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Extending design leadership to innovation strategy: Roles and tools

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This paper investigates the role of design professionals (DPs) and their tools in innovation decision-making. Given their background and capabilities, designers have emerged as particularly skilled for supporting decision-making in increasingly complex innovation contexts. However, both in research and practice there is limited knowledge on how to characterize DPs' role in innovation, in terms of key capabilities and performance implications. This paper attempts to fill this void by using seven cases from the Dutch design consultancy industry to empirically derive: (1) a set of capabilities and tools characterizing the DPs' role in the fuzzy front end of innovation (i.e. strategy and planning phase), and (2) outcome implications in terms of improved innovation decision-making.

***Keywords**: Design professionals; innovation strategy; decision-making; design roles; design tools.*

Introduction

Innovation is important for sustained competitive advantage but has become increasingly complex due to, for example, the need to combine both new product and service elements for ultimate innovation success. Successful innovation thus increasingly requires the involvement of a variety of actors with different roles and capabilities (Howells, 2006).

Design professionals (DPs) have emerged as skilled actors for supporting companies in innovation (Seidel and Fixon, 2013). Indeed, it has been suggested that for effective innovation outcomes, DPs' role in innovation should be extended from mere executors of innovation briefs to partners in the fuzzy front end of innovation.

However, there is limited insight, both conceptually and empirically, on how to characterize DPs' changing role and its impact on innovation. Perks, Cooper, and Jones (2005) made a first attempt to describe DPs' changing role in innovation through presenting a set of DPs' distinctive activities and skills for new product development. They identify a role for DPs as NPD process leaders in which DPs drive and support the entire development process and across a broad scope of functional activities. Because their focus is on the whole new product development process and not the fuzzy front end, their description of DPs' activities and skills related to this role remains, however, relatively general. Related, Perks et al (2005) do not examine in-depth the implications of DPs' activities and skills on effective outcomes. Making a connection to effective outcomes is important, in order to document design relevance in a language familiar to managers (i.e., innovation performance) and to distinguish the impact of DPs from the impact of other complementary functional specialists like marketing and R&D professionals (Moultrie and Livesey, 2014). Other authors attempted to connect the emerging, extended role of design to outcomes. However, these studies remain either conceptual or are based on anecdotic evidence (Liedka, 2014).

This paper attempts to overcome previous research's limitations by using seven cases from the Dutch design consultancy industry to empirically derive: (1) a set of capabilities and tools characterizing the DPs' role in the fuzzy front end of innovation (i.e. strategy and planning phase), and (2) outcome implications in terms of improved innovation decision-making. By describing DPs' role as a combination of capabilities and tools, we contribute to an emerging research stream looking at design as a *practice*, namely as a 'bundle of attitudes, tools, and approaches' (Liedtka, 2014, p.5). This perspective is promising for delineating a unique role for DPs: whilst design capabilities might be shared by other professionals (Brown, 2008) and design tools can be learnt and used by non-designers (Seidel and Fixon,

2013), their combination represents a distinctive, end-to-end approach to problem solving in which DPs excel. By making the connection to decision-making effectiveness we provide initial evidence for concrete and measurable outcome of DPs' capabilities and tools, thus overcoming the ambiguity and intangibility traditionally associated to the work of DPs (Moultrie and Livesey, 2014).

The remainder of the paper is organized as follows. We first provide an overview of relevant literature on the role of DPs in innovation and on the challenges of innovation decision-making. Subsequently, we explain the methodology we followed for our empirical study and present the main results. We conclude with a discussion of the emerging framework and of its implications for researchers and practitioners.

LITERATURE REVIEW

DPs can play an important role in the fuzzy front end of innovation, when innovation strategy is determined and decisions are made as regards to, for example, which markets and segments to target, with what kind of products. However, while in the literature there is increasing recognition for the role and value of DPs in strategic rather than tactical or operational activities, in practice DPs still face difficulties in claiming their strategic role to managers (Moultrie and Livesey, 2014). This seems, in part, due to a lack of insight in what DPs can actually bring in terms of capabilities and tools for effective strategizing (Liedtka, 2014) and the difficulty of connecting such competences to business and performance indicators (Moultrie and Livesey, 2014).

