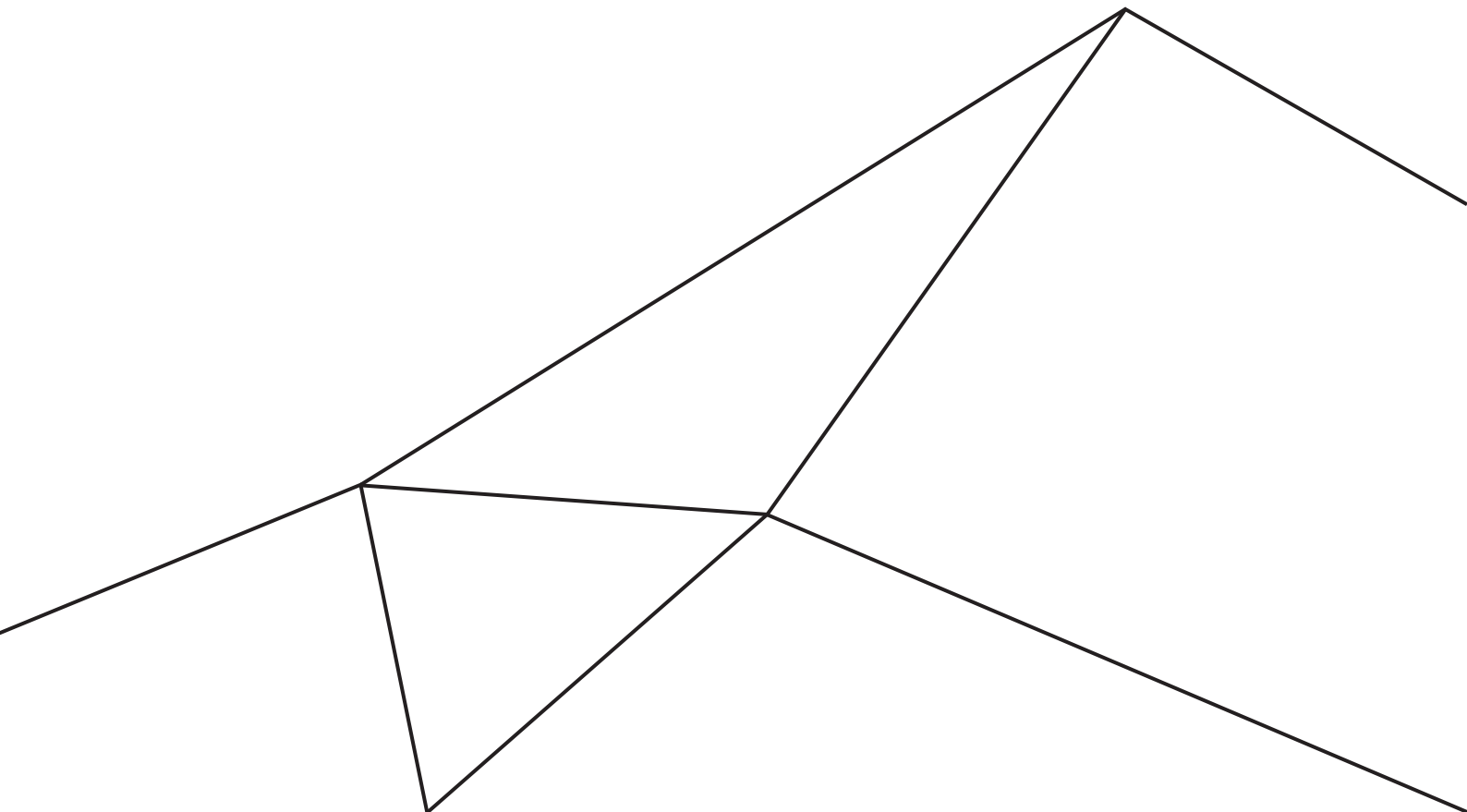
HANDLING DESIGN SUPPORT PROGRAMMES COMPLEXITY

An interpretative framework for barriers and drivers to introducing design innovation into Brazilian MSMEs

Mariana Fonseca Braga



HANDLING DESIGN SUPPORT PROGRAMMES COMPLEXITY

An interpretative framework for barriers and drivers to introducing design innovation into Brazilian MSMEs

Mariana Fonseca Braga, MSc

Supervisor
Francesco P. Zurlo, PhD
Vice-Dean, School of Design, Politecnico di Milano

Assistant supervisor
Viviane dos Guimarães Alvim Nunes, PhD
Dean, Faculdade de Arquitetura, Urbanismo e Design (FAUeD),
Universidade Federal de Uberlândia (UFU)

Controrelatore
Gisele Raulik-Murphy, PhD
Partner, DUCO - Driving Design Strategies

Politecnico di Milano
Department of Design
PhD programme in Design
30th Cycle

January 2019

DOTTORATO DI RICERCA IN DESIGN
POLITECNICO DI MILANO, DIPARTIMENTO DI DESIGN

ACKNOWLEDGEMENTS

This research was supported by the Brazilian National Council for Scientific and Technological Development (CNPq), which made it possible. I am grateful to CNPq for this opportunity.

I am indebted to the amazing people, who surrounded me in the Design Department at Politecnico di Milano, especially Prof. Francesco Zurlo, the best supervisor I might have, and the Creative Industries Lab (Cilab) staff, particularly Prof. Arianna Vignati. I also thank Prof. Marzia Mortati, from the Design Policy Lab, for the meaningful advice she has provided throughout this investigation.

In addition, I had especial support from Prof. Viviane dos Guimarães Alvim Nunes, Prof. Gisele Raulik-Murphy, and from my friend, Prof. Silvia Xavier. I am really glad for your voluntary contributions to this research.

I also thank all interviewees who told me their project's stories, without them this research would lack meaningful insights, and the non-profit private entity, which provided information about two of its projects.

I dedicate this piece of work to my husband, Marcelo Manhago, and my son, César Braga Manhago, who have been standing for me throughout this research journey, leaving their lives oversea and being opened to this new rebuilding experience. I thank my beloved husband and son for their everlasting love, bravery, and patience.

"*NO MAN [WOMAN] EVER STEPS IN THE SAME RIVER TWICE, FOR IT'S NOT THE SAME RIVER AND HE[SHE]'S NOT THE SAME MAN [WOMAN]*."

HERACLITUS

ABSTRACT

This dissertation looks at largely applied design support programmes which aim at introducing design innovation into Micro, Small and Medium-sized Enterprises (MSMEs) with little or no design experience in Brazilian traditional industries. The need to better understand how factors at diverse levels support the conditions and lever the decision to use design (as well as its intensity of use) or not to use design, making empirical barriers and drivers to design innovation evident, motivated this study. It can be of benefit to policy-makers, designers and consultants, MSMEs, and design scholars who deal with or are interested in design innovation, design policies and their related initiatives focused on MSMEs.

The research approach is inductive, exploratory and qualitative. In the first empirical cases' analysis, a map that indicates the businesses' engagement intensity and its impact on Acklin's design capabilities indicators was proposed. The preconditions to better absorb design in those cases were also identified. Businesses' attitudes and conditions throughout projects' implementation are generally overlooked in design management and design policy research, particularly regarding MSMEs with little or no design experience in less advanced economies.

The second sample of cases enlarges the landscape of introducing design innovation into MSMEs through design support initiatives by analysing two polar types cases in which barriers and drivers to design innovation emerged and were explored at three levels: (1) actors, (2) organisational, and (3) ecosystem level. This second cases' analysis aims at providing a holistic perspective on barriers and drivers to design innovation in the context of MSMEs, especially in Brazil, considering the main actors' (policy-makers, consultants and beneficiaries who took part in design support initiatives) point of view.

Few barriers and drivers were new and distinguished from others in prior research only regarding the rationale used to address them by the interviewee or the lack of empirical evidence within design studies or regarding design support programmes. This analysis showed that barriers and drivers differ according to: (1) the context in which each project is embedded, including the economic and political priorities and orientation, as well as cultural aspects; (2) the way programmes and their projects are crafted, managed, implemented, and evaluated; (3) the background and mindset of key stakeholders who take part in these projects.

The main contributions to the design policy field are: (1) an interpretative framework at three levels to identify barriers and drivers to design innovation, contributing to underpinning strategies to harness drivers and to overcome barriers; and (2) a design support metamodel which aims at an experimental and participatory approach to tackling design support programmes' craft, upgrade, and change.

Keywords: design support, design innovation, Brazilian MSMEs, barriers, drivers.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

This dissertation focuses on the Brazilian context, but the problematic which is addressed can be considered of global concern, as it is a relevant issue in emerging and mature economies (see for instance Arquilla, Maffei, Mortati, Villari, 2015; Raulik-Murphy, 2010; Schneider, Gibet, Colomb, Orazem, Loesch, Kasparyan, Salminen, 2015). Micro, Small and Medium-sized Enterprises (MSMEs) are important sources of employment and contribute to decreasing the impact of an economic crisis (Airaksinen, Luomaranta, Alajääskö & Roodhuijzen, 2015; Bell, 2015; Cawood, 1997; Madeuf & Estimé, 2000; Organisation for Economic Co-operation and Development [OECD], 2016a; Raulik-Murphy & Cawood, 2009b). The need for innovation ranging from businesses to regions and nations has been fully recognised (Bason, 2014; ECLAC, 2015, European Commission, 2015a; Galinari, Teixeira Junior, & Morgado, 2013; Julier, 2017; Junginger, 2014; OECD, 2014; Raulik-Murphy, 2010; Schneider et al., 2015; Silveira da Rosa, Correa, Lemos, & Barroso, 2007). Design as a way that leads innovation and humanizes technologies, keeping people at the core throughout its process, constitutes one path to promote change at diverse levels: from micro (organizations, businesses) to macro (policies, territories, industries, nations, ecosystems). The designer "… is concerned with how things ought to be in order to attain goals, and to function" (Simon, 1996, p. 4). This definition is still appropriate nowadays with the expansion of the design field.

In a world overwhelmed by bottom-up ideas, creativity, problem solving and innovation (Ito & Howe, 2016; Verganti, 2016), we have seen the emergence of social innovation, crowdfunding, open innovation and grassroots initiatives. However, we are still struggling to demonstrate the value of design from the private to the public sphere. What matters to bring or to consider design in the core of organisations' strategies? Is design for everyone, for every nation? This thesis contributes to taking a first step towards an answer by analysing the barriers and drivers to introducing design innovation in the context of design support programmes addressed to MSMEs with little or no design experience in Brazil. Usually, the literature, media and press focus on successful design cases.

Here, cases that can be considered ordinary were explored, admitting the fact that few firms use design strategically (Thomson & Koskinen, 2012). Our tendency to 'follow the crowd' and keep ourselves in the comfort zone as human beings has not been overlooked (Sternberg, 2006, 2012), as well as the fact that established organisations present a resistance to change (Deserti & Rizzo, 2014). The external environment influences are considered too.

The lack of references in such contexts surrounding the factors that facilitate and that block the design integration in those conditions keep the mystery of moving on the design ladder. Our main goal is to reduce this gap through an exploratory and qualitative approach to better understand these factors and their implications on design support practices and key stakeholders.

Although there are many definitions of design and no consensus for an accurate definition that encompasses its whole meaning, in this thesis, definitions will appear throughout the text regarding each research moment and needs. In practice, the activities held concerning design in the analysed empirical cases present an approach at the project level, including:

- product and communication design,
- design process improvement by integrating ergonomic criteria into product development processes, anticipating prototyping activities,
- product adequacy to national norms standards,
- training and workshops concerning product development and branding,
- store (point of sales) design, and
- business model change, integrating a B2C model to a B2B cluster.

Innovation is understood, in the context of this study, as the transformation process of ideas into products, services, experiences, and their introduction to the market.

Other key definitions are used throughout the thesis: policy, design for policy, design policy (or policy for design), and design support.

A policy can be understood as a set of principles, purpose, and procedures related to the intentions of a government or a corporation in a specific topic (Heskett, 2001a).

Design for policy is defined by Bason (2014) as "a resource for government departments, public service organizations, and institutions, universities, think tanks and consultants that are increasingly engaging with design as a tool for public sector reform and innovation" (p. 3). It can be considered a design-led approach to policy development and innovation at diverse levels of the public sector (Bason, 2014).

In the argument of design for policy, Junginger (2014) stresses policy as a matter of design. The design contribution should be to provide a proactive approach rather than a reactive approach, such as problem-solving (Junginger, 2014). The author (Junginger, 2014) suggests policy-making as designing[1] in order to harness design potential towards desirable futures and to make policies according to a future-oriented approach. Policy-makers and public managers should be able to use design tools and methods to develop and implement innovative policies (Junginger, 2014). There is little research into this emerging field within design studies (Kimbell, 2016).

Design policies or policies for design

> "… are government strategies that aim to develop national design resources and/or to encourage their effective use in the country. Part of these strategies is the creation of an environment where design and creativity can flourish; where companies are encouraged to develop their own products and services by making use of the expertise of design professionals; and where the public sector works with designers in order to improve its processes and therefore provide good, accessible and inclusive services to the population. The design policies determine a strategic vision and plan for the use of design in a country, which are delivered through design promotion and support programmes."
> (Raulik-Murphy & Cawood, 2010, p. 121)

One part of the aforementioned quotation (Raulik-Murphy & Cawood, 2010, p. 121): "… and where the public sector works with designers in order to improve its processes and therefore provide good, accessible and inclusive services to the population…" is nowadays considered within the scope of design for policy field, being

[1] an analogy to Boland and Collopy (2004) *Managing as Designing*, which explores how managers can benefit from design approach and mindset.

also previously found within the scope of design support programmes.

Design policies can be explicit or tacit[2]. Explicit design policies

> "refer to countries where design is officially integrated into national policy (this could be innovation policy, smart specialisation strategies, other policy domains or even a dedicated design policy) while tacit design policies refer to countries with government-funded design policy mechanisms (this could be design support programmes, design promotion activities or design centres)"
> (Whicher, Swiatek, and Cawood, 2015, p. 24).

In Brazil, the design support programmes are part of tacit design policies, not being officially addressed within other branches of national policies, and not pursuing a specific dedicated national policy, strategy or plan.

Design support constitutes one of the ranges of design policy's activities. There are diverse definitions of design support depending on the source (i.e. Raulik-Murphy, 2010; Schneider et al., 2015; Sun, 2010; Schneider et al., 2015). In this thesis, the Raulik-Murphy and Cawood (2010) and Whicher, Swiatek, and Cawood's (2015, p. 14) definitions were considered appropriate to the Brazilian cases of design support, stating that:

> "Design Support Programmes work directly with businesses and the public sector, providing advice and assisting them to make effective use of design."
> (Raulik-Murphy & Cawood, 2010, p. 121)w

Whicher, Swiatek, and Cawood's (p. 14, 2015) complement that: "Design support programmes are a policy instrument for improving the use of design and can comprise of one-to-one mentoring ranging from light-touch to more specialised interventions, as well as subsidies, tax credits, and export schemes." (Whicher, Swiatek, Cawood, 2015, p. 14)

Activities of integration of design into businesses through a design policy, such as capacity building, dedicated advising and bespoke support (Schneider et al., 2015, p.10) can be also deemed as design support activities according to the aforementioned definitions (Raulik-Murphy & Cawood, 2010, p. 121; Whicher, Swiatek, Cawood, 2015, p. 14).

