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The choice of design. From businesses' conditions to businesses' attitudes.

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Abstract: This paper addresses a psychological approach to creativity use as a decision in order to understand design management capabilities absorption within small businesses throughout three design policy programs focused on the integration of design into MSMEs in the Brazilian furniture industry. The issue is: What are the different companies' attitudes and prior knowledge (or conditions) that contribute to or block the absorption of design management capabilities throughout these projects? Literature review and participant observation were employed in a qualitative perspective. The integration of design into business has been more related to the organisational culture than to an economic reasoning. The main contribution is to start better understanding different businesses' attitudes and prior knowledge that support the absorption or improvement of design management capabilities within MSMEs. The findings are summed up in a map that shows the perceived businesses' conditions and attitudes and their impact on design management capabilities absorption.

Keywords: business's attitude, prior design knowledge, design management absorptive capacity, use of creativity resources, MSMEs

1. Introduction

Creativity is the main basis of the design process. Studies have not considered a psychological approach to creativity in order to analyse the role of firms' conditions and attitude during the integration of design into their (not design-oriented) small businesses. Many design policies focused on the integration of design into micro, small and medium-sized enterprises (MSMEs) and studies on design management ignore differences related to the decision to deploy creativity held by diverse stakeholders and its implications as, for example, the lack of value to move on to the next level of the design ladder, and the mindset and experience regarding design knowledge and practice.

This paper sheds light on the use of creativity resources as a decision at the micro level (enterprises' level) using insights from the Sternberg and Lubart's theory of investment (Sternberg, 2006, 2012) in the psychology field, in order to better understand empirical evidence of success and failure in

absorbing design management capabilities through design policy projects of integration of design into MSMEs.

The choice of exploring the design potential has been considered as more related to organisational culture aspects than to an economic reasoning. Good financial performance is not a precondition for design investment in firms (Gemser & Leenders, 2001; see also Braga, 2016). The main motives for integrating design into businesses reported in the design management literature have been: trust (Micheli, 2014), vision (Borja de Mozota, 2006), ethos (Walsh 1996), behaviour (Danish Design Centre, 2003), cultural imperatives (Heskett, 2009), and adopted strategy (Gemser & Leenders, 2001; Roy & Riedel, 1997). The gap lies on the businesses' attitudes and prior knowledge that support or not the absorption or improvement of design management capabilities.

The assumptions about the fundamentals of creativity related to design management considered in this manuscript are:

1. Design "is creativity deployed to a specific end" (Cox, 2005, p.2);
2. Creativity is not an inborn trait but people can decide to use or not to use creativity resources (Sternberg, 2006, 2012);
3. Deploying creative ideas is harder than 'following the crowd' (Sternberg, 2006, 2012);
4. The value of being creative varies depending on individual perspectives, intra-organisational (see for instance Amabile, Conti, Coon, Lazenby, & Herron, 1996; Braga, 2016; Heskett, 2009) and external environment (e.g. macroeconomic factors, design innovation ecosystem, societal and cultural context);
5. The willingness to explore design and design management in MSMEs does not assure the investment in design or the absorption of design management capabilities (see for instance Acklin, 2013). Organisational aspects such as the lack of top management support (Acklin, 2013; Amabile, et al, 1996; Cowood, 1997; Schneider, Gibet, Colomb, Orazem, Loesch, Kasparyan, & Salminen, 2015), other pressures on the business and risk aversion (Cox, 2015), underdeveloped education and training (Massa & Testa, 2008) as well as external barriers such as the difficulty in finding appropriate support with respect to design professionals (Arquilla, Maffei, Mortati, & Villari, 2015; Cox, 2005), finance (e.g. credit availability) (see Bell, 2015) and bureaucracies related to local authorities and to intellectual property procedures (see for instance Acklin, 2013; Massa & Testa, 2008) are examples of the obstacles that firms face to implement innovative ideas besides their 'willingness' to make them happen.

This discussion brings implications to the way of dealing with innovation in the design management and in the design policy fields (especially for policies focused on the integration of design into MSMEs).

Schneider et al. (2015, p.7-8), Thomson and Koskinen (2012) notice that few companies and industries use design potential to leverage successful business across Europe. This is not considered a specific European difficulty; diverse publications (Organisation for Economic Co-operation and Development [OECD], 2014; Economic Commission for Latin America and the Caribbean [ECLAC], 2015; European Commission, 2015) report the need to lead also countries of the South to more innovative paths reducing the productivity gap between MSMEs in Southern and Northern countries.