In this paper we focus on how DPs can contribute to effective *strategic decision-making*. In the management literature, strategic decision-making is conceptualized as prevalently analytical, linear and step-by-step (Cabantous and Gond, 2011). Particularly, decision-making includes four steps or phases: (1) problem identification and formulation; (2) information gathering; (3) generation of alternative solutions; and (4) alternatives' evaluation and choice (Elbanna, 2006; Janis and Mann, 1977; Schwenk, 1984). Below we describe these four steps in more detail. We subsequently examine, in our empirical study, how DPs contribute, via their capabilities and tools, in each of the four phases of the strategic decision making process.

The first phase in strategic decision-making is problem identification. Problem identification stems from the perception of a gap between decision maker's expectations or standards and observed performance. According to Baer, Dirks, and Nickerson (2013) successful problem formulation is determined by its *comprehensiveness*, namely the extent to which alternative, relevant problem formulations are identified in order to capture all the aspects of a problem. Additionally another important aspect of this stage is the *clarity* of problem formulation, namely the extent to which all the decision-makers have a common understanding of a problem (Vessey, 2007). According to the cognitive fit theory (Vessey, 2007) a correct understanding of the problem by all the decision makers is fundamental in order to activate the relevant models, to retrieve the pertinent knowledge, and ultimately to take an appropriate decision. A comprehensive and clear problem formulation will then lead to a better quality of the resulting decision (Shrivastava and Grant, 1985). Given their tendency to reframe problems we assess that DPs' capabilities and tools could improve the comprehensiveness and clarity of problem formulation.

Based on the problem formulation, decision makers begin collecting all relevant internal and external information. From a theoretical standpoint, innovation decision-makers tend to adopt a cumulative approach in information gathering, collecting and processing as much information as possible in order to minimize the uncertainty of the decision process (Galbraith, 1973). Thus, effective information gathering is determined by the *amount* and *relevance* of information collected (Dean and Sharfman, 1996). However, the cumulative approach requires time and might reduce the innovativeness of the decision outcome (Eisenhardt, 1989). Thanks to their different way of searching and organizing information (Michlewski, 2008), we assess that DPs capabilities and tools can accelerate and streamline information gathering.

After the problem has been defined and information has been collected, alternatives must be generated for dealing with the problem. Decision-makers can generate alternatives by retrieving ready-made solutions or by developing new ones (Mintzberg, Raisinghani and Theoret, 1976). In innovation decision-making, in order to achieve innovative outcomes the newness of alternatives and their feasibility are important (Dean and Sharfman, 1996; March, 2006). DPs' capabilities can contribute to both aspects by proposing additional alternatives, and by using their holistic approach to simultaneously consider all the feasibility drivers.

The decision process concludes with the evaluation of alternatives and the final choice. Alternatives are carefully and objectively evaluated, their factual consequences are explicitly determined along various goals, and the choice is made based on utility maximization (or on the logic of *satisficing* from a bounded rationality perspective) (Cabantous and Gond, 2011). In the context of unstructured tasks, uncertainty and uncontrollability of certain variables can make such an analytical approach challenging and leading to sub-optimal choices. Specifically two kinds of errors can occur: *Type I errors* of rejecting a superior alternative and *Type II errors* of accepting an inferior alternative (Knudsen and Levinthal, 2007). Integrating DPs' capabilities and tools in this stage might reduce the incidence of both errors by affecting the set of evaluation criteria, their weight, and their systematic consideration.

METHODOLOGY

Data collection

We adopt a qualitative research design to collect empirical data on DPs' practice and its impact on a decision-making process. As noted by Lee (1999), qualitative research designs are particularly well suited for studying dynamic, interactive processes.

We opted for a multiple case study design (Eisenhardt, 1989; Yin, 2003) and studied 7 innovation projects in-depth. We focused on innovation projects in which the innovating company hired DPs to provide support in the innovation strategy and NPD process of a new product or service.

For each case we collected data from three sources: (1) interviews with design professionals involved in the selected cases; (2) interviews with key informants from the company that subcontracted the design consultancy firm and interacted with the design professionals; (3) secondary sources such as project documentation (briefs, reports, presentations, supporting visual material), web sites and informal observations.

For each case we interviewed key informants from both the design consultancy firm and their client, for a total of 36 interviews. Table 1 provide additional information on each.