In the Brazilian case, design support is defined, developed and managed mainly by non-profit private entities. These entities are funded through Brazilian Government's tax paid by formal companies or registered firms in diverse industries.

Why design support?

> "… design creativity linked to technological competence and entrepreneurial capability can be a powerful means not only of resisting the penetration of global companies in existing product markets, but enhancing a nation's competitiveness. Establishing clear concepts of entrepreneurial approaches to design in small companies should be at the heart of any national design policy."
> (Heskett, 1999, 2016, p. 232)

Successful innovation and change towards more innovative contexts are noticed in an environment strongly supported by public policies and funding, which can be observed in several countries, such as the United States (Mazzucato, 2013), Korea (Chung, 1993, 2015; Kim, 1997), Australia (Bentley, 2014), Singapore (Lerner, 2010). Policy decisions regarding investment in innovation and national strategies by which innovation is led define important changes in the way these countries create value and become

[2] Explicit design policy was also previously recognised as dedicated design policy (see for instance Bitard & Basset, 2008).

more competitive in the global arena. Julier (2017, p. 144) stresses the public sector as "a major user and stimulant of design activities", although this factor has been overlooked.

Design innovation deserves attention and investment at the national level of policy-making to promote required changes in order to make the country more competitive and prepared to face international innovation standards that can consolidate economic growth in emerging economies (OECD, 2014; Economic Commission for Latin America and the Caribbean [ECLAC], 2015; European Commission, 2015a).

Design support is part of the design policies activities and is one of the ways largely employed in Brazil to introduce design innovation into MSMEs, being supported by public funding. Hence, design support initiatives should be better exploited and understood in order to attain a promising scenario to design innovation. SMEs representativeness in the economy leads to consider more strategic and entrepreneurial approaches to design at the core of design policies (Heskett, 1999, 2016). Design support programmes are one of the means which crafts these approaches to design. Thus, design support programmes might be critical to providing an appropriate approach to design in SMEs.

Furthermore, a worldwide concern has been the fact that policy-makers have been exceedingly dedicated to making paper about what ought be done without doing[3] (Vohnsen, 2011 cited in Bason, 2014, p. 1). In the case of design, in which doing is related to knowledge formation, this fact constitutes a gap in the policy-making process regarding design support interventions.

Bason (2014) explains that "policy-makers lament the fact that perhaps they do not make the difference to people and society they could" (p. 1). Both claims (Vohnsen, 2011 cited in Bason, 2014; Bason, 2014, p. 1) reflect the policy-makers responsible position towards citizens. In the Global Competitiveness Report 2017–2018, the World Economic Forum reinforces that "Ensuring future economic growth will require solutions that are more creative than any we have seen so far" (Schwab, Sala-i-Martín, & Samans, 2017, p. v). This matter has been discussed in the design for policies domain.

Brazil ranks 137th, scoring 1.3 (from 1 [worst] to 7 [best]), regarding the low public trust in politicians within the institution pillar in the Global Competitiveness Report 2017–2018 (Schwab, Sala-i-Martín, & Samans, 2017). This is also a constraint to participatory policy-making process that has emphasised the need to shift from traditional top-down approaches towards bottom-up approaches to policy-making (Chisholm, Cruickshank, Evans, & Cooper, 2013; Julier, 2017; Maffei, Mortati & Villari, 2014c; Mortati et al., 2016; Whicher & Walters, 2014; Whicher, 2015) albeit this aspect is not prescriptive across the literature (e.g. Whicher, 2015). This shift requires confidence between the various stakeholder groups. Besides meaning investment in relationship building, it is also resource and time intensive and may need a long-term perspective (Chisholm et al., 2013).

Design support initiatives are one part of design policy interventions. In Brazil, they are funded by government tax rates and are vulnerable to the political climate, rationales of governance, and the regime in which they are immersed in.

This thesis searches for solutions and rec-

[3] It means that policy-makers have been overwhelmed by bureaucracy and planning, and that policy processes have traditionally separated planning from implementation. This creates a gap between the craft of policies and the recognition of the reality in which these policies will be implemented what might generate policies which do not correspond to citizens' needs.

ommendations on design support towards a promising scenario to cultivate design innovation considering barriers and drivers to design innovation in a holistic perspective. However, everything written here can be only useful in an environment where policy-makers are primarily concerned with making a difference for citizens and society, even though making paper (Bason, 2014) can be regarded as a global constraint and, throughout neoliberalisation approaches and processes, the outsourcing of public services tends to make service providers more committed to investors than to the public (Julier, 2017).

Junginger (2014) addresses this condition to use design at the policy-making level: "If the public sector is serious about its efforts to modernize administrations, become more citizen-centred and transform governance, design will have to become part of the curriculum of future policy-makers, civil servants and other public managers" (p. 58). In the case of design support, the main concern can be described as being effective, promoting changes that enhance small businesses' conditions and capabilities to face challenges and foresee opportunities through the use of design.

Mortati et al. (2016) similarly reinforce the need for change in the public sector approach, which requires that public officers (or civil servants) shall get closer to designers' roles and competencies in order to deal with the current complex (systemic and interconnected) challenges faced by governments that cannot be solved anymore by using pre-set answers, demanding experimentation typical of design approaches, crafting solutions/opportunities first in small scale to gradually increase the scale for the whole population. This reasoning is also highlighted by Julier (2017).

Design besides designers

> "... the owner/founder of the company [...] determines whether design knowledge classifies as useful or not" (Acklin, 2013, p. 157)

Silent design (Gorb & Dumas, 1987) was a remarkable phenomenon evidenced through design management research. It showed that design relies on other functions than designers. These other people contribute to meeting a good design, even though they do not perceive they are doing this. In the 1990s, Pilditch (1990) emphasised the role of companies in reaching a good design: "See good design and you see a good client" (Pilditch, 1990, p. 14). Peters (2001) uses the term design mindfulness to address corporations (e.g. Sony, Apple, BMW) in which design is "the wellspring of the corporate culture (or "soul") and of the "brand proposition" itself" (Peters, 2001, p. 4) through their design aware (and passionate) leadership (Peters, 2001). The relevant role of owners in MSMEs to introduce design innovation is still being emphasised (Acklin, 2013; Bruce, Cooper & Vazquez 1999), though not defined in detail.

On the other hand, Boland and Collopy (2004) explore the way designers approach and mindset can be applied to management practices, and Michlewski (2008) defines the influence of designers' professional cultures in design-led organisations. Both present compelling visions about designers' contributions to other roles within organisations.

D'Ippolito, Miozzo and Consoli (2014) analyse (at the micro and meso level) events that were critical to learning and that spurred routinisation of design (product development) activities within the Italian home furnishing industry in firms that are "well known for undertaking de-

sign activities on a regular basis" (D'Ippolito et al, 2014, p. 1339). They notice how technological (e.g. new materials, technologies), organisational (e.g. general trends of developments in information and communication technologies [ICTs] and globalisation), and institutional (e.g. triennial events, Triennial Foundation, Compasso d'Oro award, Association for Industrial Design [ADI]) events spill over across firms and sectors, leading to firms and industry practices' changes (e.g. with development and acquisition of new skills).

The authors highlight the importance of firms' engagement with experts to increased professionalization and establishment of new professional roles, stressing the value of trial-and-error and prototyping practices from design processes (carried out by diverse experts besides designers) to new knowledge generation. D'Ippolito et al. (2014) call attention to design idiosyncrasies, such as the highly diversified set of skills and competencies required to the formalisation of design knowledge in which solutions are drawn on a cumulative understanding and redefinition of problems, as well as new visions propositions to users. The environment within firms operate is considered favourable, providing feedback and support to diffuse novel practices (D'Ippolito et al., 2014).

The importance of the integration of designers with other functions in companies is still being emphasised nowadays in companies' practices. Andrea Laurenza (2017), Head of Deloitte Digital Italy, clearly demonstrates this need, in his words: "We are looking for designers who are available to interact with other people […] You [designers] have to interact with other creative parts". The same reasoning is demonstrated by Fiorella Villa (2017), from B&B Italia, when she says: "we [designers and company] must work together" [4]. Jay Osgerby[5] , a designer who has developed products for B&B, confirms this need: "To make a son [new product] you need a mother and a father [company members and skills, and designer]. It is not just the designer who makes it."

However, the contribution and role of other functions throughout the design process are inquired but not defined in-depth in design studies, particularly in the case of MSMEs with little or no design experience in which design is fledgling, and in environments which are not favourable to design innovation. For instance, in which sort of characteristics a 'good client' or a small company owner (e.g. Acklin, 2013; Pilditch, 1990), as well as companies' best practices, can be recognised in this context. Although the design attitude has been analysed (Boland and Collopy, 2004; Michlewski, 2008), the openness to designers and design in those contexts is generally taken for granted.

Hence, in this thesis, the first empirical cases analysis looks at companies' engagement with designers and conditions to take in and lead design throughout design support projects implementation. The analysis of the second group of cases points out beneficiaries' (generally company owners in MSMEs) characteristics that contribute to or block the use of design throughout projects. This attempt aims at contributing to filling in this gap in the contexts of introduction of design innovation into MSMEs

[4] "dobbiamo lavorare a quattro mani"

[5] In the occasion of the lecture led by Villa (2017) about B&B Italia, Jay Osgerby was presented in the B&B Italia institutional video and he referred to the importance of companies' contribution to achieving a meaningful design solution.

with little or no design experience.

Expanding on Boland and Collopy's (2004) main idea of 'managing as designing', and on design for policies grounds, policy-makers can learn from designers' practices and approach not only to problem-solving but also to new opportunities identification, designing, and implementing meaningful projects that make the difference to beneficiaries, contributing to the design of desirable futures. This idea started to be developed by Junginger (2014). This process is a two-way street; designers can also learn from beneficiaries and policy-makers. This alignment will vary according to: (1) the skills and background of key stakeholders; (2) the engagement between key stakeholders, or openness to one another, which also concerns trust between them; (3) the awareness of the shared goal of improving beneficiaries' contexts; and (4) policy-makers and beneficiaries' conditions and attitude towards design.

Schneider (2006) stresses the need for tools and methods to evaluate companies' capabilities for innovation, including resources, strategy, and management but harnessing design goes beyond organisational factors. Therefore, the ecosystem level is also explored in the thesis, especially in the second group of cases analysed, shedding light on external factors that can hinder or lever the use of design. External environment influences in design are usually overlooked (see, for instance, Julier, 2017), but they are fundamental to understand and to harness design. They work as spurs to design that shapes itself in response to external environment's changes and challenges in a defined social, political, and economic context and time (i.e. Julier, 2017), as well as design shapes the world (e.g. Simon, 1996). So the familiarity of policy-makers with design becomes a key component to move towards favourable contexts to design innovation in order to better serve citizens' real needs and build up better futures (see, for instance, Junginger, 2014).

Research questions and goals

This thesis aims at shedding light on what matters to introduce design innovation into Micro, Small and Medium-sized Enterprises (MSMEs) with little or no design experience in mature or traditional industries through design support projects, programmes or initiatives within a national context that might be seen as not favourable to design innovation. This issue was translated into questions as follows:

- What are the barriers and drivers to introducing design innovation into MSMEs through design support?
- What are the new barriers and the new drivers found in these Brazilian cases?
- What are the meanings of these new barriers and drivers attributed by key stakeholders?
- Might we envision a promising scenario to cultivate design innovation?
- What are the challenges?
- How can design support initiatives and their main stakeholders contribute to building this promising scenario?

These issues are analysed throughout the thesis at three levels: individual (actors), organisational (micro); and ecosystem (macro).

Other issues are set out, and suggest a reflection on the research findings rather than a definitive answer: What matters when bringing or to considering design at the core of organisations' strategies? Is design for everyone (every country)?

Research approach and methodology

> "… design knowledge is of and about the artificial world and how to contribute to the creation and maintenance of that world. Some of it is knowledge inherent in the activity of designing, gained through engaging in and reflecting on that activity." Cross (2001, p. 54)

The nature of design knowledge is strongly related to its practice (Brown, 2009; Cross, 2001; D'Ippolito, 2014; D'Ippolito et al., 2014). Design skills are generally gained in an approach 'learning by doing' (e.g. design thinking approach). A design culture emerges, is shaped, and nurtured as a consequence of the adopted and evolved design practices throughout time (i.e. Deserti & Rizzo, 2014; D'Ippolito et al., 2014). The idea that "knowledge evolves as a by-product of practice is widely accepted" among innovation scholars, although the institutional mechanisms which enable practical know-how diffusion are still under-researched (D'Ippolito et al., 2014, p. 1335). Considering these assumptions, this research uses an inductive reasoning, starting from empirical cases to identify the integration of design's problematic in the context of design policies, specifically design support initiatives, when the beneficiaries are MSMEs in mature industries and have little or no design experience.

The researcher's background in design supported interpretations and understanding of the studied phenomenon. She took part as a designer in the implementation of several design support programmes' projects in Brazil and the issues that were discussed in the first group of analysed cases raised from these empirical contexts when the projects were carried out, mainly based on primary sources through the use of participant observation.

The second group of cases studied came from experiences in which the researcher did not participate in order to consider (a) other key stakeholders' perspectives on the phenomena (beyond designers' representative), and (b) other factors at diverse levels that influence to use or not to use design, in other words, the barriers and drivers to harnessing design innovation potential according to aspects related to the individuals, to the organisation and to the external environment.

Current findings in the design management and design policy literature, such as:

- design results are more evident throughout time relying on longtime strategies (Rae 2013, 2014),
- the identity of design at the organizational level is not clear; design still is undefined in terms of responsibility, budget source, guidelines, and power, presenting a non-clear form to manage (Acklin, 2013; D'Ippolito, 2014),
- the company's performance is not just an outcome of design adoption (Chiva & Alegre, 2009; Gemser & Leenders, 2001; Roy & Riedel, 1997) or design policy intervention (Raulik-Murphy, 2010),
- design is very "integrated into the fabric" of design-led organizations (Westcott et al., 2013),
- difficulty in evaluating design impacts at the firm level (Cooper et al., 2016; Schneider et al., 2015; Westcott et al., 2013), as well as building a culture of evaluation at the design policy level (Arquilla et al., 2015),
- the shortage of qualitative studies that look at design and management (Schneider, et al, 2015);
- the lack of a broader perspective, such as macroeconomic or socio-economical approaches (Schneider et al., 2015);
- the need for criteria that would assess in a broad manner the innovation capacity of

businesses vs. evaluating the innovation in a given product or service (Maffei, Bianchini, & Mortati, 2014b; Schneider et al., 2015);

- the failure in the selection of the design policies' beneficiaries suggesting that the selective processes of beneficiaries have not achieved the 'right companies' with the potential to innovate (Maffei, Bianchini & Mortati, 2014b);
- the focus on quantitative aims (such as number of supported SMEs), rather than on the quality of the approach, design work and capacity building (Schneider et al., 2015);
- the lack of studies addressing design strategy and management in less advanced economies (Er, 1997; Heskett, 2001b),

contributed to adopt a qualitative and exploratory research approach. Most studies focus on design-oriented contexts or on the relationship between design and economic benefits or companies' performance, particularly exploring successful cases in large enterprises and global corporations' contexts or are drawn from an advanced economy perspective in which design has been built upon (see for instance Heskett, 2001b). Little attention in the design management field has been devoted to how and why organisations move on the design ladder and what features/aspects contribute to the potential use of design, as well as the barriers in doing so, especially in the case of MSMEs with little or no design experience in emerging economies.