2. The use of creativity resources: from conditions to attitudes

This topic is based on Sternberg's (2006, 2012) explanations about Lubart and Sternberg's theory of investment. Their theory sheds light on the use of creativity as a decision. Most analysis provided by Sternberg are based on learning (teacher-students) environments and were useful to understand mainly the individual differences that lead to the use of creativity. Some analogies to the 'absorption' of design management capabilities into MSMEs are possible considering their prior knowledge or condition and decision to deploy creativity (or to promote some change into businesses) by applying design resources throughout a learning 'to use design' process.

Studies have not considered stakeholders' differences referred to attitude and prior knowledge, and empirical evidence from cases studied has shown that the stakeholders' attitude and prior design-related knowledge impact on the absorption of design management capabilities throughout the projects of integration of design into MSMEs in different ways.

According to the theory of investment, creativity is not a result of any particular inborn trait and is seen as a *habitual novel response*, an *attitude towards life*, instead of responding automatically and mindlessly to it (cited in Sternberg, 2012).

Schooling often does not encourage creativity, and evaluating students through tests based on wrong-answer-right-answer format limits assessment, focusing on content related to knowledge. Solving problems that do not fit into the wrong-answer-right-answer standard requires creative thinking or divergent thinking. Then, *knowledge is necessary but it is not a sufficient condition for creativity* (Sternberg, 2012).

Design issues depend on context and there is no 'right' or 'wrong' answer; there is the most appropriate answer that is built up by exploring new ways of thinking, doing and making through the use of the knowledge available at a certain time and a certain context.

Creative ideas defy the crowd, and when first presented they encounter resistance. Society does not realise the value of creative ideas, perceiving them as an opposition to the status quo. Creativity, thus, cannot be understood separated from its societal context (cited in Sternberg, 2006, 2012). However, the issue is whether the creative individual will persist and go against the crowd (cited in Sternberg, 2012).

As stated by Sternberg (2006, 2012), *one decides* to deploy creativity according to six different and interrelated resources, which are briefly described in Table 1.

Table 1. Creativity resources (Sternberg, 2006, 2012).

Creativity resource	Description
Intellectual abilities	Three main abilities compose this resource: (1) the synthetic one, which allows seeing problems in new ways; (2) the analytic one, which refers to the ability to recognise which ideas are worth pursuing and which ones are not; (3) the practical-contextual one, that means knowing how to persuade others of, or to sell others on, the value of one's idea. All of them are important to deploy creative ideas.
Knowledge	Enough knowledge is required to move a field forward. However, knowledge can block creativity when it promotes a closed perspective. Then, the balance between enough knowledge and freeing oneself of it is advised.

Creativity resource	Description
Thinking styles	There are preferred ways of using one's skills. Thinking in new ways (legislative style) and distinguishing the whole from the parts are considered important for creativity.
Personality	Personality attributes such as willingness to overcome barriers, willingness to take sensible risks, willingness to tolerate ambiguity, and self-efficacy.
Motivation	It is not inherent in a person. It is up to the individual to feel motivated by their own reasoning. However, task-focused motivation is important for creative work, and people rarely do truly creative work unless they love what they do and focus on the work more than the rewards (cited in Sternberg, 2006, 2012).
Environment	Supportive and rewarding environment is required to deploy creative ideas. The cultural differences related to the support of creativity as well as about its concept should be taken into account when evaluating creativity (cited in Sternberg, 2012).

These components should be considered together as more than a sum of an individual's level of each component (Sternberg, 2012). Some elements are essential (e.g. knowledge), and creativity is not possible without them; also, when isolated, they are not enough to deploy creativity. Compensation can happen between different components (e.g. strength in motivation can counteract weakness in environment), as well as interactions between resources enhancing creativity (cited in Sternberg, 2012).

3. Key elements to understand the integration of design into MSMEs

Activities of integration of design into businesses through a design policy include (Schneider, et al, 2015, p.10):

1. capacity building: this activity refers to the development of good practices for integrating design through activities such as seminars, approaching topics related to design management such as "writing a brief" and "user-centred innovation",
2. dedicated advising: it is the evaluation by a dedicated advisor in order to assess the needs and capacities of the company, supporting activities such as brief development, design consultant selection, and project development monitoring,
3. bespoke support: it is focused on the integration of design into a business strategy by mentoring or coaching senior managers.