Table 1 - The Sample

Project	Project content	Design consultancy (DC)	Client (CL)	Data sources
Project A	Portfolio of new digital services – Innovation vision – Brand identity	Multidisciplinary design consultancy; Medium-sized (50-250 employees)	Sector: Digital services for public transportation Small-sized (10-50 employees)	8 interviews - DC: project manager (1), strategic designer (2), creative director (1), interaction designer (1), service designer (1); CL: project manager (1), marketing director (1)
Project B	Innovation vision – Brand identity	Multidisciplinary design consultancy; Medium-sized (50-250 employees)	Sector: Cultural institution Medium-sized (50-250 employees)	6 interviews - DC: project manager (1), strategic designers (2); CL: marketing director (1), brand manager (1), service manager (1)
Project C	Portfolio of new products – Corporate identity	Industrial design consultancy; Small-sized (10-50 employees)	Sector: Bicycle accessorises Medium-sized (50-250 employees)	7 interviews - DC: project manager (1), strategic designer (1), product designer (1); CL: NPD manager (1), R&D manager (1), product designer (2)
Project D	Portfolio of new services	Specialization: Service design Micro-sized (< 10 employees)	Sector: Healthcare product-service systems Medium-sized (50-250 employees)	6 interviews – DC: strategic designer (2); CL: project manager (2), service manager (1), marketing manager (1)
Project E	Portfolio of new products	Industrial design consultancy; Small-sized (10-50 employees)	Sector: Social entrepreneurship Micro-sized (< 10 employees)	3 interviews – DC: strategic designers (2); CL: general manager (1)
Project F	Innovation vision for a SBU	Strategic design consultancy Small-sized (10-50 employees)	Sector: Technology company Large-sized (>250 employees)	6 interviews - DC: project manager (2), strategic designer (1); CL: project manager (1), innovation manager (2)
Project G	Portfolio of services – Innovation vision	Strategic design consultancy Small-sized (10-50 employees)	Sector: Public transportation Large-sized (>250 employees)	4 interviews – DC: project manager (1), senior designer (1); CL: marketing manager (1); operation manager (1)

The interviews were semi-structured and open-ended. Each case started with interviewing the project leader(s) from both the design professionals and their client, in order to get an overview of the project history. Subsequently we alternated respondents from the two parts, in order to triangulate information, clarifying inconsistencies, and filling-in gaps. We taped and transcribed the interviews, which lasted from 60 to 90 minutes each. After each interview, the interviewer developed field notes, impressions and conclusions to be taken into account in the follow-up interview (Eisenhardt, 1989). In order to avoid respondent biased and unintended social behaviours, we followed the guidelines of Miles and Huberman (1994) by clarifying our study objectives and data collection process to the interviewees, and by ensuring the confidentiality of conversations and results.

Data analysis

The analysis followed the general approach indicated by Eisenhardt (1989) and Miles and Huberman (1994):

- ***Step 1:*** Identifying relevant quotes exemplifying design professionals' capabilities and tools used in the different steps of their client's decision-making.
- ***Step 2:*** Compiling a contact summary sheet and individual case history to record the main themes, constructs and insights emerging from the selected quotes.
- ***Step 3:*** Creating a preliminary list of construct and themes.
- ***Step 4:*** Cross-case analysis to investigate the extant to which themes and constructs recur in the cases. The cross case-analysis refined the list elaborated in step 3, by adding new entries or by collapsing existent entries into others.
- ***Step 4****:* Finding tentative relationships between capabilities, tools and the decision-making steps. We refined these initial relationships through replication logic and through comparison with extant literature. The iteration between data, literature and analysis was repeated several times.

FINDINGS

Our findings are organized as follows. We first derived a list of DPs' capabilities that emerged as relevant and valuable in supporting a company's innovation decision-making. Subsequently, we describe how these capabilities affect each stage of an innovation decision-making process, thus improving the overall decision-making outcome. Finally, we show how such positive effect on decision-making is generally achieved through the materialization of DPs' capabilities into their tools and methods.