The need to better understand how elements at diverse levels support the conditions and lever the decision to use (as well as its intensity of use) or not to use design towards more innovative contexts, evidencing empirical barriers and drivers at the micro level motivates the first empirical cases analysis of this study and provides implications for key stakeholders.

The second sample of cases enlarges the landscape of introducing design innovation into MSMEs through design support initiatives analysing two cases in which barriers and drivers to design innovation emerged and were explored from the individual to the ecosystem level. This second cases' analysis aims at providing a holistic viewpoint on barriers and drivers to design innovation in the context of MSMEs, especially in Brazil, as well as pointing out the perspectives of the main actors (policy-makers, consultants, and beneficiaries) that took part in design support initiatives. The meaning of each barrier and each driver quoted by actors were explored in order to better grasp these barriers and drivers in those situations. New barriers and new drivers were also identified.

Recommendations from these cases analysis were finally pointed out in order to support the process of surpassing the barriers and to build design support initiatives through a more sustainable approach to introducing design innovation into the practices of MSMEs. A metamodel for design support programmes is proposed based on the learnings from the empirical cases and literature analysis. A promising scenario to design innovation is pointed out, defining challenges, as well as implications for design support and key stakeholders, in order to contribute to attaining this scenario.

Philosophical assumptions and implications for methodology

The need for this holistic outlook and for the analysis of diverse actors' perspectives who took part in the cases come from the research assumptions. The first assumption refers to what Burrell and Morgan[6] (1979) categorize as human nature being associated with the ontological[7] and the epistemological[8] issues despite separate from them, constituting a set of assumptions that concerns "the relationship between human beings and their environment" (Burrell & Morgan, 1979, p.2). This study adopts a perspective in the range between that is not deterministic[9] neither voluntarist[10], which means that individuals can influence their society and environment and vice versa. Therefore, the identification of barriers and drivers to design at diverse levels and the analysis of actors' viewpoint become crucial to supporting the understanding of the cases.

This research uses an interpretative, constructivist and phenomenological approach. The kind of generalization that this inquiry aims at is known as naturalistic generalization by Stake and Trumbull (Stake, 2000) where the readers associate their experiences to the cases being told, adding, subtracting, reshaping the knowledge "in ways that leave it differently connected and more likely to be personally useful" (Stake, 2000, p. 442-443).

Two research strategies were combined in order to accomplish this: case study and grounded theory. The case study is indicated when a contemporary phenomenon is inquired in a real context where the boundaries between the context and the phenomenon are not clearly defined (Yin, 1994). It allows diverse research phases interaction throughout the research process, which enables flexibility to better update and design the research according to the discoveries about the phenomenon and the needs found out throughout the research process (Eisenhardt, 1989). The grounded theory approach enables evidencing the meanings from empiri-

[6] Burrell and Morgan (1979, p.1) build on the idea that "theories of organisation are based upon a philosophy of science and theory of society", hence, to grasp alternative viewpoints, the researcher should be fully aware of the assumption upon which his/her outlook is based.

[7] Refer to the essence of the phenomena, one ontological question, for instance, is whether the 'reality' to be inquired is (a) external, pursuing an objective nature, given out there; or (b) is internal the individual, being a product of the individual cognition, product of one's mind (Burrell & Morgan, 1979, p. 1).

[8] Concern the grounds of knowledge, "how one might begin to understand the word and communicate this as knowledge to fellow human beings" (Burrell & Morgan, 1979, p. 1). The extreme epistemological visions regard knowledge "as being hard, real and capable to be transmitted in tangible form", or as being "softer, more subjective… based on experience and insight of a unique and essentially personal nature" (Burrell & Morgan, 1979, p. 1-2).

[9] Extreme view that sees human beings as subjects and objects of enquiry, being conditioned by their external circumstances, responding in a mechanistic or deterministic manner to situations in the external world (Burrell & Morgan, 1979, p. 2).

[10] Opposite of the deterministic view, the voluntarist perspective sees the human being as creator of their environment, where 'free will' plays a definitive role (Burrell & Morgan, 1979, p. 2).

cal data (Glaser & Strauss, 1967).

To support cases understanding and knowledge building, this study shows how the cases are like and unlike other cases concerning the studied phenomena, describing and interpreting the meanings attributed by different actors to the barriers and drivers studied, and confronting them to prior research, evidencing which were the particular elements of these cases and which were their ordinary features discussed in previous studies, clarifying the meanings given by the participants of this research, particularly in the second group of cases (Chapter 7 of this thesis) this emphasis was explored.

Triangulation of methods was used, and methods were selected according to the different needs that emerged during the research. Eisenhardt (1989) defines research as a dynamic process in which learnings throughout research stages enable diverse research phases interaction and the update of the research design. Stake (2000, p. 435) emphasises understanding the case more than focusing on methods:

> "By whatever methods, we choose to study the case. We could study it analytically or holistically, entirely by repeated measures or hermeneutically, organically or culturally, and by mixed methods – but we concentrate, at least for the time being, on the case [...] As a form of research, case study is defined by interest in individual cases, not by the methods of inquiry used." (Stake, 2000, p. 435)

Hence, this methodology approach was drawn from multiple data sources, which included:

- primary data sources: participant observation, semi-structured interviews (addressed to key stakeholders' representatives who take part in the design policy-making processes, such as policy-makers, advocates, designers and other consultants, and beneficiaries), in-depth interviews (to get insights on specific topics that emerged in the semi-structured interviews), questionnaires (used to explore one specific output of the first phase), and participation as listener in events related to design policy, design for policy and design innovation;
- secondary data sources: desk research (data collection and analysis of papers, literature, brochures, documents, websites of projects, institutions and companies).

The implications for policy-makers, consultants, and beneficiaries are evidenced from the real-world environments. The findings are not statistically significant because the sample size was very small, and it is difficult to statistically define enough participants since there is not enough data about design support and policies in Brazil (see for instance CBD, Apex-Brasil, MDIC, 2014). However, this is a typical feature of real contexts studies where the recruitment of participants is harder than in lab experiments as pointed out by Paulus and his team who research brainstorming practices and tested them in the actual workplace (Paulus, Korde, Dickson, Carmeli, Cohen-Meitar, 2015; Sneed, 2016).

Then, the main contribution is related to the fact that the findings were rooted in the real context of design support initiatives including their conditions and forms of actions, considering the real people who joined those and their perceptions. Readers can recognise similarities and differences compared to other contexts and evaluate the extent of the applicability (or not) of these findings to their contexts. The contribution relies mainly on what can be learnt from these cases as emphasised by Stake (2000, pp. 446-447): "Potential for learning is a different and sometimes superior criterion to representativeness". The sample of this research was purposively selected according to the criteria specified in each chapter of empirical cases.

The country selection considered the productivity gap that exists between MSMEs in Europe and in Latin America that indicates the need to enhance the production systems in Latin America, which should move towards innova-

tion, improving skills to consolidate and keep the economic growth (ECLAC, 2015; European Commission, 2015a; OECD, 2014).

Furthermore, methodology scrutiny of each research phase is provided as it was carried out at the time, being particularly described in the chapters that focus on empirical cases.

Brazilian context

Brazil is a developing country located in Latin America. The research focuses on Brazil considering its representativeness in Latin America. Brazil, Mexico, and Argentina have the more developed production structures in Latin America (ECLAC, 2015). Brazil has the biggest GDP (Gross Domestic Product) amongst Latin America countries, ranking the seventh economy in the world in 2013 (World Bank, 2015). After the ten-year economic growth, since 2010 Brazil has experienced the economic slowdown.

Despite the argument of globalization as a means to shrink distances and empower developing countries (Friedman, 2005), there are many constraints to be overcome in enterprises from these countries in order to achieve innovative behaviour, developing, and routinizing design innovation practices. Latin America presents a different historical background, technological approach, development, and macroeconomic policy when compared to Europe and the USA, where most design approaches come from.

The imitation of products previously manufactured by a pioneer is a way to survive in SMEs. This behaviour can be noticed in clusters where the creation of an SME is linked with a reaction to the unemployment condition in Latin America, as well as the lack of some skills that have been considered crucial to innovation and related to its management (Altenburg et al., 1999).

Design-intensive industries (definition in Verganti, 2003, p.35) are still presenting the 'followers' behaviour (see for instance Galinari, Teixeira Junior, & Morgado, 2013; Silveira da Rosa, Correa, Lemos, & Barroso, 2007 about this context in the furniture industry) in Brazil. The development of joint actions has been indicated as a useful way to engage companies towards innovation but the lack of confidence between firms in Latin America clusters has blocked this kind of long-run action (Altemburg et al., 1999).

Social inequalities, low quality of education, lack of management skills and knowledge are barriers to the consolidation of economic growth (ECLAC, 2015; OECD, 2014) despite the high craft skills identified in Latin America (Altenburg et al, 1999). Manufacturing and services correspond to 20% of the productivity growth in Brazil even though over 80% of the added value and employment are concentrated in these sectors. The productivity growth in Brazil is associated with low added value sectors, agriculture, and mining, whereas in Asia the economic growth is based on manufacturing (OECD, 2013a). By contrast, international design rankings show the predominance of big traditional industry nations (e.g. the USA, Germany, Japan) as well as the attempt of Asian countries, such as India and China, to "move away from price competition towards higher added value, quality and brand-based competition" (European Commission, 2009, p. 41). South Korea stands out regarding investment in design (European Commission, 2009). On the other hand, the heterogeneity of design is observed within European countries where "new Member States — do not consider design in the context of innovation and competitiveness" (European Commission, 2009, p. 53).

Brazilian history is characterized by a late forced industrialization that brought international producers from North to South influencing the development of a design culture in Brazil (Moraes Junior, 2002). Although Brazil shows meaningful and authentic cultural ex-

pression, reports and research (Altenburg et al., 1999; Galinari, Teixeira Junior, & Morgado, 2013; OECD, 2013a; Silveira da Rosa, Correa, Lemos, & Barroso, 2007) have expressed that Brazilian enterprises lack the capacity to absorb design culture and to foster innovation. For instance, firms in the furniture industry do not tend to develop long-run strategies (Silveira da Rosa, Correa, Lemos, & Barroso, 2007). The furniture industry usually does not present an innovative attitude (Gemser and Leenders, 2001, Galinari et al., 2013). However, behaving differently among firms in the same industry has been recognised as better than behaving as a follower (Gemser and Leenders, 2001, Roy and Riedel, 1997). On the other hand, design and innovation do not always achieve success and the way the company leads design and innovation is relevant to get good performance (see for instance Bruce & Bessant, 2002; Chiva & Alegre, 2009; Gemser & Leenders, 2001; Roy & Reidel, 1997; Teece, 1986; Walsh, 1996).

The rupture with its roots, such as traditional craftwork (Borges, 2011), along with other social conditions led Brazilian design to the identity crisis (Moraes Junior, 2002). The need to change this scenario has been reported in diverse publications which show the urgency to adopt routes towards a more innovative environment (ECLAC, 2015; European Commission, 2015a; Galinari, Teixeira Junior, & Morgado, 2013; OECD, 2014; Silveira da Rosa et al., 2007).

Data and research on the use or on the management of design in Brazil are scarce (CBD, Apex-Brasil, MDIC, 2014). Some institutions have discussed design in the Brazilian industries (e.g. ABDI, BNDES, IEMI, FGV, SEBRAE). These institutions emphasise the importance of design to achieve innovation and to compete in the market but they do not point out how to use design aligned with the firms' context or how to integrate design into SMEs towards an innovative culture[11].

Design teams face difficulties in the design process to align with the enterprises' expectation. Designers tend to innovative solutions while the companies do not seem prepared to adjust or to anticipate changes (see for instance Schneider, 2006). Lack of job opportunities and the devaluation of the design activity are constant complaints among designers working in Brazil. Designers feel that companies are still not recognising design as a strategic resource or as an important way to innovate and create value despite all the emphasis design activity has gained worldwide[12].

[11] An innovative organisational culture is based on the implementation of ideas (Kenny & Reedy, 2006, p. 119). Innovative cultures are risk-taking, engage all members promoting participation, encourage creativity, learning, share responsibilities, are committed to innovation (Kenny & Reedy, 2006; cited in Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2016), and can be measured by number of innovative services or products launched (Kenny & Reedy, 2006) and investment in innovation (Rao & Weintraub, 2013).

[12] Evidence of this feeling was demonstrated in August (2015) when Professor Marcos Breder from the University of Minas Gerais Federation (Universidade do Estado de Minas Gerais [UEMG]) posted a question at the time for the design community (students, professors and professionals) on social media about the situation of design in Brazil, whether it is an issue of methodological inadequacies to the reality, whether the university was preparing students for the market. Most designers showed discontentment about the market acceptance with comments, such as: "demand for product design is almost inexistent" emerged. Other comments mentioned that the methods are not coherent to the reality of most Brazilian companies that want immediate results, commercial products and do not recognize or value designers. A similar controversy is noticed by Schneider (2006) who notices the short-term results desired by companies in contrast with more future-oriented visions of designers.

This aspect had been previously observed in the 1980s in Turkey by Er (2002) who points out the rise of design students while "with the exception of a handful of design-conscious firms, industry was unaware of the possible contribution of design in competitive performance, and reluctant to employ designers" (Er, 2002, p. 184), which leads to unemployment. Er (2002) considers the Turkey situation similar to the one in Latin American countries. However, the discussion on social media did not raise the issue of the Brazilian's macro factors and policies that influence design and designers conditions in Brazil.

Some explanations about this phenomenon have been related to the macro level, such as the historical, social, political and economic factors (ECLAC, 2015; Er, 1997, 2002; Moraes Junior, 2002; OECD, 2014, 2013a) that shaped the enterprises' behaviour and vision about design as a cost and not as an investment (Silveira da Rosa et al., 2007), along with the context in which companies were born (Altenburg et al., 1999) and compete (Er, 1997, 2002). The Brazilian domestic market competition is inward-focused and heavily protected from international competition (Araújo, 2016; Arnold, 2016; Gupta, Weber, Peña, Shipp, & Healey, 2013).

The high cost of doing business in Brazil, known as 'custo Brasil' or 'Brazil cost', also discourages investment in innovation (Gupta et al., 2013). The 'Brazil cost' refers to a "highly complex tax system, poor infrastructure, an unpredictable regulatory and legal system and an inefficient bureaucracy" (World Economic Forum [WEF], 2018, p. 6). According to the World Economic Forum (WEF) Brazil presents some characteristics that discourages doing business and innovation, and the top 16 problematic factors for doing business according to this survey are ranked as follows (Schwab, Sala-i-Martín, & Samans, 2017, p. 70):

1. Tax rates
2. Restrictive labour regulations
3. Corruption
4. Inefficient government bureaucracy
5. Inadequate supply of infrastructure
6. Policy instability
7. Tax regulations
8. Access to financing
9. Government instability/coups
10. Inadequately educated workforce
11. Inflation
12. Crime and theft
13. Insufficient capacity to innovate
14. Poor work ethic in the national labour force
15. Poor public health
16. Foreign currency regulations

Although overall improvements in education, and numbers of quality and extent of science, technology, engineering, and mathematics (STEM) graduates have doubled between 2000 and 2010, public and private sector investment in R&D is low, private economy has not exploited R&D resources to its benefit, and industry and academy are not integrated towards research application, lacking linkages between them (Gupta et al., 2013). The low investment in innovation has been related to historical protectionist policies adopted by the government, and the increase of local demand that do not push industries towards more innovative paths (Gupta et al., 2013). The companies usually operate in vertical supply chains, not being well integrated into horizontally integrated supply chains of multinational corporations, which is considered a disadvantage compared to Southeast Asian countries (Gupta et al., 2013). Hence, innovation in the industry generally limits to the acquisition of foreign technologies which are adapted for local and regional markets (Gupta et al., 2013).