Capacity is the ability to perform an activity in an acceptable manner, whereas capability is the ability to repeatedly deploy the capacity in a well-structured way (cited in Acklin, 2013; cited in Mortati, Villari, & Maffei, 2014). In this sense, design management capabilities absorption can be recognised when a firm is able to develop or improve its design management skills throughout time during a design policy intervention.

Although under-researched, design capabilities are identified as design management skills, tasks, and capabilities in the design management field ranging from basic skills to strategic skills (Acklin, 2013; Mortati, et al, 2014). Several studies provide examples of design management skills (e.g. Acklin, 2013; Borja de Mozota, 2006; Bruce, Cooper, & Vazquez, 1999; Chiva & Alegre, 2009; Mortati, et al, 2014).

Acklin (2011, 2013) proposes the Design Management Absorption Model (DMAM). This model started from a prescriptive approach based on literature review insights, and was first used by the research team to drive the analysis of companies results from a design knowledge absorption perspective during an action research project in 2011 (Acklin, 2013). They studied design projects implementation and their outcomes related to design management skills in five SMEs with little or no prior experience. After a more in-depth study of literature, Acklin (2013) revised DMAM and proposed a second version based on Zahra and George (Figure 1):

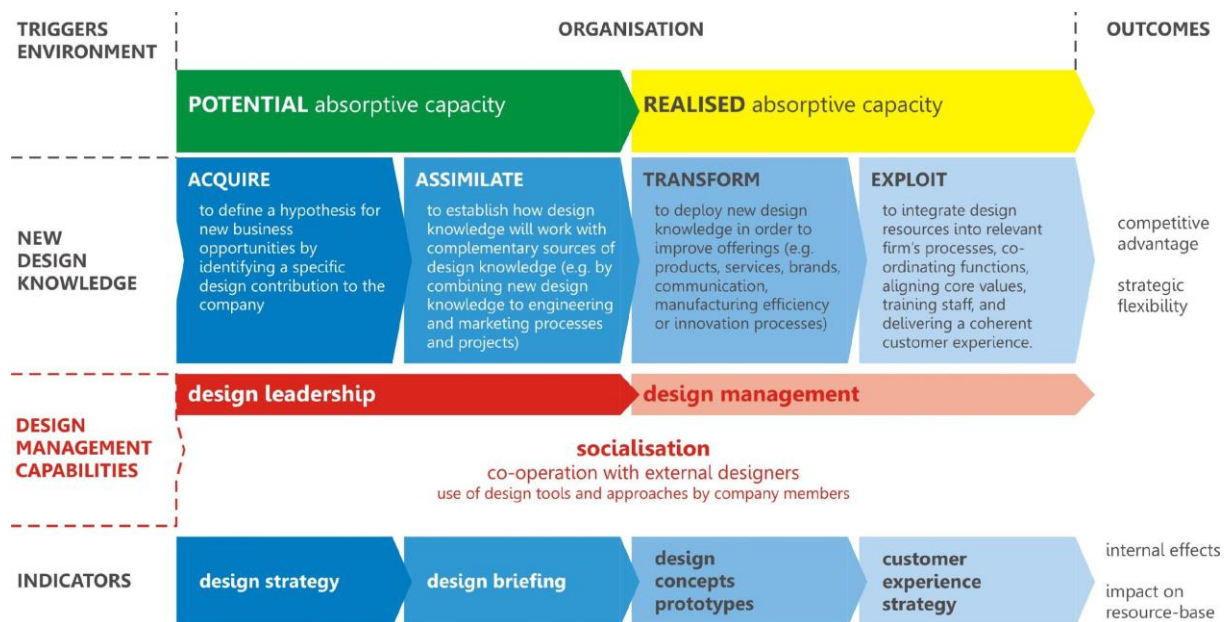


Figure 1. Revised Design Management Absorption Model (Acklin, 2013).

The framework of reference taken by Acklin (2013) adopts a design thinking approach to design management capabilities which promotes the use of design tools by companies' members "as a vehicle to introduce how designers work, to socialise design knowledge throughout the company" (Acklin, 2013, p. 157). She highlights the distinction between design management capabilities and design capabilities, emphasising that design management capabilities "are more readily absorbed" because they establish a relation to the prior company knowledge such as the way to use or manage resources (Acklin, 2013, p. 158).

4. Methods

The main methods used in the research were the literature review and the author's participant observation. The literature review includes topics which were selected considering the potential to contribute to the comprehension of empirical cases, and the gaps that surpass the lack of economic resources to promote the absorption of design management capabilities in MSMEs.