DPs' Capabilities in Innovation Strategy

Consistently with the objectives of our study, our data reveal eight capabilities that DPs effectively use for supporting their clients' decision-making in innovation strategy and execution. Such capabilities include:

1. *Structuring*: DPs point to their clients all the steps for an appropriate decision-making process for the problem at hand.
2. *Facilitating*: DPs help clients going through all the steps of a structured decision-making process, by asking the right questions, providing valuable inputs, helping summarizing, indicating core issues.
3. *Integrating*: DPs help clients in aligning different perspectives in various moments of innovation decision-making and/or in combining different types of knowledge and expertise.
4. *Translating*: DPs help clients converting information from a certain language to another (e.g., verbal to visual, visual to verbal, tacit to explicit, explicit to tacit).
5. *Inspiring*: By providing new perspectives, insights and approaches to problem-solving, DPs help clients generating and considering new alternatives in their decision-making processes.
6. *Motivating*: DPs keep clients motivated and focused on their innovation objectives during the entire decision-making process.
7. *Co-creating*: DPs co-create the innovation decision-making outcome together with their clients.
8. *Embedding*: DPs help clients learning and retaining a certain approach to innovation decision-making and integrating the decision-making outcome in the organization.

Table 2 reports some exemplifying quotes to illustrate the DPs' capabilities defined above.

Table 2 - Illustrative quotes for DPs' capabilities

Capability	**Illustrative quotes**
1. Facilitating	In general my role has been very much to help with giving them the right tools. The second thing is that in working with these tools it was very important that I asked the important questions. How is this? How is that? Keep the process going by asking questions all the time (DP, Project D)
	So we did contribute to that. But it wasn't really… We didn't do ourselves. It's more we enabled them to do it. so I don't want to claim that. I think that's the best way to describe we helped them, we enabled them (DP, Project A)
2. Structuring	So [the DP] was our project leader for the complete management of what is the insight, how can you make a concept, what is a concept, check the concepts, financially make the business case, and then finalized (Client, Project D)
	[The DP] is a very structured person. He has this idea that you have to do it step by step. […] The way [the DP] was doing it… I can show it to you…where in very short points you can see the complete process: what you have to do. It makes it clear in our mind what we have to do, what we have to develop. His way of working is so creative, but structured. That's a good combination. Because structure you need to understand what the process will be and how long it will take. But in the process he was the one who brought the creativity. (CL, Project D)
3. Integrating	I think we are helping them making connections between what they are thinking and doing in different departments and across people with different background and functions (DP, Project C)
	What we really notices is that they are all working from different islands and they are just getting new ideas and trying to shout into the worlds or do something with it. And that's also something we tried to teach them: try to look through your brand glasses and see If this is something matching (DP, Project A)
4. Translating	And another thing I did after we defined the new strategy and accepted it, we made a translation that was much more understandable than a PowerPoint presentation. We wrote a half page document with an explanation for the employees. (…) I had to be very keen that it was exactly translated as I had it in my head, in my system (DP, Project A)
	What we mainly did is translating the positioning in the house style, (…) What we said is for example, that thanks to what [the company] developed, you will become better in your job. And mainly in the photography style we chose to show that. (DP, Project B)
5. Inspiring	That's how decisions are made right? Obviously resource-based, but also opportunity based. So we helped them seeing the opportunity together with what they already know about what it should be (DP, Project A)
	[Our company] was already [in the healthcare industry] for many years. You know the word tunnel vision? When you are already in the market, there is a tunnel vision that you do the right way. And it's very hard with your team to broaden that way. And [the DP] was the right person to make us think in another way. But very nice base, point by point, step by step. It was necessary to come out of our own tunnel (Client, Project D)
6. Motivating	It's not that I gave them such great insights. I think I gave them also pride and be aware of what you can mean if you do your job in a proper way. SO I think I gave them a little push, to get started again (DP, Project A)
	Sometimes we are a bit of their conscious, because they have a very ambitious mission and sometimes they tend to forget what their mission is (DP, Project E)
7. Co-creating	When we present several alternative solutions in a project we usually don't have our favourite. The client has to decide. We discuss with them and then we get to the favourite solution together (DP, Project C)
	So she advised us, but she also let us decide at the end. Which is good because she was convincing in why some matters are important, which is a good thing. But she didn't tell us "You have to decide to take these as your values" (Client, Project B)
8. Embedding	What we gave to them is the way of finding out what they do. So teaching them and going through the process of finding out (DP, Project C).
	My choice was to be mostly a facilitator and to have the people of the company doing a lot of work themselves. For instance if you are in the stage of finding insights with their customers […] I think it's very valuable for a company if they do those kinds of things themselves. Because if you hire a research company, it would find a lot of very valuable insights, and they would give a presentation and say these are all the things we did and these are the insights we found. And at the end of the ppt they would have a slide with the ten most important insights. And then if you ask the people involved in the project after one or two weeks what are the most important insights, they would probably recall four out of ten. So they are not…by doing that themselves, by talking to clients themselves, by analysing the insight themselves they are really part of it, they really experience the richness of the insights that they find with their clients. (DP, Project D)