Design is not considered within industry and innovation policies documents and reports in

Brazil (see for instance Gupta et al., 2013; Mazzucato & Pena, 2015; Patrocínio, 2013; Torres Freire, Massami Maruyama & Polli, 2017).

The thesis chapter by chapter

This dissertation is organised into three parts:

- Part I focuses on building the conceptual framework (Section 1), and describing and analysing the context in which the phenomena was inquired (Section 2);
- Part II concerns the empirical cases which were divided into two stages; Chapter 6 represents the first empirical cases studied and presents an approach more focused on the micro or organisational level of analysis that is closely related to the top management and leadership attitude (generally represented by the owner of the enterprise) in the context of MSMEs. Chapter 7 enlarges the scope of analysis which was framed at three levels (actors, organisational, and ecosystem).
- Part III regards the findings and learnings, contribution to the design policy field, limitations, and future research issues.

The **first part** of this dissertation is divided into two sections. The **first section** provides rationales for the use of design (Chapters 1, 3), as well as for imitation (Chapter 2) in the global arena from a literature review, building the conceptual framework. The **second section** looks at the context of this research (Chapters 4, 5).

Chapter 1 discusses the value of design. The first chapter attempts to clarify the motivations that lead organisations and countries to invest in design. The diverse value views that have been connected to design based on a literature review and analysis were conducted in order to clarify the issue of the design value. The need to approach this issue arose from practice. The idea is to evidence in a more 'shareable' and 'visual' way the value of design and related studies and fields since it has been very difficult to assure benefits directly related to the use of design (and to its use intensity).

Chapter 2 presents the counteracting (or supporting – depending on the context) role of the copycat behaviour and the different reasons that have been motivating firms, people and countries to 'follow the crowd' or imitate. In some contexts, the copycat attitude works as an alternative to survive (e.g. Latin America) and a means to innovate in the tech industry (e.g. China). Copy, imitation, and adaptation of original products have been carried out in different geographies and cultures, as well as in diverse historical moments.

Chapter 3 points out the MSMEs' relevance for a wealthy economy as well as briefly introduces their relations to design innovation.

Chapter 4 focuses on the development of the field of design policies, pointing out main studies and historical events that were crucial to moving towards the consolidation of the field, frameworks, and actors that have been identified and conceptualised to describe and visualise contexts of design policies. Research which focuses on less advanced economies is emphasised. Design support programmes' best practices are highlighted.

Chapter 5 introduces an overview of design policies in Brazil, and the design status in Brazil, especially from a design management viewpoint. The Brazilian Design Innovation ecosystem is illustrated, applying the framework suggested by Whicher and Walters (2014), and analysed. Design support programmes in Brazil are further explored and the main mechanisms are discussed in the light of best practices.

In this first part, a global perspective on topics which can be considered universal regarding design approach and practice is provided. This outlook is convergent with Krippendorff, Ma-

ser, and Spitz (Bonsiepe, Krippendorff, Maser & Spitz, 2015) thoughts on the universal character of design. Krippendorff (Bonsiepe et al., 2015, p. 18) claims that "…design is a basic human ability to construct or improve on the construction of our world with responsibility to those affected, directly or indirectly", and although "… there are cultural differences to be honoured… the process of proposing responsible innovations is not explained by national boundaries". Maser (Bonsiepe et al., 2015, p.18) emphasises that "any distinction should rather be project-specific and task-focused" relating to the field of application, not to national labels. Spitz (Bonsiepe et al., 2015, p.18) also addresses design as an "international phenomenon" being historically "a substantial part of industrialization"; in addition, she confirms her position stating that "any national label would reduce design to its superficial aspects, to the style features of formal aesthetics".

Moreover, studies on design policy (Er, 1997; Raulik-Murphy, 2010) have stressed the common role of design as a competitive tool in industries and firms (Er, 1997), and the similarity of the pattern of design programmes (Raulik-Murphy, 2010) in less advanced and advanced economies.

Thus, in this study, design is considered a worldwide practice that can be embedded in diverse contexts, presenting certain common routines, ways of thinking and doing, and expectations regarding change and future. On the other hand, the specific context of emerging countries can influence design adoption or use. Hence, the particularities of Latin America and Brazil are pointed out throughout the text, as well as studies that have addressed design in these contexts.

The **second part** of this thesis concerns the empirical cases analysis from where the overall literature review was selected in order to provide a better understanding, even though one part of this literature is previously presented in the thesis outline. Some literature review which is of interest for specific cases was placed near the empirical cases they address in order to facilitate the understanding of cases. All cases studied correspond to the most common models of design support initiatives applied across Brazil.

Chapter 6 explores a group of design support cases joined by the researcher. These cases are described and analysed looking at the micro level (enterprises' level), concerning mainly what goes on within MSMEs in order to contribute or block the use of design throughout design support projects implementation. 'The choice of design: from businesses conditions to businesses attitudes' focuses on empirical cases in the furniture industry, emphasising the role of firms' conditions and attitudes during the integration of design into their (not design-oriented) small businesses. This issue emerged from the researcher's practice and was one of the gaps realised in chapter 1 on the value of design concerning the capacity to 'absorb' design. Most 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 key 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.

Although the topic of a design attitude was previously explored in Michlewski's (2008) exploratory study, the attitude in the small business with little or no design experience that contributes to or undermines the use of design has not been empirically inquired. This chapter addresses 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 - from Acklin's (2011, 2013) proposed framework - through design policy projects of integration

of design into MSMEs or design support programmes. The main methods used in this first research phase were the author's participant observation and the literature review. The literature review included 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 capabilities in MSMEs.

Chapter 7 expands this outlook with new cases, in which the researcher did not take part in, looking at three levels of analysis ranging from human beings (related to individuals, actors) and organizations (micro) to the ecosystem (external environment influences). A framework at three levels is proposed in order to support barriers' and drivers' visualisation and analysis.

This chapter aims at broadening the framework of barriers and drivers that influence the integration of design into MSMEs through design support programmes' projects from the actors to the ecosystem level. The limitations of the map of perceived businesses conditions and attitudes, the output of the research first sample of cases, were also pointed out and inquired in depth. The second sample of cases has also the purpose to overcome some limitations faced in the first phase of empirical cases analysis, such as the lack of the key stakeholders' point of view and confrontation with other designers and consultants' experiences when implementing design support projects. Two projects in which the researcher did not join were selected in collaboration with a non-profit private entity (that is the main design support agency for MSMEs in Brazil) in order to provide new inputs of empirical evidence into the research.

The **third part** of the thesis concerns the learnings and the reflections on the whole research pathway and outcomes.

Chapter 8 sets out a promising scenario to cultivate design innovation based on critical factors to foster design capabilities development, and recommendations on how design support initiatives and key stakeholders can contribute to attaining this scenario, particularly improving design support processes, are pointed out.

Chapter 9 includes the discussion on the main thesis contribution to the research field, especially to design policy. Limitations and future research are defined, indicating challenges and possible next steps to better grasp the issues proposed.

In addition, a **Glossary** with few terms that have overlaps in literature, and others regarding the definitions of specific contexts quoted is provided after Chapter 9.

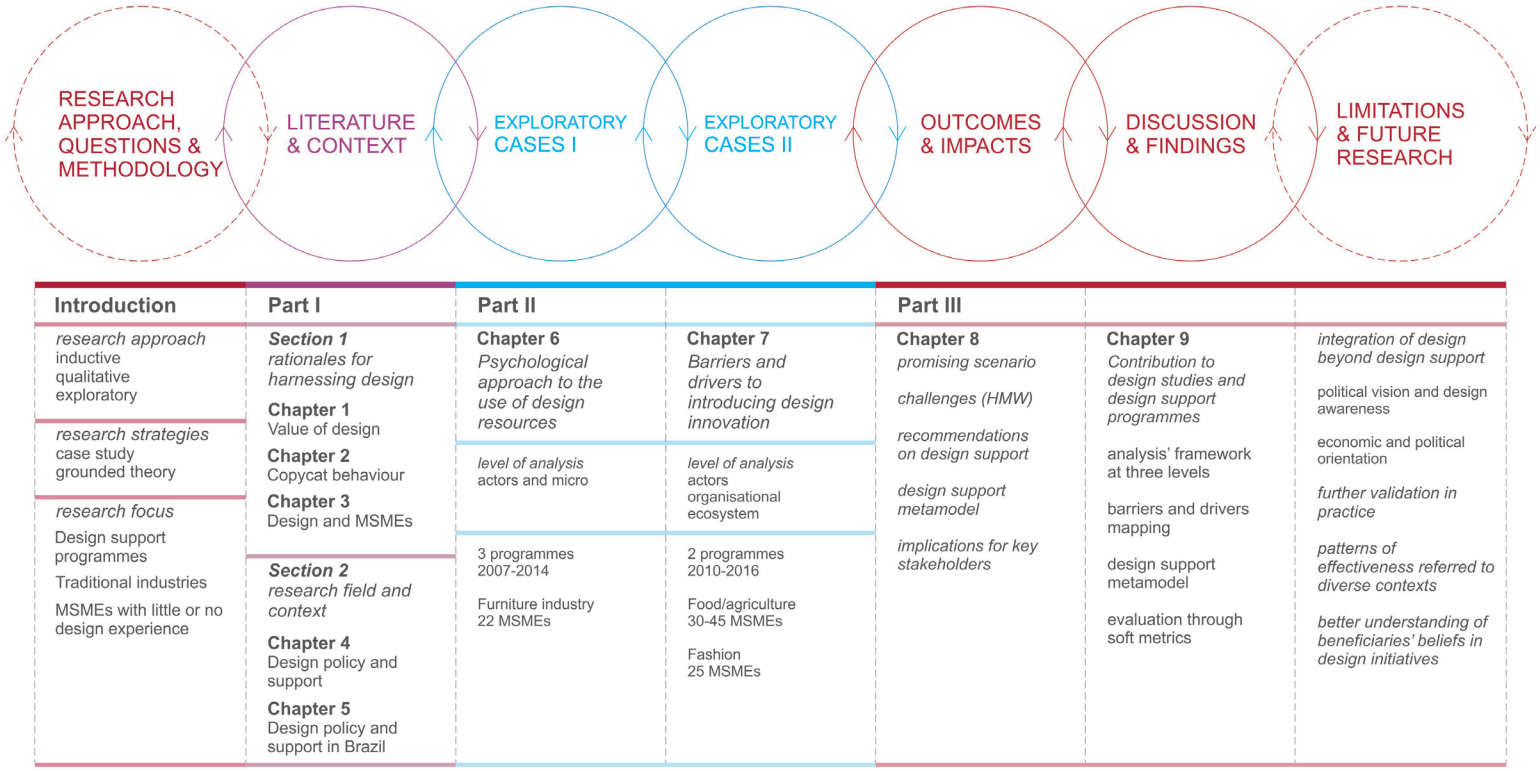


Figure 1: Research cycles

PART I

RATIONALES AND CONTEXT

SECTION 1

Rationales for harnessing design

CHAPTER 1

The value of design:

an issue of vision, creativity, and interpretation[13]

What is the value of design? Why should firms and countries invest in design? This chapter aims at clarifying the value of design, its dimensions and its variables (qualitative and quantitative) throughout a literature review and analysis. The premise is that firms invest in design to create value, and countries to boost productivity, competitiveness, economic growth, and wellbeing. Design has evolved, becoming closely related to innovation, and the need to clarify its dimensions and relationships to value within firms and society rise. Despite the global growing interest in design, generally, it is not fully understood how it brings benefits to companies and nations. The concept of value is found in a fragmented literature including economics, marketing, business, management, value engineering, design domains, social and environmental sustainability. In conclusion, the value of design still is under-researched and new dimensions emerge. It is shaped by designers' and companies' visions, creativity and interpretations, and adopted national strategies. Better cross-fertilization is required to identify the mechanisms of value creation by design.

Keywords: value of design, vision, creativity, cross-fertilization

[13] This chapter was built upon the paper 'The value of design: an issue of vision, creativity, and interpretation' (Fonseca Braga, 2016). It was originally presented at DRS2016 Conference: Future-Focused Thinking, held at the College of Arts and Humanities of University of Brighton and other locations of the Brighton Dome Complex, Brighton, UK, 27-30 June 2016. An initial version of the paper was included in the Proceedings of the event. This is a reviewed version of the paper, improved with the contributions from the Conference, and further literature review mainly addressing systemic and macro aspects.

Introduction

Chapter 1 is organized in four sections in order to provide a framework to develop the analysis that draws the answers to the questions and the conclusion. It starts pointing out design definitions, and the evolution of the term and activity is provided in order to contribute to the understanding of the relationships between value and design, as well as its enlargement.

The value of the design topic lies in clarifying the concepts of value reported in several domains and their limitations referring to the design perspective. The topic 'Why should companies and countries invest in design?' elaborates on the motives to adopt design, describing some reported studies that have approached the economic benefits generated by design in the companies and highlighting qualitative dimensions related to competitive advantage, as well as the forefront of UK and Denmark, in evidencing design benefits and fostering design across the country.

The discussion and conclusion topics are presented in two parts. The first part summarises the value of design dimensions and variables according to the different perspectives reported that can be related to design.

The second part emphasises the need to grasp design's nature and practices to better achieve cross-fertilization. In this sense, this chapter extends the Cross (2001), D'Ippolito (2014) and Heskett (2009) concerns about the importance of understanding design practices and theories. Design and its value are perceived as a question of vision (Borja de Mozota, 2006; Danish Design Centre, 2003; Heskett, 2009; Trueman & Jobber 1998; Walsh, 1996), creativity, and interpretation.

Design: definitions, approaches, and potential

> "Design is all around you, everything man-made has been designed, whether consciously or not" (Hunter, 2014)

The word design has its origin in the Latin term designare, which means "mark out, devise, choose, designate, appoint," where de- means "out" and signare means "to mark," from signum "a mark, sign" (Online Etymology Dictionary).

Leonardo Da Vinci is considered the first designer, but his legacy refers more to invention (Bürdek, 2006). The beginning of the industrial era (XVII-XVIII) separates design and manufacturing in the company (Bürdek, 2006; Forty, 2007). Design starts taking on a mediator role between producers and users to convey social aspirations to products' designs in a European perspective (Forty, 2007).

Two main streams of Design can be identified: (1) the inclusive one, that considers the multiplicity of design regarding arts and craftwork and (2) the polytechnic culture, where design is a branch of architecture and interacts with engineering, being called industrial design (Trocchianesi & Guglielmetti, 2012, p. 39).