Participant observation was based on design policies' initiatives in different times, from 2006 to 2014 in Brazil (see Table 2). The author took part in projects of integration of design into MSMEs, working

with teams of designers and consultants from other fields (according to the type of intervention requested), being in charge of the (re)identification or adaptation of the enterprises' needs or demands, participating in the development of the 'micro' strategy to achieve the (innovative - when possible and needed) solution required in the real context of each company, while trying to preserve or strengthen the innovative content that could be addressed to and realized in each context (sometimes more innovative steps are not the main priority or need to attribute more value to the business at that moment and in the context of the company).

Table 2. Programs and their projects of integration of design into MSMEs considered.

	characteristics		proposal and goals	projects' architecture
Program 1	Number of MSMEs benefited	Cluster 1: 8 Cluster 2: 5 Cluster 3: 5	To develop products and brand identities for firms in three clusters in the Brazilian furniture industry.	The funds came from public funding through a government design office. There was not foreseen financial or economic compensation coming from benefited companies.
	Staff	18 designers 3 designers seniors		
	Time	2007-2008 8 months		
Program 2	Number of MSMEs benefited	Direct: 1 and indirect ¹	To integrate ergonomics into the design practices of a furniture company contributing to the development of an instrument of ergonomic assessment (to be deployed prior to the complete physical prototyping phase aiming at shrinking that), and specific ergonomic methods applied to and replicated in this industry through diverse design centres.	The funds are provided by a non-profit private entity which has specific funding addressed to innovation. The projects and their beneficiaries are selected through annual edict criteria. The beneficiary covers at least 10% of the costs in economic and financial terms.
	Staff	3 product designers 2 graphic designers 1 physiotherapist		
	Time	2010 2012 2 years		
Program 3	Number of MSMEs benefited	3	P1 ² : To fit products according to the compulsory national regulations P2: to introduce practices of projects detailing to production P3: to design a new product fitted to a market opportunity	On-demand projects supported by non-profit private entities' initiatives and funds. The company requests support to a specific design need identified within the firm. The beneficiaries cover at least 20% of the
	Staff	P1: 2 designers P2: 1 designer P3: 3 designers		
	Time	2014 from 3 to 8 months		

¹ MSMEs in the regional and national furniture industry, associations, universities, research centres, laboratories.

² P1 means project 1. P2 means project 2. P3 means project 3.

characteristics	proposal and goals	projects' architecture
	identified	costs in economic terms.

The MSMEs which were beneficiaries of these design policies programs are firms in the Brazilian furniture industry in Minas Gerais. The economic relevance of the Brazilian furniture industry is recognised through the value of its production and its potential to create jobs (Ministério do Desenvolvimento, Indústria e Comércio Exterior, 2015). The southeast region of Brazil is the first in number of employees and the second in number of firms, and Minas Gerais state is the third in both numbers in Brazil, presenting 45.002 employees and 2.539 companies formally registered (Departamento de Pesquisas e Estudos Econômicos, 2015).

The Brazilian industry has historically devoted more to the domestic market than to exports (OECD, 2014; Moraes Junior, 2002; Galinari, Teixeira Junior, & Morgado, 2013), and is considered low technology based presenting structural problems that affect trade development and design. The strategy of product-design is low priority, there is low design insertion, and competition is based on prices in low value added markets (Silveira da Rosa, Correa, Lemos, & Barroso, 2007, Galinari, et al, 2013). Most enterprises are MSMEs in the furniture sector in Brazil (Silveira da Rosa, et al, 2007; Galinari, et al, 2013).

5. Results

The indicators of design management capabilities absorption (Acklin, 2013) were used to analyse differences between businesses' prior knowledge or conditions and their attitudes or decisions to use (or not) creativity resources (Sternberg, 2006, 2012) observed within firms.

The customer experience strategy was not successfully explored in any program and was not considered in the design policy proposals. The reasons identified were: the potential and the value of design were not and are still not being acknowledged by diverse stakeholders. The idea of having a project almost 'for free' or completely 'for free', as well as the lack of trust in the competence of the non-profit entities, seem to lead some companies to the lack of commitment with projects' activities and goals. However, these factors are not enough to explain the different levels of firms' engagement with projects and the absorption or no absorption of design management capabilities by the firms throughout the projects.