The effect of DPs capabilities on the steps of innovation decision-making

In the following paragraphs we will illustrate how DPs' capabilities can improve each stage of their clients' innovation decision-making process. Additionally we show how these results are achieved through the use of DPs' tools, thus providing evidence for describing DPs' distinctive value as a bundle of capabilities and tools. For clarity purposes the stages are discussed separately, but we acknowledge that they are interdependent and subject to overlap and reiteration.

Effect on problem formulation

Our data show that DPs improve the comprehensiveness of problem identification and formulation by limiting their clients' *prior hypothesis bias* (Schwenk, 1984). Especially in uncertain circumstances (e.g., innovation) decision makers formulate problems on the basis of previously experienced problem formulations and cause-effect hypotheses. As the following quote illustrates, *prior hypothesis bias* leads decision-makers to overvalue information confirming their previous hypotheses and undervalue disconfirming information.

> *Before hiring* [the DP] *we developed new products based on what customers buy. So we were talking a lot with the dealers and the retailers and ask them what new products we should offer*. […] *We never checked whether a new product fits the portfolio or whether the customers see the connections* [with other products we offer] (Client, Project C).

As a result the problem formulation can be too narrow or even erroneous. As our data show, DPs use their capabilities in different ways to help their clients overcoming biased and narrow problem formulations. Specifically, DPs draw their clients' attention towards a broader array of drivers and key stakeholders that are generally not regarded as relevant for innovation projects (*inspiring*):

> *We also looked at the competitors from a human perspective. For instance we came out with two or three small brands that we thought would be important to them –competing brands – but they missed them. They didn't see them growing from the numbers. They just didn't think about competitors from a user perspective. They only looked at the numbers* (DP, Project C).

Subsequently, DPs use their capability of *integrating* to combine the above-mentioned drivers into a more thorough assessment of the innovation context, which then culminates in a broader and more appropriate formulation of the innovation problem.

> *They came to us and said that they needed a new website.* […] *Once we found out what kind of organization they were* […] *and the technical issues to take into account, we understood the challenges they were facing. We started to propose basic technology architecture, propose a vision of design, and propose ways to accomplish these quite radical changes. And we proposed that for them to do that, they would have to adopt a different brand* [identity] (DP, Project B).

> *We asked them to help us creating and developing new bicycle accessories with a distinctive design* […]. *They came back saying that in order to do that we should first define our vision and how we want the customers in our different target segments to perceive us* (Client, Project C).

The use of visual artefacts supports DPs in persuading innovation decision-makers about the appropriateness of a broader problem formulation, since neglected cause-effect relationships are made explicit and openly discussed:

> *So even when we are asked just for a website, I draw a map with a couple of decisions that we have to make before we start drawing that website. What I always do is trying to figure out where in this map [the client] already has a professional standpoint. And when [the client] does not have it, I suggest maybe we should get into that. Maybe not right now, maybe in a workshop later. So this map I almost always drawn* (DP, Project A).

Effect on innovation gathering

According to our data, DPs' capabilities can affect both the amount and the relevance of gathered information, by providing additional, distinctive knowledge (*impact on the amount*) and by supporting rational decision-makers in organizing and using the information they accumulate (*impact on the relevance*).

As to the first contribution, thanks to their capability of making connections across disparate insights (*inspiring*), DPs can extend the knowledge base of an innovation decision-making process through knowledge brokering, namely by using for the innovation project at hand knowledge acquired when solving different and apparently unrelated problems in different and apparently unrelated projects (Hargadon and Sutton, 1997).

> *We are somehow capable to refresh* [our client's] *knowledge on a very regular basis. They cannot do that within their own knowledge. There is a lot of what I always call 'cross-overs'. What we learn in one project we can apply in another project. What we learn in a big project for* [a big client] *we can apply in a project for a small start-up. A lot of what we do is juggling with that knowledge and find the right pack to sell to the client* (DP, Project C).