The polytechnic culture is related to approaches that are close to product development and product engineering involving product design at the project level (e.g. Baxter, 1998; Pugh, 1991; Ulrich & Eppinger, 1995). Baxter (1998) defines product design as the set of project activities, which can be overlapped, systematically planned, and managed to approach each project context.

The inclusive perspective can be observed in the Italian cultura del progetto[14] (Munari, 1981;

[14] The term is not considered synonymous with design culture.

Paris, 2014), where the immersion in design is part of the culture and history and emerges from diverse relationships framed in the company throughout its experience and its relationships to diverse stakeholders, generating meanings that are conveyed to and valued by people.

The idea of design culture conceptualizes design as a mediator between the production and consumption worlds (Deserti & Rizzo, 2014; Forty, 2007). The designer is seen as an interpreter of social aspirations and serves as a means to convey values through products, services, experiences, and so on.

Verganti (2008) introduces the concept of design-driven innovation, a top-down approach to design. Instead of a user-centred design approach, the strategy of design-driven innovation is used by design intensive firms based on their visions about possible new product meanings and languages that might spread in society (Verganti, 2008). The design intensive company uses external interpreters to understand, anticipate, and influence the emergence of new product meanings (Verganti, 2008). According to Verganti (2008, p. 450), "this process is more knowledge-based than creativity-based".

Bottom-up (or user-centred) approaches, such as design thinking (Brown, 2008) and emotional design (Norman, 2008), were emergent in North-America, especially in the USA, where the focus on market and consumer-related needs are perceived throughout their industrial design history and culture (Paris, 2014).

Norman (2008) describes the design expertise as the one responsible for discovering the users' needs that they cannot express by themselves. Several ethnographic methods and the use of interdisciplinary teams have been suggested to achieve users' needs through design thinking (Brown, 2008, 2009). Norman (2008) develops the argument that emotion plays a fundamental role in better products use; people feel more motivated to solve problems or to grasp products' use as a consequence of the emotional relationship established through product's aesthetics.

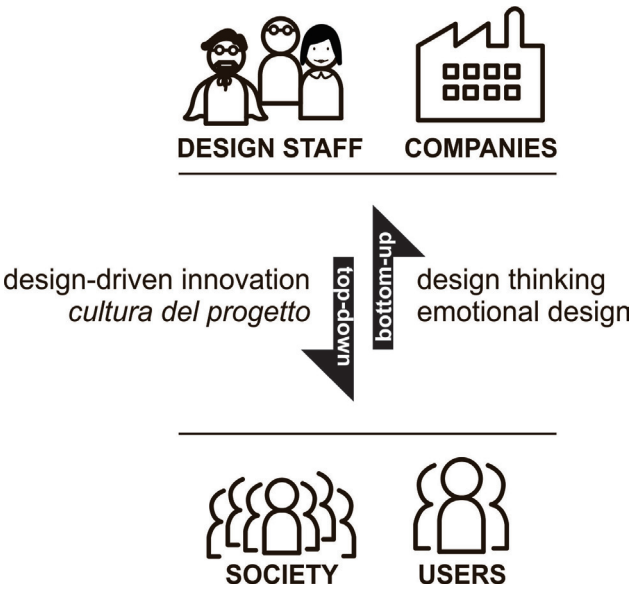


Figure 2: The inspiration flow: Top-down and bottom-up approaches to design.

Design thinking approach had its peak in the 2000s. It is based on participatory methods that consider users early in the design process as well as experts involvement, working with multidisciplinary teams. It is experimental in nature, and uses prototyping as a good cost-benefit tool for learning by doing in the early design process. Figure 3 illustrates the design thinking process model:

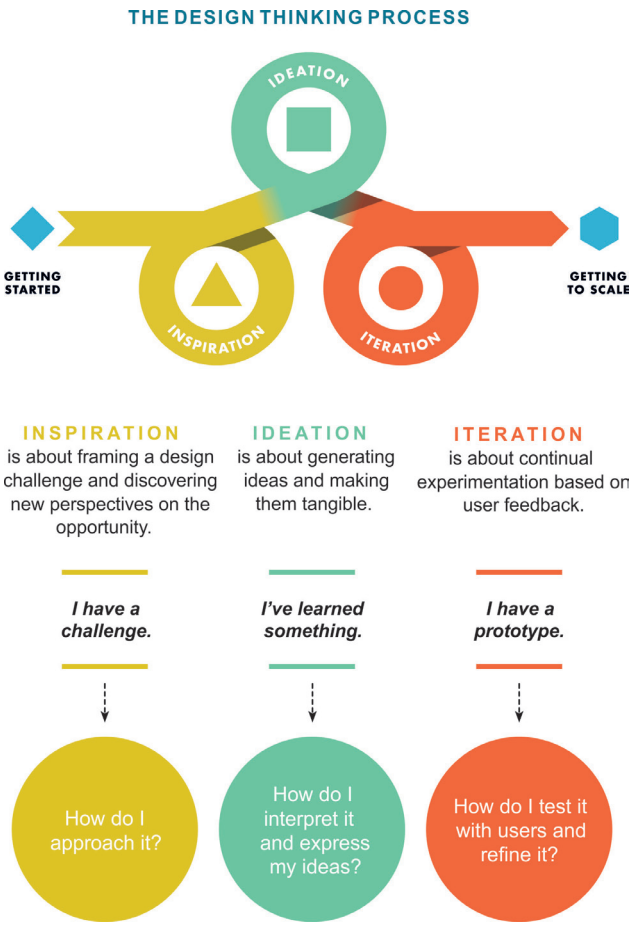


Figure 3: The design thinking process (IDEO, 2014, pp. 8-9)

The innovation framework by IDEO represents the typical approach to innovation from a design thinking perspective (Figure 4).

Top-down approaches emphasise designers as interpreters who bring the disruption, which could not be imagined by users who are used to behave according to a referable context, presenting difficulty in creating breakthrough concepts. In this sense, top-down approaches have been considered more useful to achieve disruptive (or radical) innovations, and bottom-up approaches to incremental innovations or improvements (Norman & Verganti, 2014).

Design creates more than a tangible world composed of goods, driving the development

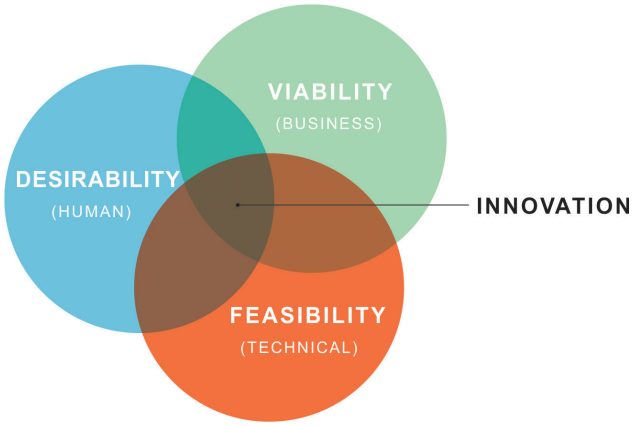


Figure 4: Design thinking approach to innovation (IDEO, 2014, p. 6)

of new ideas, strategies, services, brands and users' experiences. The emphasis on innovation changes from technology, R&D (e.g. Clark & Wheelwright, 1993) to design principles: inspiration, ideation, and implementation (Brown, 2009).

The International Council of Societies of Industrial Design (ICSID, 2015) acknowledges design as a fundamental means of innovation: "Industrial Design is a strategic problem-solving process that drives innovation, builds business success and leads to a better quality of life through innovative products, systems, services, and experiences." The Design Council (2015) broadly defines design as: "a way of thinking that helps large organisations, small and medium-sized enterprises, social enterprises and charities change the way they work".

Design Council (2015) definition assumes that design plays a fundamental organizational role related to the human-resources evolvement and its ability to change. Heskett (2009, p. 82) highlights the design activity as a source of innovation, stressing the role of design to envision change.

The design potential has enlarged, as well as its definition, being studied in several domains and being considered as an important competency to achieve innovation in enterprises (Bro-

wn, 2009; Design Council, 2007a, 2007b; ICSID, 2015; Maeda et al., 2015; Verganti, 2008) with its own ways, practices, knowledge, and language (Cross, 2001; Deserti & Rizzo, 2014; Zurlo & Cautela, 2014).

The complexity of evidencing design roles, "modes of use" and benefits for organizations becomes visible. Design management, business, design and competition are examples of fields that try to accomplish this clarification.

Exploring the design role in business success, Walsh (1996) interpreted design as an activity which overlaps with R&D and technological innovation and can also contribute to the business of the company. She provides the insight that the way design is led by the company is a crucial issue along with resources invested (Walsh, 1996).

The growing interest in design benefits for firms leads to the development of models and tools, such as the design ladder tool developed in 2001 by the Danish Design Centre (Danish Design Centre [DDC], 2007) (Figure 5), and the Design Management Staircase (Figure 6) model from the Design Management Europe survey (Kootstra, 2009) in order to grasp the design phenomena in companies, according to the ways companies see, use, and manage design.

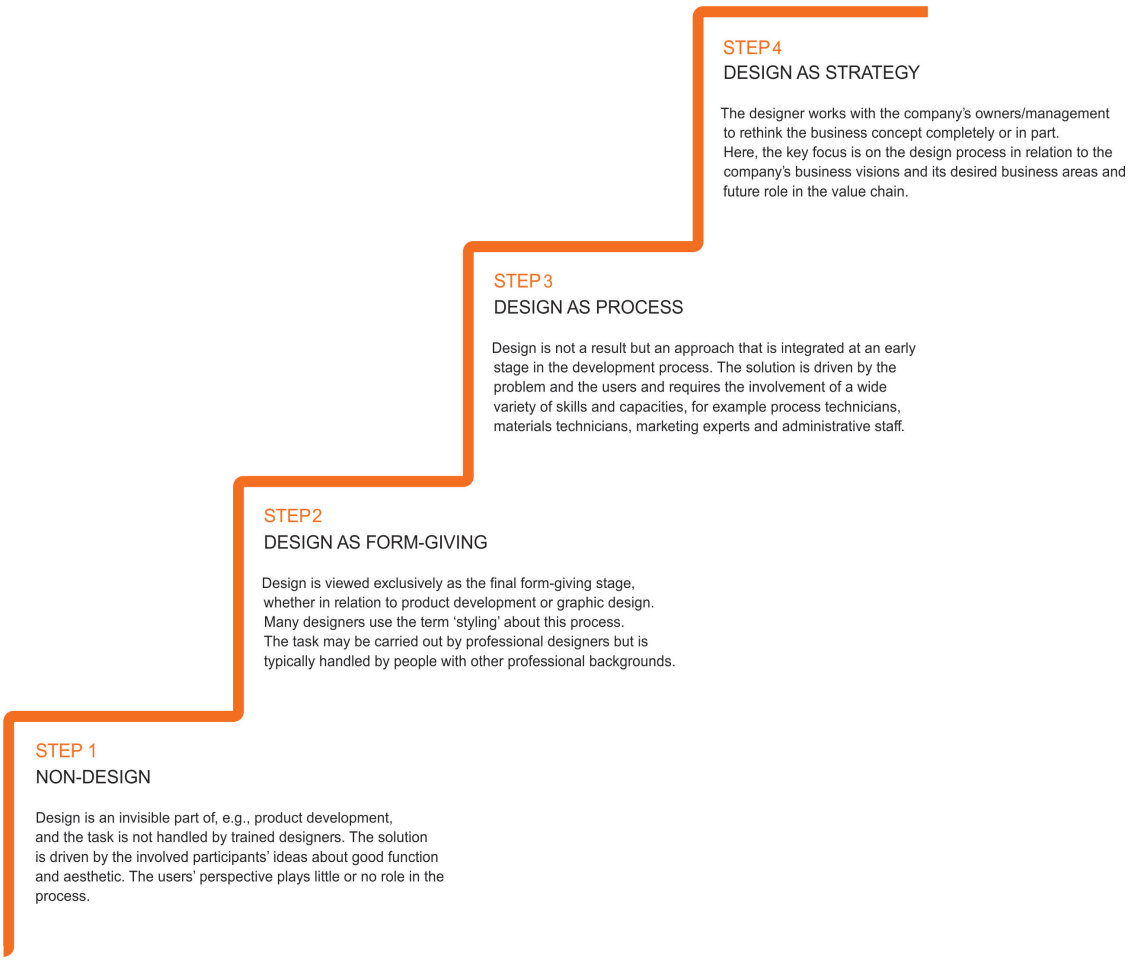
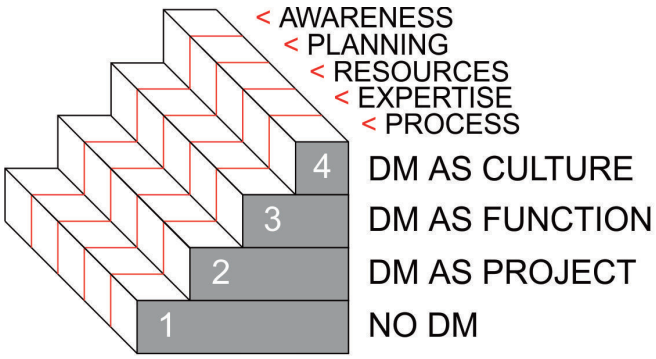


Figure 5: The Design Ladder (Danish Design Centre, 2007).



Level 4: Design management as culture
Strategic management of design; design leadership; infused

Level 3: Design management as function
Management of the design function, integrated with other processes; a defined role for design

Level 2: Design management as project
Design project management; repeated

Level 1: No design management
Some or no design activity; not repeated, defined or managed

Figure 6: The Design Management Staircase (Kootstra, 2009)

The Design Management Staircase (DM Staircase) considers five factors that appear to define success and failure of design, "making them indicators for good design management" (Kootstra, 2009, p. 13). Table 1 describes these factors according to each DM Staircase level or to the design management maturity.

Table 1: Design management maturity grid (Kootstra, 2009, p. 15)

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

Zurlo and Cautela (2014, p. 35) assume that design can contribute to the company in several ways and levels of innovation, from styling to the change of ecosystems of product-services and business models.

From the argument of design and competition, D'Ippolito (2014, p. 721) underpins that "design has the potential of bringing into the picture some non-technological dimensions of new products that firms had not considered before", emphasising design as a creative activity and a social phenomenon that has been studied across various domains.

In the context of management and business, design is considered a strategic resource (Bruce & Bessant, 2002; Celaschi et al., 2012; Dell'Era & Verganti, 2007). Design adoption and its "mode of use" are a question of enterprises' behaviour, ethos, or vision (Borja de Mozota, 2006; Calabretta et al., 2008; Danish Design Centre, 2003; Verganti, 2008; Walsh, 1996).

Borja de Mozota (2006) introduces the concept of the four powers of design in the management science. Two powers suggested by Borja de Mozota (2006) are of special interest in this chapter's discussion: design as an integrator, which undertakes design as a core competence, and design as a transformer, which brings the design contribution to the learning processes and to the ability to deal with change in organizations, creating new business opportunities.

