findings of this study reinforces the argument that external designer represent a strategic source of competitive advantage for the firm. Firms have made clear the importance attached to external designers in bringing new ideas and experience into their organization to foster their innovation capabilities. It is crucial for firms to “design” a reliable environment in which the *essential tension* could turn into a long-term sustainable competitive advantage. Accordingly, the contribution of this study is twofold. First, in having made explicit the crucial prominence of the different types of knowledge underlying design activity. This bears substantial consequences on the nature of the relationship between designers and the firm. Secondly, in providing some examples of practices and strategies put forward by design-driven companies regarding the effective managing of this relationship. Finally, this study suggests the relevance of carrying out further research specifically in the field of knowledge management concerning design innovation activities.

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References

- Arora, A., Gambardella, A. and Rullani, A., 1998. Division of labour and the locus of inventive activity. *Journal of Management and Governance* 1 123-140.
- Bernsen, J. 1990. Twelve principles of design management in design management: A handbook of issues and methods. M. Oakley. Basil Blackwell, Oxford.
- Bessant, J. and Francis, D., 1997. Implementing the new product development process. *Technovation* 17 (4), 189-197.
- Bruce, M. and Bessant, J., 2001. *Design in business* Pearson Education, London.
- Bruce, M. and Cooper, R., 1997. *Marketing and design management*. International Thomson Business Press,
- Busoni, B. 1986. *Il centro stile fiat. Il disegno del prodotto industriale*. V. Gregotti. Mondadori, Milano.
- Chiva, R. and Alegre, J., 2007. Linking design management skill and design function organization: An empirical study of Spanish and Italian ceramic tile producer. *Technovation* 27 (10), 616-627.
- Chiva, R. and Alegre, J., 2009. Investment in design and firm performance: The mediating role of design management. *The Journal of Product Innovation Management* 26 (4), 424 - 440.
- Czarnitzki, D. and Thorwarth, S., 2009. The design paradox: The contribution of in-house and external design activities on product market performance. ZEW Discussion Paper No. 09-068.
- De Fusco, R., 1985. *Storia del design*. Laterza, Bari.
- Dumas, A. and Whitfield, A., 1989. Why design is difficult to manage. A survey of attitudes and practices in British industry. *European Management Journal* 7 (1), 50-56.
- Filippetti, A., 2010. The prominence of design within the innovative activities of firms: A micro level analysis SSRN Working Paper.
- Follesca, S., 2009. *Pane e progetto. Il mestiere di designer*. FrancoAngeli, Milan.
- Gemser, G. and Leenders, M., 2001. How integrating industrial design in the product development process impacts on company performances. *Journal of Product Innovation Management* 18 (1), 28-38.
- Gisele, R., Gavin, C. and Larsen, P., 2008. National design strategies and country competitive economic advantage. *The Design Journal* 11 (2), 119-135.
- Kahney, L., 2008. *Inside Steve's brain*. Penguin Book, New York.
- Khun, T., 1977. *The essential tension*. University of Chicago Press, Chicago.

- Kotler, P. and Rath, A., 1984. Design: A powerful but neglected strategic tool *Journal of Business Strategy* 5 16-21.
- Lorenz, C., 1986. *The design dimension: The new competitive weapon for business*. Basil Blackwell,
- Mozota, B. B., 2002. Design and competitive edge: A model for design management excellence in european smes. *Design Management Journal* 2 (1), 88-104.
- Nonaka, I., Toyama, R. and Konno, N., 2000. Seci, ba and leadership: A unified model of dynamic knowledge creation. *Long Range Planning* 33 (1), 5-34.
- Perks, H., Cooper, R. and Jones, C., 2005. Characterizing the role of design in new product development: An empirically derived taxonomy. *Journal of Product Innovation Management* 22 111-127.
- Quinn, J. B., 1985. Managing innovation: Controlled chaos. *Harvard Business Review* 63 (3), 73-84.
- Ravasi, D. and Lojacono, G., 2004. Managing design and designers for strategic renewal. *Long Range Planning* 38 51-77.
- Ravasi, D. and Lojacono, G., 2005. Managing design and designers for strategic renewal. *Long Range Planning* 38 (1), 51-77.
- Ravasi, D., Marcotti, A. and Stigliani, I., 2008. Conditions of success and failure in collaborations between business firms and design consultancies: The designers' perspective. *DIME Working Papers on Intellectual Property Rights*.
- Roy, R., 1994. Can the benefit of good design be quantified? *Design Management Journal* 5 (2), 9-17.
- Roy, R., 2000. The long-term benefits of investing in new product development by SMEs *International Journal of New Product Development and Innovation Management* 1 (4), 281-295.
- Roy, R. and Potter, S. 1997a. *The commercial impact of investments in design*. Marketing and design management. M. Bruce, R. Cooper. International Thomson Business Press, London.
- Roy, R. and Potter, S., 1997b. Managing engineering design in complex supply chain. *International Journal of Technology Management* 12 (4), 403-420.
- Roy, R. and Riedel, J. C., 1997. Design and innovation in successful product competition. *Technovation* 17 (10), 537-548.
- Scott Swan, K., Kotabe, M. and Allred, B. B., 2005. Exploring robust design capabilities, their role in creating global products, and their relationship to firm performance. *The Journal of Product Innovation Management* 22 (2), 144 - 164.

- Talke, K., Salomo, S., Wieringa, J. E. and Lutz, A., 2009. What about design newness? Investigating the relevance of a neglected dimension of product innovativeness. *The Journal of Product Innovation Management* 26 (6), 601-615.
- Utterback, J. M., Vedin, B. A., Alvarez, A., Ekman, S., Sanderson, S. W., Tether, B. and Verganti, R., 2006. *Design-inspired innovation*. World Scientific Publishing, New York.
- Verganti, R., 2010. Design, meanings, and radical innovation: A metamodel and a research agenda. *The Journal of Product Innovation Management* 25 (5), 436 - 456.
- Von Stamm, B., 1998. Whose is design it? The use of external designers. *The Design Journal* 1 (1), 41-53.
- von Stamm, B., 2003. *Managing innovation, design and creativity*. John Wiley & Sons, Chichester.
- Walker, D., 1990. Managers and designers: Two tribes at war? In *design management: A handbook of issues and methods*. Blackwell, Oxford.
- Walsh, V., 1996. Design, innovation and the boundaries of firms. *Research Policy* 25 (4), 509-529.
- Walsh, V., Roy, R., Bruce, M. and Potter, S., 1992. *Winning by design: Technology, product design and international competitiveness*. Blackwell, Oxford.
- Whyte, J., Bessant, J. and Neely, A. 2007. *Management of creativity and design within the firm*. D. T. Piece'.
- Yin, R. K., 2003. *Case study research. Design and methods*. Sage Publications, London.

Appendix

Table 1A: firms and designer consultants interviewed

Firms	Industry	Designer consultants
Faber	Kitchen hood	Giovanna Talocci
Poltrona Frau	Furniture	Fabio Lenci
Teuco Guzzini Spa	Bath interior design	Corrado Terzi
Guzzini Lighting	Lighting engineering	Cecilia Cecchini
Canados International	Boat	Carlo Martino
Nemo – Cassina	Internal lighting	3cLab
Luceplan	Internal lighting	Saung Sook Kim
Abet Laminati	Laminates for buildings exteriors	Mani Frers
		Barzanò e Zanardo
		Federico Cedrone