DPs further increase the amount of available information by using their capability of *translating* to help innovation decision makers to externalize their relevant tacit knowledge:

> *And the other part is that our exit point was that most of the knowledge was there internal, it was very implicit and we had to make it explicit. That's difficult, because then you are really trusting on their knowledge* (DP, Project A).

DPs' tools relying on visuals are particularly helpful in externalizing decision makers' tacit knowledge, since visuals make decision-makers' mental models explicit, tangible and memorable (*embedding*):

> *So* [the clients] *started talking about the way people travel. My natural step is to look into personas. And they said personas don't exist in our world. And I said personas always exist. And then we tried to reflect around who those people are. And they started talking about moments of travelling, and put down on the wall. And that's how we started diving into* [our clients'] *world* (DP, Project A).

As to the impact on the relevance of gathered information, DPs' help innovation decision makers to identify important information and relevant connections across information (*facilitating*), thus supporting them to cut through masses of information instead of becoming overloaded by it.

He also helped us to select the competitors in the right way. Indeed we have three different kinds of competitors. And we found that we have to look differently at each of these three different types of competitors. […] *Before it was just 'we have competitors', and then a long list* (Client, Project D).

Once the relevant information has been identified, DPs recur to their capability of *integrating* to help their clients organizing and synthetizing information in key insight that can be used as inputs for the subsequent stages of decision-making (alternative generation and evaluation).

And [the DP] *was able to challenge us and to bring forth the real essence and ideals of this organization, the topics the organization stands for, and the future aims that we want to address* (Client, Project B).

We were sitting with a coffee and everybody had to tell what do you think is the ambition of [our company]*. And* [the DP] *brought that together in nice words* (Client, Project D).

Once more DPs' tools such as the development of personas play a key role in *integrating* the collected information and *embedding* the key insights in the organization:

When we introduced a persona they really got a feel for it…ok this person has to buy my products…it clicked with them, it made sense for them. […] *personas really helped them to fill the picture of the situation of what people want* (DP, Project C).

Effects on alternative generation

Our data show that DPs' capabilities help clients generating a larger and more innovative array of solutions to innovation decision-making processes.

Since innovation decision-making is characterized by high uncertainty, risk-adverse decision-makers might opt for conservative alternative generation, by processing information step-by-step and following more or less structured decision trees for formulating alternative solutions (Mintzberg et al., 1976). Our data show that DPs use their capability of *inspiring* to reduce decision-makers resistance to innovation and, thus, point

their clients towards relevant, but neglected directions for formulating alternatives.

> [Creating all these products] *was also possible because in this situation* [the DP] *was able to feed us with ideas, possibilities, giving examples, thinking with us* (Client, Project B).

Additionally, DPs use their capability of *translating* to make alternatives tangible and concrete in through different types of visualization and materializations. The persuasive character of DPs' visuals also contributes to reduce decision makers' resistance towards generating innovative alternatives.

> *If you present the new brand in a little movie or something it becomes more alive for the client as well* (Project A, design professional).

In some decision-making processes in our sample, DPs use their capability of *co-creating* and *integrating* to help their clients co-developing and agreeing on one single solution rather than a set of alternatives. While research on cognitive biases describes risks of escalation of commitment or desirability bias with the single outcome solution (Steinbruner, 1974), the *facilitating* role of DPs may limit the risks of bias by increasing the range of considered issues during the single alternative generation (i.e., by adding and connecting insights) and by monitoring the internal and external validity of the single alternative (i.e., as an intrinsic consequence of intuition as a an associative holistic process).

> [I show] *them that I have three visions and we discuss. And then I try in the meetings to get some important terms that we can agree on. So I can discuss* [things like] *is your role also to get people out of the car into public transport? Then we have a discussion.* […] *And then we agreed. And then I re-wrote the vision for them. And then I gave it to them, and said this is yours, not mine* (DP, Project B).

Effect on evaluation and choice

Our data show that DPs' capabilities affect their clients' choice by reducing their resistance towards risky alternative and by drawing their attention on two types of decision criteria normally disregarded: qualitative/intangible criteria, and external/non-controllable criteria.