Design potential depends on the individual creativity, talent, and experience of the designer (D'Ippolito, 2014; Gemser & Leenders, 2001). Besides the designers' skills, the development of competencies and ability to deal with change are important levers which can be fostered by design in the organization (Borja de Mozota, 2006; D'Ippolito et al., 2014; Heskett, 1999, 2016; Junginger, 2008). As reinforced by Junginger (2014, p. 57): "Where there is design, there is the potential for change", and, even when considering only product development, design is inherent from change in organisations (see Junginger, 2008; Thenint, 2008):

> "In its essence, product development is all about change… Today's organizations value product development for its ability to realign a business with its external environments, consumers and markets… It has turned into the corporate response to challenges posed by social trends, economic forces and technical advances. As a result, organizations think of product development when they think of external change." (Junginger, 2008, p. 26)

Design as an element of change from the micro- to the macroeconomic context is also stressed by Julier (2017) who expands on Jessop's notion of economic imaginaries[15]: "Design shapes products, environments, or, images. It also makes 'economic imaginaries" (p. 174). And by Heskett (1999, 2016) who highlights design as "a dynamic element in innovation and adaptation to change" (p. 232) also at the policy level, helping producers and users navigate processes of economic change, enabling cultures' evolvement rather than repeating old patterns.

On the other hand, the company's vision about design (Borja de Mozota, 2006), its cultural imperatives (Heskett, 2009), and the adopted design strategy (Gemser & Leenders, 2001; Roy & Riedel, 1997) or stage (Danish Design Centre, 2003) define the limitations of firms to harness design.

Another stream that design has strongly em-

[15] The idea of economic imaginaries draws on the notion that practices and objects stand in for wider practices of economic change, particularly in the case of complex and unstructured change, such as contemporary capitalism usually is (Julier, 2017, p. 174).

braced refers to social and environmental issues (e.g. Bonsiepe, 2011; Manzini, 2007; Manzini & Vezzoli, 2005). The interest in the social dimension comes from the Bauhaus and Ulm schools, which started working on design and its social contributions. Papanek (1972) introduced the idea of design responsibility in his book Design for the real world. Design starts exploring the ways towards social responsibility throughout ecodesign, Design for Sustainability, and social innovation.

Design has gained attention in the policy-making world, especially in Europe, where design methods have been proposed in order to better accomplish citizens needs, modernise administrations and envision desirable futures (Bason, 2014; Junginger, 2014; McNabola, Moseley, Reed, Bisgaard, Jossiasen, Melander, Whicher, Hytönen, & Schultz, 2013). From these contexts, another tool emerges: the Public Sector Design Ladder (McNabola et al., 2013) (Figure 7).

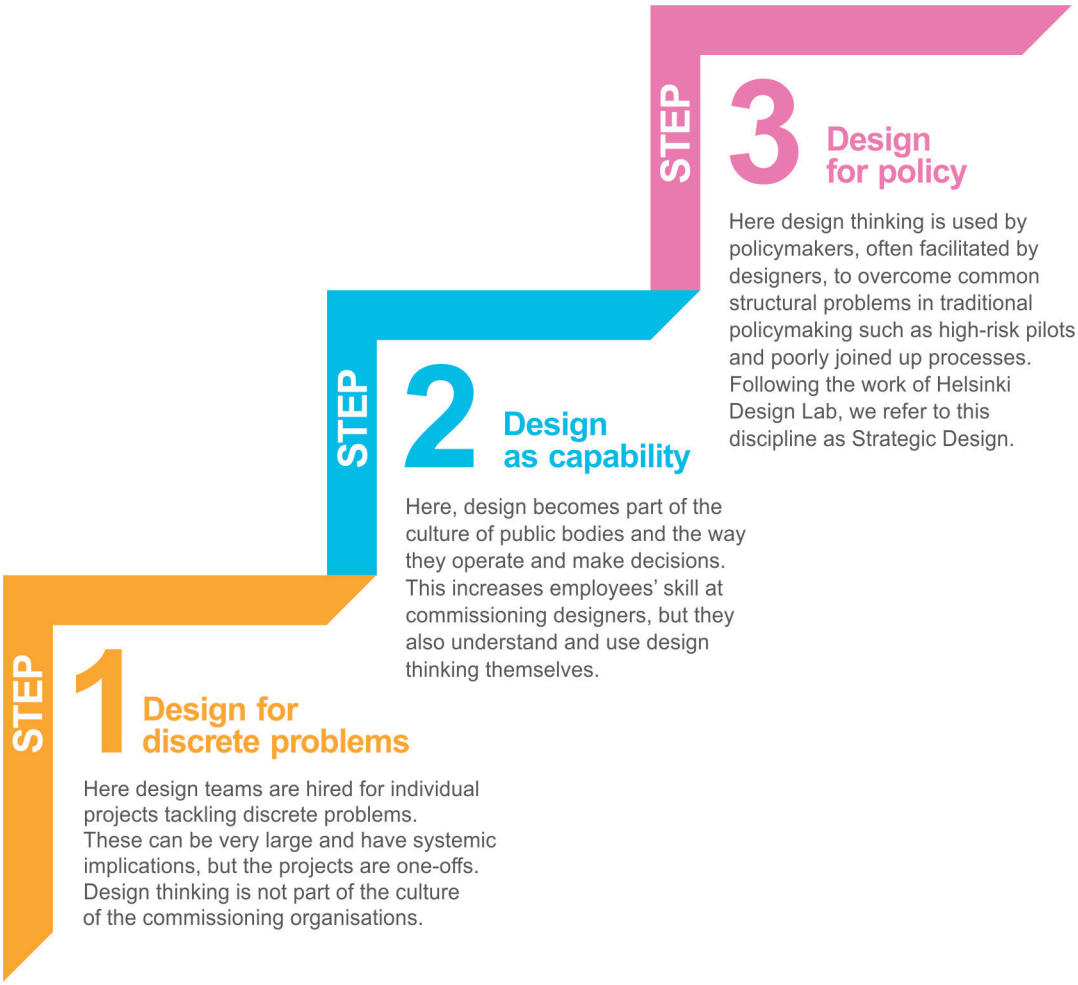


Figure 7: The Public Sector Design Ladder (McNabola et al., 2013, p. 30)

This tool builds on the idea that the higher the understanding and integration of design into a public sector body, the more value it can create (McNabola et al., 2013).

Value of design

The evolution and fragmentation of value concepts

Several domains have studied the value concept (Ulaga & Chacour, 2001). Among them, marketing (Kotler, 1972; Ravald & Grönroos, 1996) and economics (Heskett, 2009; Smith, 1776) disciplines have stressed the importance of value and presented a range of definitions.

In the modern economy, the value in exchange comes from the concept of money, which arises because of the need to have a common element and measure to exchange things among different producers. It started as a question of a commodity becoming "the universal instrument of commerce" (Smith, 1776).

Smith (1776) suggests two different meanings for value: value in exchange and value in use. Scant things have a higher value in exchange and a lower value in use (e.g. diamond). Goods which have a greater value in use (e.g. water) usually have no value or have a lower value in exchange (Smith, 1776). Both concepts are restricted to the monetary value, to the idea of price defined by productive dimensions (labour and capital), in the neoclassical theory.

The concepts of value generated throughout economic theory do not fit the design dimensions regarding the context of use, the role of products, communications, environments, services, and systems in the lives of people (Heskett, 2009). Heskett (2009) argues that the economic theory generally stops at the point-of-sale and the new economic concepts, such as value, should be elaborated from the design perspective. The Austrian School explores value concept closer to the marketing ideas in which the users' behaviour plays an important role in purchasing (Heskett, 2009, p. 75).

Marketing concepts are related mainly to the idea of "customer-perceived quality" and "customer satisfaction," where the customer perceives benefits relative to perceived sacrifice, taking into consideration suppliers' offers and price (Ulaga & Chacour, 2001). In business-to-business, value has also been related to psychological benefits, such as risk reduction and reputation (Hinterhuber, 2008). Hinterhuber (2008) highlights that the concept of value still is an ill-defined and under-researched subject, despite the importance of providing value to customers to foster their loyalty. Ravald and Grönroos (1996) emphasise that marketing perspective carries on the idea of value, adding that it can lead to adding technical products improvements or increment of services that are not perceived by the customers anymore.

The value engineering (Csillag, 1991) and the product design (Baxter, 1998) approaches to value are similar, stressing value in terms of money as an outcome of a combination of different types of value or functions, representing how much money the consumer is willing to pay for functions in the market by comparison. Baxter (1998) considers two product design functions: utility and esteem[16].

Krucken (2009) relates value to the perceived product quality, suggesting different value dimensions, such as functional or practical value referred to the mode of use; emotional value related to subjective factors as feelings, user's

[16] Esteem function represents social, cultural and commercial effects throughout beauty, shape, appearance.

experience, memories; environmental value represented by nature preservation; and symbolic and cultural value expressed by the social identity.

Borja de Mozota (2006) claims that value in management science is achieved when a result superior to that of the competition has been achieved and when a greater ratio between the profits and the capital invested is realised.

The Economic Value Added (EVA) comes from two types of value: substantial value based on customer value, performance value, and strategic value; and financial value that is gotten through finance, investment or mergers (Borja de Mozota, 2006). The substantial value includes the value perceived by the market (competitive rationality), and the value created and shared by human resources (process improvement, individual creativity, knowledge management, the performance of projects) that is referred to as organizational rationality by Borja de Mozota (2006).

The perspective of value engineering and of product development narrows the design strategic values related to the corporate image, language and meanings, innovation, human resources, and possible social contributions. Marketing perspective binds the issue to a profit, focusing on the customers' viewpoint (Kotler, 1972; Ravald & Grönroos, 1996; Ulaga & Chacour, 2001), presenting the shortcoming of an innovative logic to achieve disruptive ideas or to deal with change.

The scenario of design value within companies: the management of design complexity

Design has been emphasised as an important factor for economic growth by several governments and institutions across Europe (Aalto University et al., 2012; Barcelona Design Centre, 2014; Borja de Mozota, 2006; Danish Design Centre, 2003; Design Council, 2007b; Thomson & Koskinen, 2012). The need to demonstrate design benefits for business has generated reports and website platforms (e.g. SEE Platform) to share design experiences and policies. Governments have focused attention on design as policy for national economic growth and to foster innovation.

Despite all the emphasis that design has recently received (Borja de Mozota, 2006; Brown, 2009; Bruce & Bessant, 2002; Danish Design Centre, 2003; Design Council 2007a, 2007b; D'Ippolito, 2014; Gemser & Leenders, 2001; Hunter, 2014; Maeda et al., 2015; Norman, 2008; Roy & Riedel, 1997; Verganti, 2008; Walsh, 1996), it is still considered an uncertain activity, of which we cannot be sure of the results (Bessant, 2002; Trueman & Jobber, 1998). On the other hand, design management makes an effort to explain how we can achieve better performance by design in the firms throughout skills, organizational, and managerial practices, to attain an effective design (Chiva & Alegre, 2009).

Burns and Annable (2011) provide an interesting interpretation of how to measure design effectiveness within companies. Their framework considers measurable outcomes related to three areas within the company: human resources, production and logistics, and sales and marketing. However, the difficulty in distinguishing exactly if such benefits are directly related to design or to other factors and changes remains.

The value creation by design can be regarded as a complex phenomenon. The intangible values have strongly emerged and impacted firms in several ways. Brands have become more valuable than the physical and tangible aspects of a business. Creativity, knowledge, and ideas related to design are highlighted as sources of value creation in organizations, improving competencies, and skills to deal with a change towards innovation. Schneider (2006) points out

the unique contribution of design to shaping changes through tangible scenarios and visions of desirable companies' futures.

Michlewski (2008) defines a design attitude that influences companies. The author points out 5 headlines that designers' professional culture brings to design-led organisations. These headlines and related characteristics are summarised as follows:

1. Consolidating multidimensional meanings - Synthesising and analysing. Reconciling different (e.g. technical, financial, operational, emotional) objectives.
2. Creating, bringing to life - Making new ideas visible and tangible (e.g. prototyping).
3. Embracing discontinuity and open-endedness - Freedom to think and behave differently - 'let's see how it goes'.
4. Engaging polysensorial aesthetics - Ability to capture ideas (not just create them) and visually represent what others think. Contributing to a dialogue. Enabling 'immediate and unconsciously perception'.
5. Engaging personal and commercial empathy- Human-centred. Empathy and deep connection with people, uncovering customers' hidden needs, recognising also market needs, and constraints of businesses environment and commercial bounds. Refreshing the atmosphere and reducing tension, transmitting excitement and inspiration through their everyday experience and ideas, reinvigorating and inspiring.

All of these designers' attitudes (Michlewski, 2008) contribute to dealing with innovation and market dynamics that require quick decision-making in uncertain and changing environments. Sachs (2017) advocates that the intuition which enables quick and 'right' decision-making is based on an unconscious pattern recognition our brain is constantly performing and is ripened by experiencing failures. This reinforces the importance of trial and error practices (Brown, 2009), and the critical ability of innovators to see the failure as a learning experience, and to look at innovation as a process that requires timing, patience, persistence, being facilitated when people with diverse backgrounds participate (Poirier et al., 2017). Then again, a design attitude can play a fundamental role in innovation processes (Michlewski, 2008).

Sachs (2017) stresses that the "more uncertain an environment, the more we are forced to rely on intuition while strict analysis loses relevance, be that in an unstable home or rapidly evolving marketplace". The advice for entrepreneurs is to constantly expose "themselves to wide-ranging and relevant data, brain food for their subconscious processes" in order to avoid false patterns that intuition can easily spot (Sachs, 2017).

Ito and Howe (2016) point out new principles to innovate in a faster world considering technology and communication revolutions. Their proposed principles include typical features of design practices and processes, such as the use of creativity to quickly change direction, prototyping as a way to better face risks and to learn by doing, the capacity of learning from mistakes made as well as the use of intuition. All these aspects reinforce the value of design experimentation to innovation in an environment where accurate responses are quite expansive and time consuming, which means that when you achieve the 'right' answer, this would be probably not required anymore in a changing and dynamic environment.

In this scenario, design expertise contributes to the company's challenges that are related to open-ended issues and require more experimental approaches, but design is still considered an uncertain practice and it is not grasped at all in enterprises that use design according to their own visions and culture. The nature of design activity is tacit-based, relying on creativity to achieve unique solutions. Design is not a

science, design is a reflective practice in a constructivist paradigm where we do not expect something repeatable, although it can establish routines within organisations, can be seen as a discipline, and can be studied as a phenomenon (Cross, 2001).

The design practice is related to subjective factors, such as empathy and intuition, presenting an experimental character of "trial and error" practice (Brown, 2009) despite methods and tools that can be systematically employed. To source a designer, for instance, companies consider personal recommendations (Bruce, Cooper, & Vazquez, 1999). In addition, looking at the identity of design at the organisational level, design still is undefined in terms of responsibility, budget source, guidelines, and power, presenting a non-clear form to manage compared to R&D or technology developments (D'Ippolito, 2014).

All the subjective dimensions make design difficult to grasp, and the risk of disruptive ideas is higher than improvements proposals enabled by market research[17]. Design is future-oriented and the future is uncertain, which leads to the representation of customer value as a range of expected values, rather than a single (certain) number (Hinterhuber, 2008, p. 390). It seems more comfortable for the company to invest in things that are the 'right things', that are possible to forecast in terms of return on investment and profits in short run strategies. On the other hand, companies that acknowledge design as a source of innovation challenge forecasts and market research (which can be observed in the history of Apple and Sony – e.g. iPad and the Sony Walkman).

Why should companies and countries invest in design?