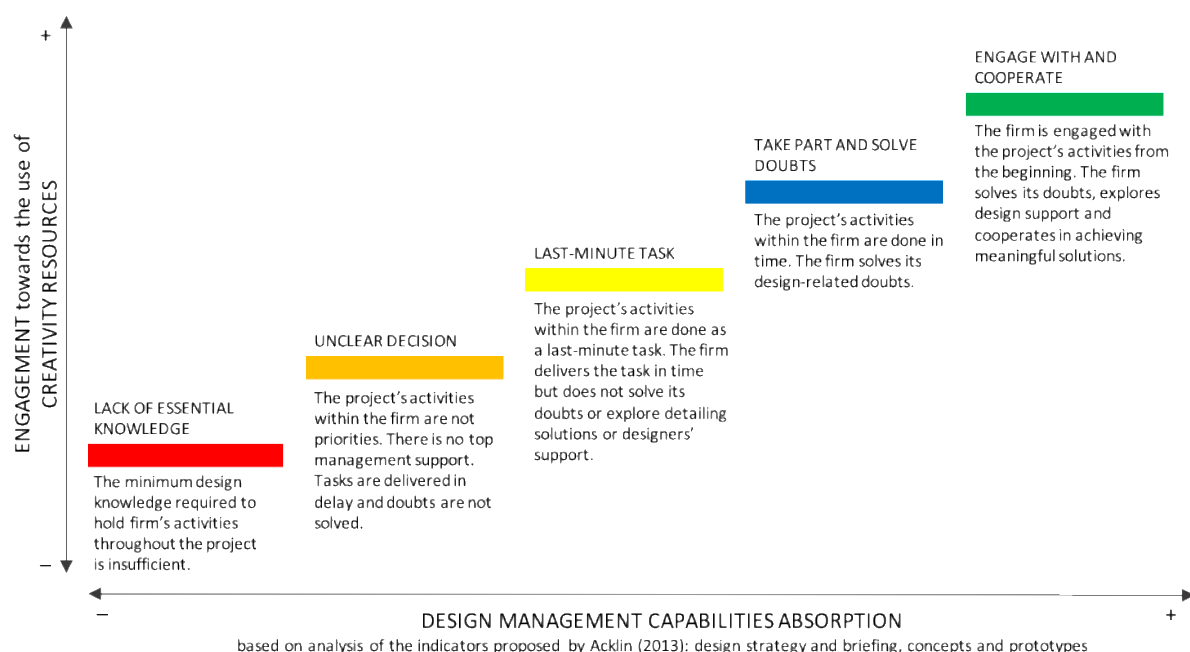
In Program 1, the differences observed were that, on one hand, some firms did not pursue basic operational design capabilities (e.g. to be able to read the project specification, to properly use the available technologies within the firm, to build jigs) to contribute to making prototypes within the company. Other firms sent employees who did not seem to have enough power or leverage in the strategic decision-making within the company, as well as not enough knowledge of their businesses, to meetings, to take part in the process of defining the design strategy, brief and selecting concepts to be prototyped. This fact led to design strategy, brief, concept and prototype that did not correspond to the company's needs at that moment. Other issues were: to make resources such as time of skilled workers and appropriate machines (or processes) available to collaborate with prototyping activities within the firm, and the commitment of the firm to its tasks deadlines. Most firms made a 'last-minute' prototype close to the deadline; in this way they do not properly use the design experts' support to solve any doubt or to explore detailed solutions specific to their businesses. On the other hand, the few firms which engaged with the project development from the

beginning, showed commitment and meaningful cooperation through specific knowledge of their market, needs, processes, prototyping and skills in their industry.

In Program 2, the lack of (1) basic knowledge applied to productive process, (2) design experience, and (3) a prior defined business strategy by the company³ contributed to not giving continuity to the ideas of the projects after implementation. The consultants had difficulty carrying out the tasks which required firm participation. The company needed more support than usual to do activities that were supposed to be done by its members. Moreover, the last-minute attitude related to the company's tasks was observed. All in all, this project was more valuable for indirect beneficiaries such as other businesses, universities, associations and laboratories which had access to the material produced and their findings related to applied ergonomics.

In Program 3, each individual business does a design demand based on a need recognised within the company. The demands considered in this study did not involve intense creative effort by design, being them related to (P1) technical adequacy to fit into national regulations, (P2) design projects integration into productive process, and (P3) the design of a furniture piece to serve a defined and established market niche taking the opportunity of a national event into account. These demands were pushed by the external environment (e.g. to fit into national compulsory regulations, to satisfy an event demand) or by basic design knowledge needs (e.g. technical detailing and patterns to production) more than by a unique vision, innovative behaviour or risk taking attitude at the business side. However, these demands represent changes for these businesses in that context and their attitude was more positive considering their engagement with and commitment to projects. P2 contributes to building up other design management capabilities, if the top management *decides* to do it. In the case of P3, the lack of basic design knowledge (e.g. reading design project specifications, building jigs to guide prototyping) was a barrier.