When innovation decision-makers have to choose among alternatives, inference of impossibility - i.e. a cognitive bias leading decision-makers to devote significant effort to identifying the weaknesses of non-preferred alternatives, in order to convince them that they are impossible to implement (Schwenk, 1984) - might drift them away from risky options. DPs can use their capabilities to reduce the inference of impossibility, for example by *integrating* rational evaluation criteria for illustrating innovative alternatives - *I remember that* [the design professionals] *gave examples of other companies as benchmark to prove their points. I found that quite convincing* (Client, Project B) -, or by supporting decision makers in understanding and internalizing (*embedding)* the innovative alternatives - *Because the risk is, in the beginning, that the strategy is more my strategy than of the customer. I have to present to it to the customer, but it takes time and the customer needs to be able to get it into its system, to really feel the new brand* (DP, Project B); *So what you do when you convince clients is that you don't say this is what you should do, but you take him on a journey. And then you start building up a story and* [explain] *why it's good for them* (DP, Project D).

Company decision-makers tend to rely prevalently on quantifiable, cost/benefit criteria for alternative selection, since they consider measurable variables more 'real' than unquantifiable ones, even when the latter might be more important (Dean and Sharfman, 1996). This might be particularly risky in innovation decision-making, where most alternatives might be only partially quantifiable. DPs diminish this bias by drawing managerial attention on (and confidence in) alternative criteria for choices (*inspiring*), like qualitative/intangible criteria - *And we were making choices based on two criteria: a rational one, like costs or feasibility, and an emotional one, like the feelings associated with experiencing the service. I was the one pointing at the latter.* […] *Probably without me they would have chosen only based on rational criteria* (DP, Project D) – and external criteria (e.g., user perspective, market opportunities) - *We are deciding how to develop with* [a partner company] […] *we have some ideas and a position, but* [the DP] *takes a different position. With good arguments, but we have good arguments too. We have to figure it out, but it's really good that in that process* [the DP] *immediately takes the position from the traveller, the consumer, our real customer* (Client, Project A).

In addition to extend the variety of decision-making criteria, DPs *facilitate* their synthesis by guiding decision makers in thorough evaluations and comparisons of different alternatives. Particularly, DPs use their tools to facilitate a process of mental simulation, during which decision-makers engage into a mental, simulated implementation of different alternatives in order to assess their quality, feasibility, and overall fit to a certain context (Klein, 2003).

> [Talking about a design professional's attempt to persuade the client of the importance of pro-activeness as a service characteristic] *And* [the DP]*, for it to be proactive, used the picture of a girl who is behind her laptop on the couch and the website says 'Hey Alice, tomorrow your train will leave from platform 5'* (Client, Project A)

Overall effectiveness of DPs

In addition to the specific effects during each step, integrating DPs in strategic decision-making has a cumulative positive effect on the overall process and its outcome.

Our data show that DPs use their capability of *structuring* for developing simple, common, informal guidelines that will hold during the entire decision-making process and even in subsequent decision making processes. These guidelines might refer to project steps, constraints, relevant information and relationships, expectations on the outcome.

> [The DP] *makes us think differently. But in a very calm way, point by point, step by step.* […] [The DP] *is a very structured person. He has this idea that you have to do it step by step.* […] *The way* [the DP] *was doing it… I can show it to you…where in very short points you can see the complete process: what you have to do. It makes it clear in our mind what we have to do, what we have to develop. His way of working is so creative, but structured. That's a good combination. Because structure you need to understand what the process will be and how long it will take. But in the process he was the one who brought the creativity* (Client, Project D).

> *I think we even helped them to get started and to make the next step into their strategic way of thinking, because we defined for them the core competences of the company. And for me that was very important. And I felt for them it was very important too. And* [a company manager] *said this will help them because everything that they develop will have to fit*

with this core. I think we gave them a lot in that perspective (DP, Project A).

By providing a set of clear and common guidelines DPs reduce the amount of discussions, evaluations, and negotiations usually occurring during decision-making. As a result innovation projects can be faster:

Yes I think what they do is now completely focused and I think that's the best thing we achieved. And there's a lot of focus in the company. And if there's focus everything goes easier and faster (Client, Project B).