Cooper, Hernandez, Murphy and Tether (2016), Gemser and Leenders (2001), and Roy and Riedel (1997) show that more innovative design strategy leads to better results (e.g. market share, turnover growth, and exports). However, first-to-market innovation strategy does not always lead to more success than using a follower strategy (see for instance Teece (1986) who also describes ways in which some enterprises profit from others' innovations).

Cooper, Hernandez, Murphy and Tether (2016) carried out a survey from the Innovate UK that provided access to UK based companies. They received 165 usable survey responses and conducted 15 semi-structured interviews. They noticed that better design benefits are identified in firms that use design as process and as strategy rather than the use of design as styling. The authors point out the role of design in innovation being mainly related to moving into new markets. Companies recognise design as a creative process and an interface between technology and user needs, and as multifaceted (Cooper et al., 2016). The difficulty in measuring the return of investments in design is observed, there are "difficulties separating the contributions of design from other elements creating value in the development process, not recognising design activities explicitly, and not knowing how to perform this kind of measurement" (Cooper et al., 2016, p.19).

[17] It is important to emphasize the difference between market research and design research. Market research is statistically valid and shows opportunities for improvements considering similar behaviour among groups. Design research tends to more innovative solutions starting from users and establishing relationships with cultural anthropology and sociology (as cited in Zurlo, 1999, p.35).

Gemser and Leenders (2001) suggest that other qualitative aspects influence competitive performance, such as the designers' reputation, experience, skills, and talent, and the market segments a company tries to serve.

The Danish survey: The Economic Effects of Design (Danish Design Centre, 2003) was a pioneer in studying the effects of design on national and business economics. The study shows that companies that work systematically with design, using professionals internally or as consultants, have higher earnings and exports than companies that do not use design. Gross revenue performances and exports are higher the higher on the design ladder those companies rank (Danish Design Centre, 2003). However, the research does not identify the precise share of the economic growth that can be directly related to design.

After that, the United Kingdom has strived to measure design impacts on companies. The public policy has approached design as a fundamental factor for economic growth. The Design Council (2007b) report contributes to show the design impact on business performance. The report (Design Council, 2007b) states design advantages in business, such as turnover growth and shares outperformance.

The recent Design Council (2015) publication, The Design Economy, demonstrates the design (or the creative economy) contribution to the financial performance of the business in the United Kingdom. The publication widened the scope of design activities approaching a wide variety of industries, compared to their previous report. It identifies a concentration of design workers and design-intensive firms in London, evidencing the fact that design is underused and its benefits can be broadened in other locations and across sectors. The main contribution of this report was to consider the contribution and value of design across the whole UK economy. The key findings were (Design Council, 2015, p. 8):

- £71.7bn in gross value added (GVA), equivalent to 7.2% of the UK total GVA, refers to the design contribution to the UK economy in 2013.
- From 2009 to 2013, the design economy GVA grew at a faster rate than the UK average.
- Workers with a design element to their work were 41% more productive than the average. Each delivers £47,400 in output (GVA per worker) compared with £33,600 across the rest of the economy
- The average output per employee is greater for those who invest in and use design strategically.

The Design Economy report (Design Council, 2015) also points out the need for more gender equality among designers and the inclusion of a more diverse range of people. The study reinforces the UK position in striving to measure design benefits, evidencing design as a way to boost productivity, competitiveness, balance economy, and improve quality of life.

Borja de Mozota (2006, p.46) relates design to the competitive advantage, presenting multiple interpretations to design by the firm, from design as a differentiator when the company sees design in the context of reputation or brand to design as a core competence, or a resource-based view difficult to imitate in terms of organisational competencies.

Chiva and Alegre (2009) emphasize that the relationship between design investment and company performance is not unconditional. The authors describe the importance of design management and its skills to achieve design effectiveness and good results to the firm (Chiva & Alegre, 2009). The way the company uses design investment to obtain or improve design management skills affects performance (Chiva & Alegre, 2009).

Most studies focus on the relationship between commercial success, competitive ad-

vantage, economic performance, and design to demonstrate the benefits that design can generate for companies. However, the reasons to invest in design are not reduced to commercial success in firms. The development of unique organisational competencies (Borja de Mozota, 2006) and of learning skills (Roy & Riedel, 1997) are qualitative aspects that can drive the economic value creation to strengthening the ability to deal with change and innovation, generating competitive advantages (Borja de Mozota, 2006; Chiva & Alegre, 2009; Roy & Riedel, 1997). Other limitations are that design economic performance is more evident throughout time (Rae, 2013, 2014) and that disruptive ideas are not always immediately successful in the market.

In addition, design benefits have been evidenced at the national level, demonstrating that design can be an important lever for economic growth. Another approach at the macro level is developed by Julier (2017) who relates the neoliberalisation or fundamental developments in the Western capitalism to the worldwide growth and visibility of design from the 1980s. Design has become more integrated with other professional disciplines and new sub-sectors, specialisms and approach have arisen in response to marketing and technological changes, which make harder to distinguish designers from other professional activities (Julier, 2017). The author stresses design and neoliberatisation more as processes of change than as an end, in which design "has taken up a role not just in providing goods and services to satisfy current requirements, but has increasingly functioned to indicate sources of future value" (Julier, 2017, p. 6).

Neoliberalisation and its implications for design are explored through four features: deregulation, new economy, financialisation, and austerity (Julier, 2017).

Table 2: Neoliberalisation's implications for design based on Julier (2017)

Neoliberalisation feature	Definition and context	Implications for design
Deregulation	Legal constrictions concerning finance trade and commerce become less strict. Deregulation waves were noticed from the 1980s in the USA (Reaganomics) and Europe, especially in the UK (Thatcherism). Examples of phenomena which emerged are: progressive deregulations in global trade, privatisation of state industries and services.	Response to global competition. Growth of flexible working and project-based employment.
New Economy (derives from deregulation)	New Economy practices have their core in the evolvement of digital information technology networks, which had its emergence with the establishment of the World Wide Web in the 1990s, and changed the supply ways (e.g. Amazon.com, eBay.com). The slogan 'faster, better and cheaper' summarises these practices, in which 'faster' meant supply chain contraction to deliver 'mass specialisation', 'better' meant that with more distributed and supple supply chains, enterprises could focus on their core capabilities through design, innovation, and brand building, 'cheaper' meant that Eastern Europe manufacturing and services bases provided cheaper labour and material costs.	Emergence of design as a core company competence. Changes in expectations and practices of creative labour.
Financialisation (emerges from New Economy)	From the early 1970s, it was accelerated in the 1980s with the deregulation of banking and stock market systems and intensified in the 1990s and 2000. Financialisation is generally related to strategies to keep the value of shares, brands, real state or capital flows. It happens in three ways: the rise of shareholder value within corporate governance, the rise in profit through financial rather than commodity production systems, and the rise of financial trading. Tangible and intangible assets are in continuous exchange.	Design adds value to tangible resources. Design points towards sources of future value. Design is applied to systems and technologies that ease financialisation process. Design is used strategically to differentiate and provide protection on assets through law (e.g. licensing out of designs for others). Design improves the value of real estate.
Austerity (derives from financialisation)	Measures introduced by governments in the occasion of the 2007-8 global financial crisis. Falls in assets' value, rise in borrowing costs, and productivity drops hinder the debts payment. This leads to financial crisis and economic recession. Governments struggle to decrease their deficit and encourage the private sector by cutting their own spending.	Designers are affected by strong pressures as commercial operations reduce costs. Emergence of 'social design' programmes for collective benefit that presented two streams: the development of cheaper and more user-focused services in regional and national governments, and the strengthening of politicised activist design practices which propose alternative economic and social frameworks to austerity.

These political and economic influences have spurred design responses to them. In this sense, Julier (2017) sheds light on how design has shaped itself to create value, to adapt to and to face challenges imposed by the environment in which it is placed, tracking the emergence of design disciplines and fields according to each feature of neoliberalisation, and providing examples in everyday life and in design (i.e. Julier, 2017, p. 12). The author (Julier, 2017) emphasises the current value of design as a value in use, which means the value of design as a tool towards innovation and of its methods.

In this sense, one example of the value of design in its process, addressing the complexity of current problems and opportunities, rather than immediate outcomes is shown through social innovation process models. Figure 8 below illustrates one of them:

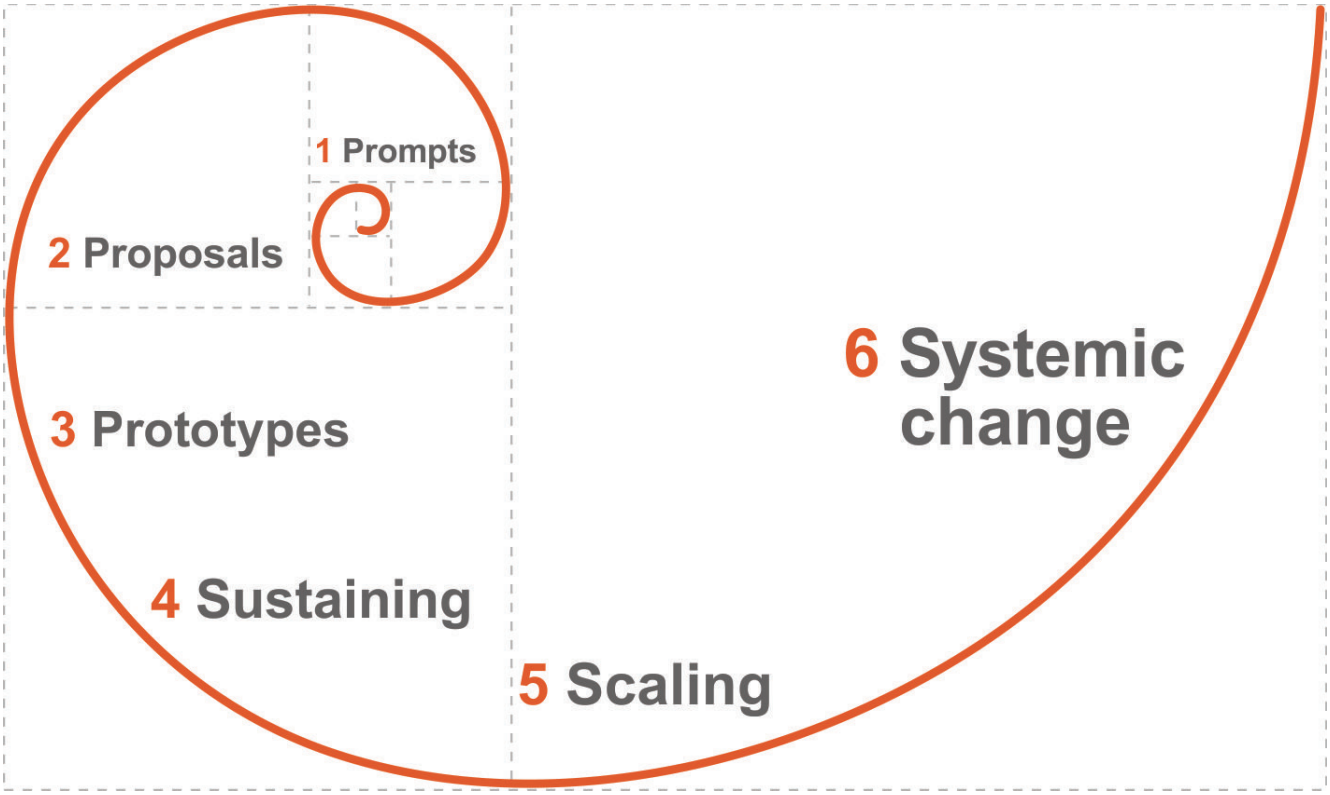


Figure 8: The process of social innovation (Murray, Caulier-Grice & Mulgan, 2010, p. 11)

Discussion and conclusion

Dimensions and variables of the value of design

The value of design dimensions and variables can be distinguished from the domains and approaches studied. This is just an initial effort considering the complexity of the subject and that it is an ill-defined, under-researched, multifaceted, and complicated topic (Hinterhuber, 2008; Ravald & Grönroos, 1996) where visions, interpretations, and new dimensions emerge, as well as new research domains. Furthermore, different approaches in the same area can provide quantitative and qualitative perspectives that are not fully explored in this framework.

Figure 9 demonstrates the dimensions and variables of the value which can be related to design according to the reported studies:

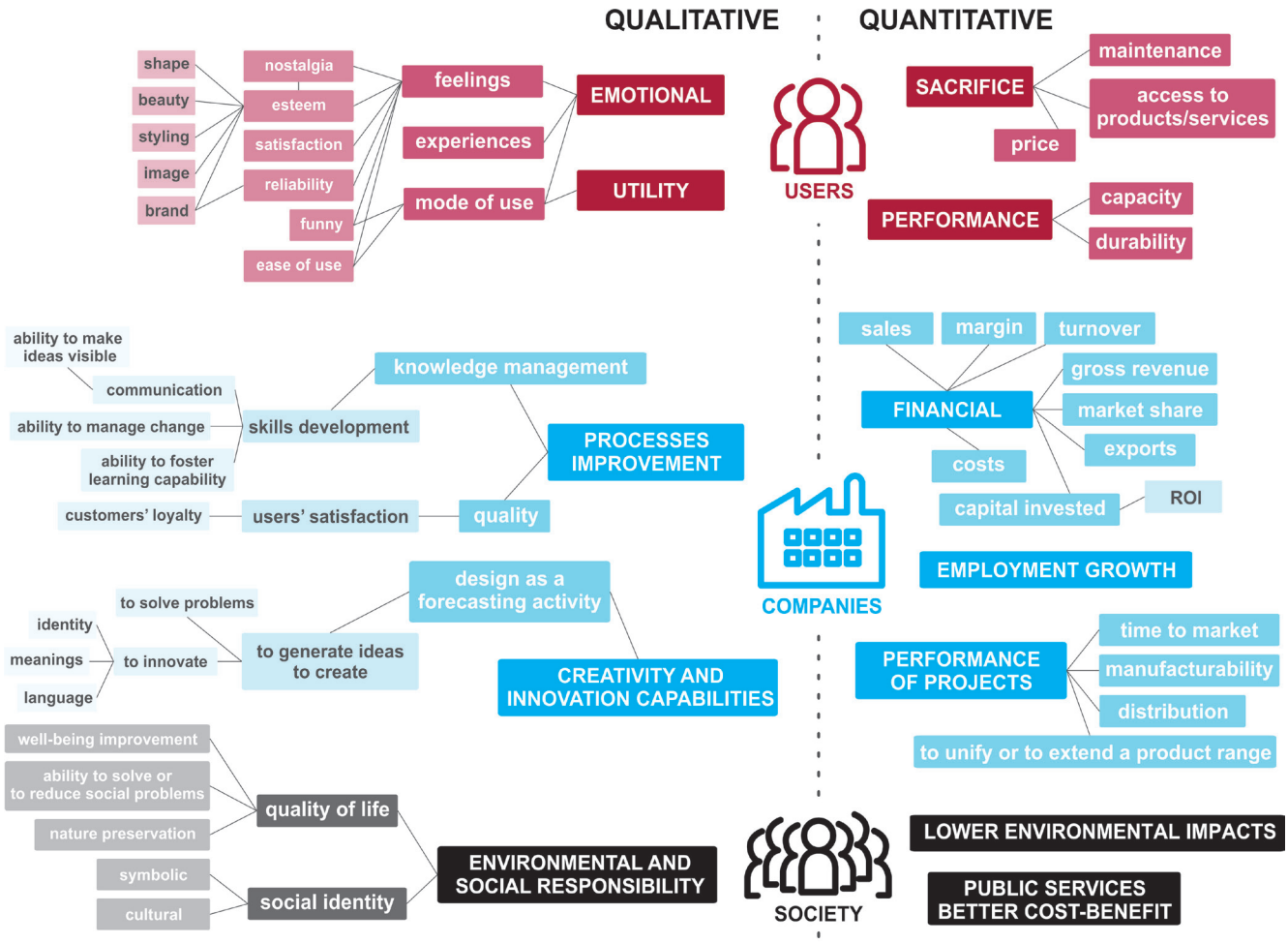


Figure 9: Qualitative and quantitative dimensions and variables of the value of design according to the perspective of different stakeholders (users, companies, and society) and domains reported (economics, marketing, business, management, design)

Although there is a categorization of key stakeholders from users to society in this framework of design value, the benefits identified can affect diverse categories. For instance, employment growth represents firm growth and can have positive effects on society, a product that builds on an emotional connection and has good quality and durability is likely to be kept by the user for a longer period, which can also contribute to the environment and, hence, society.