The main differences among firms' conditions and attitudes towards the use (or not) of the creativity resources that leverage the design management capabilities absorption observed in these projects can be summed up as follows (see Figure 2):



³ (e.g. the company served a business-to-business market and produced whatever was requested by its customers from building frames to chairs, and pursued a cost-driven approach)

Figure 2. Map of perceived business conditions and attitudes towards the use (or not) of the creativity resources (based on the framework proposed by Sternberg, 2006, 2012) by engagement and their impact on design management capabilities absorption intensity (based on the analysis of Acklin's indicators [2013]) throughout projects of integration of design into MSMEs.

6. Discussion and conclusion

MSMEs' top management can express the willingness to integrate design management capabilities into their businesses. However, sometimes they do not evidence this willingness through attitudes derived from decisions to deploy creativity resources throughout projects' implementation. Some firms seem to join design policy projects 'following the crowd' more than considering purposes related to their organisational culture, business strategy and attitude. Others really lack the basic knowledge or conditions to move on and absorb design management capabilities.

The lack of essential creativity resources, such as the prior knowledge needed, was convergent with Sternberg's point of view when looking at the design management capabilities absorption throughout the projects studied. Some companies lack basic knowledge of their own businesses in diverse dimensions (e.g. productive process, technologies, materials, norms, market, strategy) and of design (e.g. ability to read a project specification, to do a jig, to consider users' needs), which blocks design activities and creative ideas to move on within the firm. In this case, other actions should be considered before in order to 'prepare the field to flourish' creative ideas by design when the firm's top management *decides* to deploy creativity resources.

Hence, from the policy makers side, more than the 'willingness' of companies should be considered to select beneficiaries, especially for design innovation purposes and for the absorption of design management capabilities. For example, the attitude of the business during prior projects and the history of innovative efforts held by firms can indicate their real conditions to integrate design into their business.

Besides the lack of prior knowledge or conditions, the way company's members cooperate and engage with designers makes a difference in the projects' outcomes. The company's members do not have to master the use of design tools, and including the use of these tools in the day-to-day activities is hard in small businesses' environments where one person plays diverse roles in the company. However, they should cooperate in a manner that enhances the potential of the use of design by engagement, what means cooperating and engaging with designers in order to generate meaningful outcomes through the knowledge they already master and designers do not.

Designers are usually included from the implementation phase of the project when the budget and main possible directions have already been decided. Designers' skills, ways of thinking and knowing are useful to shape change, to define problems and opportunities, to envision value creation and innovative steps in a situational, contextual, mode (see Braga, 2016). Therefore, Designers can play an important role in earlier stages of the project. They can contribute to designing the policy.

These projects involve issues inherent to the design activity, such as the diversity of designers and their experiences, know-how, tacit knowledge, creativity and reputation in the design field. On the designers' side, there are also different conditions and attitudes regarding experience, know-how, motivation, commitment and so on.

The selection of designers relies mainly on qualitative aspects such as references from other businesses, individual creativity, talent, and the experience of the designer (D'Ippolito 2014; Gemser & Leenders 2001). The bureaucratic process to contract designers or consultants and the lack of design management skills to properly source professionals and to select beneficiaries are constraints

for non-profit entities in Brazil that carry out design policies. These qualitative criteria are not properly addressed in the bureaucratic contract rules that must be followed according to the Brazilian ministry. The main criterion established is price-oriented.

7. Limitations

This paper looks at the differences related to the use of creativity resources throughout three programs of integration of design into MSMEs. The approach is qualitative and the results and the findings are dependent on these contexts and on the author's participant observation and interpretation. Other limitations observed are:

- The lack of policy makers and beneficiaries' perspectives;
- The designers and policy makers' attitudes towards creativity were not inquired in-depth;
- The external environment (e.g. design innovation ecosystem, societal and cultural context, macroeconomic factors) and its leverage on the firms' attitudes, were not analysed;
- The difficulty in analysing attitudes distinguishing each creativity resource because they compose together the attitude of the individual;
- The evaluation of the real impact regarding design management capabilities absorption or no absorption after the end of projects.

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