Additionally, the guidelines and structure provided by DPs (*structuring*) ensure internal coherence in the decision process. Internal coherence refers to the coherence across the different steps of the decision-making process. A decision-making process implies taking into account a set of objectives and constraints across different stages. DPs make sure that coherence with these objectives and constraints is maintained throughout the entire process (*motivating*):

After we got the assignment [for the development of new services] *the first thing we did is to establish the value proposition of the client.* […] *At any moment we always had to remind the client of the value proposition, what we were trying to achieve during the project. They are always drifted away by the particular task they are doing or by the daily things* (DP, Project)

Additionally, DPs use their capability of *integrating* to increase the external coherence of the decision process and its outcome, and the outcome's fit with other strategic decisions within a company.

And now finally I can see that each new product we developed with [the DP] *fits its product family and it's suitable for the target group for which we developed* (DP, Project G).

And we explained why they should go for the service experience that we suggested: it gives direction to the company, it makes a good promise to the user, it's proactive, it's personal. It fits (DP, Project B).

DISCUSSION AND IMPLICATIONS

DPs' role is evolving towards a broader involvement in innovation strategy. In order to keep this evolution going both DPs and managers need to be aware of how design capabilities and tools add value to innovation strategy. In this paper we contribute to this challenge by empirically deriving eight DPs' capabilities that, when embedded in design tools and methods, can have a substantial effect on innovation strategic decision-making. Our findings are summarized in Figure 1.

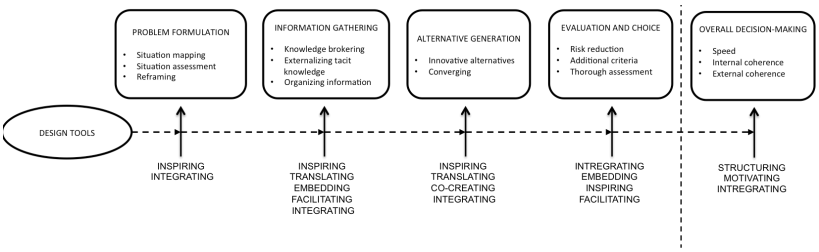

Figure 1 - DPs' capabilities, DPs' tools and strategic decision-making

In this paper we characterize DPs' role in innovation strategy in a different manner, by focusing on capabilities and on their impact on strategic decision-making. We do not conceptualized DPs' role as a set of methods that everyone can use or as a set of capabilities that everyone can develop, but rather as a unique combination of capabilities and tools that DPs could offer to innovation decision-makers. We come to this conclusion by observing how DPs' capabilities can improve the performance of each step of strategic decision-making in innovation. In turn, these punctual improvements affect the overall decision process and its outcome, in terms of speed and coherence.

Effectiveness in decision-making is an important driver of firm performance, especially in innovation. As a result, firms are constantly looking for ways to improve their capability of taking appropriate decisions. The framework empirically derived through this research may give firms a direction on how to integrate DPs in innovation strategic decision-making. Despite the popularity of design within practitioners' discussions, the lack of knowledge on how DPs work in an organizational context and how their capabilities can benefit innovation decision-making makes the same practitioners reluctant in integrating them in innovation strategy. Our results first draw managerial attention on specific pitfalls in innovation

strategic decision-making. Subsequently, they provide empirical evidence for how DPs can contribute to address those pitfalls and, at the same time, make decision-making faster and more consistent.

We made the case for DPs' capabilities improving each stage of innovation decision-making by studying interactions between design consultancy firms and companies hiring them for innovation projects. While we consider this setting appropriate for an exploratory study, the fact that design consultancy firms are external actors takes into limited account that the selection of the decision-making approach and especially its outcome might be influenced by political dynamics, like personal agendas or power relationships. The effectiveness of DPs' capabilities in improving decision-making steps might be stifled – or perhaps strengthen – by unfavourable political behaviours. Replicating the study in a setting where the political behaviour are also observable – for example by looking at cases where DPs and innovation decision-makers coexist within the same company – might extend the validity of our findings and provide additional insights on the phenomenon under study.

Furthermore, while the cases were carefully chosen and the data collection planned in detail, the findings are based on a limited amount of cases and mostly on retrospective information. To refine the emerging framework and improve its generalizability we encourage additional research with another case sample or with a complementary methodology. For example, observing the actual interaction between DPs and innovation decision-makers might provide useful additional data to corroborate our results. Furthermore, the insights generated here might constitute the starting point for a quantitative study that confirms and/or defines some of the outlined relationships.

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