Moreover, quantitative and qualitative approaches can be found regarding the same variable that is considered in one way or another depending on the research reasoning and methodology.

The value of design: an issue of vision, creativity, and interpretation

The reasons that lead companies to explore design potential have been related to the interest in getting a competitive advantage at a profit, increasing the focus on design relationships to competition, business, and management. The will to demonstrate that design is a rewarding activity for companies triggers several efforts to translate in numbers design outcomes. Then again, Gemser and Leenders (2001) suggest that good financial performance is not a precondition for design investment in firms. Furthermore, this approach presents the limitation of binding design to an outcome, disregarding its qualitative roles and benefits that lead to the results. In this sense, Borja de Mozota (2006) draws a compelling perspective contributing to the establishment of a connection between the qualitative aspects (e.g. design as a core competence and as an agent that fosters the firm's ability to deal with change and creates new business opportunities), which are considered the source of economic added value.

The same discussion has emerged in the public sector (Bason, 2014; Junginger, 2014; McNabola et al., 2013). Nations have demonstrated that design can become an axis for national productivity, competitiveness and wellbeing (DDC, 2003; Design Council, 2007b, 2015). Some of them stand out, such as the UK and Denmark (DDC, 2003; Design Council, 2015). In this sphere, the awareness and familiarity of policy-makers with design is crucial (McNabola et al., 2013; Raulik-Murphy, 2010) as well as the country's conditions and attitudes towards design. For instance, the big traditional industry nations (e.g. the USA, Germany, Japan) prevails in international design rankings (European Commission, 2009). Some emerging economies have moved towards higher added value through design (i.e. European Commission, 2009), and others are still associated with low added value sectors (see, for instance, OECD, 2013a).

Another constraint at the organisational level is the difficulty in isolating design from other variables that impact the firms' performance, because the company's performance is not just a result of design adoption (Chiva & Alegre, 2009; Gemser & Leenders, 2001; Roy & Riedel, 1997) and design is very "integrated into the fabric" of design-led organizations (Westcott et al., 2013). Moreover, the measurable results of design are more evident throughout time (Rae, 2013, 2014).

At the national level, the UK has carried out design measurements across its regions building on a systematic approach (Design Council, 2007b, 2015) that has evolved in the last decade.

Design expertise and practice are still not fully understood by people in organisations (D'Ippolito, 2014; Trueman & Jobber, 1998; Walsh, 1996), and governments or public bodies (Raulik-Murphy, 2010), despite the existence of systematic processes and tools. At the national level, this leads to efforts to familiarize policy-makers with design (e.g. McNabola et al., 2013), reinforcing the need to provide better solutions

and futures to citizens.

This misunderstanding about design by non-design experts can be related to the idea that design is not a science and has its own logic (Cross, 2001), and that design is future-oriented; it deals with uncertain change, and, as pointed out by Julier (2017), it involves problem-solving activities that seek for the most effective and more appropriate response rather than predefines design outcomes in response to a problem. In addition, the individual creative component and the tacit nature in which it operates to build expertise through practice-based know-how can also contribute to this (Cross, 2001; D'Ippolito, 2014, p.722).

Assuring measurable outcomes for innovative design or innovation by design is an incoherent approach, and so is market behaviour forecast, which is inappropriate to disruptive innovations that are unfamiliar to users or citizens. This kind of risk-taking attitude requires long-term strategies and evaluations.

Design as a process relies on creativity. From the semiotics point of view, we are always interpreters regardless of our functions or positions. When a message is sent (e.g. an image, a text, a product, a service, an experience) the relevance is the meaning that the 'reader' builds on it, the interpretation. Designers interpret society and users employing technical information to create. The knowledge used to achieve solutions passes through a creative process where the designer is also a 'filter' and interpreter, who turns diverse subjective (e. g. social desires, aspirations, unknown users' needs, individual know-how) and objective (e. g. manufacturing requirements, technologies, materials, economic resources) information into design (products, services, experiences, communications, systems). In this sense, creativity is the main power to innovation by design.

Verganti (2008, p. 450) claims that the design-driven innovation process "is more knowledge-based than creativity-based". Knowledge and creativity appear inherent to each other (Cohen & Levinthal 1990, p. 130), and weighing which of them is more relevant to design seems incoherent considering that design knowledge has its own form of relying on engagement and reflection on design activity (Cross, 2001, p. 54) that is creative-based. To think of new languages and visions in an explorative manner requires creativity to establish new linkages that embody sociocultural models making sense of new meanings.

Individual creative reactions and the construction of an organisational culture that fosters innovation are crucial factors to innovate by design. The design process is creative-oriented and its most powerful feature is to innovate. Nevertheless, the design strategy supported by the organisation (Gemser & Leenders, 2001; Roy & Riedel, 1997), its vision about design or its cultural imperatives (Borja de Mozota, 2006; Heskett, 2009) along with adopted approach to design and design skills embraced by the organisation binds the exploitation of the value of design (concerning public bodies as well as companies).

Design requires a diversity of competencies and each project is unique (Project Management Institute, 2012). The difficulty in demonstrating a "recipe for design" relies on the creative nature of the activity and its diversity compared to activities that you can repeat and obtain the same result (e.g. manufacturing activities). Overlooking the nature of design, its practice, and knowledge can lead to a superficial approach to the role of creativity to innovate by design.

The way in which the firm leads design concerns design management that searches for patterns or indications for 'good' design (e.g. Hertenstein, Platt, & Veryzer, 2012). The same concern has been stated by public bodies where design management has been stressed as an essential skill (European Commission, 2013), and design methods as an instrument to policy innovation (Bason, 2014; Julier, 2017; Junginger, 2014). The limitation on a recipe for 'good'

design is also related to the unique competencies, visions, change, innovation, breakthrough concepts and design context. In this sense, the value of design is not just related to the results but to the capability to create, interpret and visualise worthy ideas in each context, forecasting novelty throughout time.

Some enterprises are future- and design-oriented at the beginning of their foundations, which means that the stages in the design ladder are useful references but the reality and the dynamism of the companies to compete and to innovate by design are not reduced to this general scale.

Some nations have built on design skills as a way to achieve better productivity, competitiveness, and wellbeing, which has been related to the stage of economic development, industry history, policies, and governance. In this case, the policy-maker mindset and commitment, as well as the national conditions (e.g. social equality/inequality, access to education, health) and priorities (among other factors further explored in Chapter 4 and 7), can ease or hinder design innovation across a country.

Furthermore, some studies have explored organisational culture in design-centric firms (Calabretta et al., 2008; Design Council, 2007a), and the cultural change of perspective in climbing the design ladder (Doherty et al., 2014). However, it is not clear when and how a non-design-oriented company and country present a capacity to absorb design (or features that favours design embodiment) to create value, fostering innovation.

The analogy to absorptive capacity[18] (Cohen & Levinthal, 1990) suggested by Verganti (2008, p. 447) regarding the company's immersion in design is a valuable insight, considering that design performs a mediator role between companies and users (outside knowledge). This can be extended nowadays to the role of design between governments and society (outside knowledge). Design can foster the evolvement of the organisations' human resources and their learning skills (Borja de Mozota, 2006; Roy & Riedel, 1997) depending on its management and top management commitment and mindset.

However, to better accomplish this cross-fertilization, it is necessary to clarify the particularities of design knowledge and practice (Cross, 2001; D'Ippolito, 2014; Heskett, 2009). For instance, what are the preconditions or the prior knowledge in the design context to recognise the value of new information, assimilate it, and apply it to commercial ends? Another consideration discussed in this chapter is that the value of design is not restricted to commercial ends, but is built throughout the evolvement of unique competencies, visions, and interpretations that can lead to the creation of economic value and wellbeing.

The implication of this discussion for research in design innovation management is the need to develop new ways of dealing with the innova-

[18] Cohen and Levinthal (1990, p. 128) notice that the ability to exploit external knowledge is a critical component of innovative capabilities: "We argue that the ability to evaluate and utilize outside knowledge is largely a function of the level of prior related knowledge. […] prior related knowledge confers an ability to recognize the value of new information, assimilate it, and apply it to commercial ends. These abilities collectively constitute what we call a firm's "absorptive capacity"."

tion by design issue besides the measurable and visible assets, first focusing on the creative process and design knowledge formation in organisations in order to get insights related to the design core competencies and their roles in the companies changing processes, understanding what the preconditions to better develop innovation and create value by design are. This chapter sheds light on this issue emphasising design as a creative-oriented activity in which its value is shaped by companies' and nations' visions and interpretations.

Limitations

This chapter focuses on the value of design mainly at the organisational level. The framework proposed helps visualise benefits or values that can be related to design according to prior research; however, many of these benefits can also be led by other factors, and their achievement referred to design will depend on the way design is managed, so assessing the organisation 'before' and 'after' specific design activities or interventions is suggested to support the understanding of the role design played in the achievements.

Furthermore, harnessing design does not rely just on designers' activities as it can be observed in the phenomenon of silent design (Gorb & Dumas, 1987) and at the national level concerning policy-makers background and mindset. A set of conditions, attitudes, and activities inside and outside organisations influence the design system (or the design innovation ecosystem), supporting or hindering value creation by design. Especially from Chapter 7, the barriers and drivers to design innovation from the actors to the ecosystem level, considering the diverse stakeholders' viewpoints, are better explored.

CHAPTER 2

Why are some enterprises and countries imitating (others)?[19]

"when imitation is easy, markets don't work well"
(Teece, 1986, p. 285)

Competition amongst firms is first focused on designs which are quite different from each other, and when a dominant design emerges it shifts to price (Teece, 1986, p. 288). Despite the responsibility of the innovator for fundamental breakthroughs and design, when imitation is easy, imitators compete and can profit from others' innovations (Teece, 1986, p. 288).

Looking at the history from the beginning of the Industrial Revolution, copying is a recognised pattern "with national economies industrialising initially on the basis of copying, poaching and appropriating skills and governments seeking to protect their nascent industries and encouraging them to move up the value chain" (Heskett, 2010, p. 5). The USA, Europe and East Asia are examples of this pattern (Heskett, 2010). In the case of Britain, albeit a technological forefront, there was a dearth of skilled designers (Heskett, 2010, 2001a). Then, historically, it might be said that Americans copied Britain manufacturing that copied French designs (see Heskett, 2010). Germany had a late 19th century industrialisation and also based its products on copying at the outset before its economic policies pushed higher quality of products and production. A copy is seen as a quick way to learn in this process. Meanwhile, France was able to keep its competitive advantage in the luxury products market

[19] The first version of this topic was published as one part of the paper 'Ceasing copycat behaviour: Developing product design identity through industry and handcraft interaction' (Fonseca Braga, 2017). An initial version of the paper was published in the Brazilian journal: Gestão e Tecnologia de Projetos [Design Management and Technology] from University of San Paolo (Universidade de São Paulo [USP]), São Carlos, 12 (2), 21-40. This is the reviewed version of one part of the paper, improved with further literature review, particularly addressing the national contexts in which copy, imitation and products' adaptations have taken place in diverse locations and historical moments.

with the consolidation of a strong design educational system that encouraged to maintain and to improve quality work in manufacturing, though changes were related to decorative design with limited innovativeness possibilities. There was a time in which innovation was also prevented by economic affairs' rulers[20] and considered dangerous, menacing existing skills and social stability (Heskett, 2001a, 2010).

The literature on imitation, copy and plagiarism is scarce (Satomura, Wedel, & Pieters, 2014). The followers' behaviour has been studied in fields, such as marketing, economics, business, management, law, sociology, and psychology. There is a lack of literature in the product design field related to the copycat behaviour in companies. This issue leads to asking why enterprises are copying design products from other companies despite the design advantages reported in the last decades (e.g. Danish Design Centre, 2003; Design Council, 2007b, 2015; Gemser & Leenders, 2001; Rae, 2013; 2014; Roy & Riedel, 1997).

In order to contribute to this discussion, diverse perspectives ranging from the social and psychological (Little et al., 2011; Van Horen & Pieters, 2013; Yang et al., 2014) to the marketing, business (Teece, 1986), design management (Borja de Mozota, 2006; Dell'Era & Verganti, 2007; Deserti & Rizzo, 2014; Gemser & Leenders, 2001; Heskett, 2009; Roy & Riedel, 1997) were considered in this chapter. In addition, Er (1997) notices the reasoning of imitation in the Newly Industrialised Countries (NICs)[21], Julier (2017) addresses the issue in less advanced economies, and Altenburg and Meyer-Stamer (1999) contextualized the differences in the copy culture in Latin America. This behaviour cannot be grasped by looking at only one dimension or field.

The idea of copycat behaviour is linked to social learning that is first related to the non-humans' behaviour. When a "model" female chooses a "target" male from two males being observed by other females, the latter are more likely to prefer the target male chosen by the model after watching the "model" female's decision (Little et al., 2011). This behaviour has also been observed in humans in a more complex manner in which social learning is a mechanism to spread preferences for certain traits, but hu-

[20] e.g. Pharaohs of Egypt, Mogul shahs of northern India and the Chinese emperors ruling from the Forbidden City in Beijing (Heskett, 2010), and in early 1600s government inhibits innovation in England (Heskett, 2001a).

[21] NICs are a sub-group of less advanced economies that include countries that 'have attempted to gain design capabilities in parallel to their industrial development' from about the 1970s though industrial design is still unknown in the less advanced economy practices (Er, 1997, p. 294), and have experienced high growth in the 1960s and 1970s generally but not necessarily on the basis of manufacturing exports (Er, 1997, p. 296-297). In spite of the absence of a consensus of the group of countries that compose NICs and existence of diverse criteria, Er (1997) considers in his study countries in less advanced economies in which manufacturing reached 20 or 25 per cent of gross domestic product, making an explicit effort to develop their economies on the basis of manufacturing. Examples of NICs are Latin American countries with an inward-oriented economy, such as Brazil, Mexico and Argentina, and Asian NICs with an exports-oriented economy, such as Korea, Taiwan, Hong Kong, Singapore and Malaysia; where India and Turkey have similar development experiences to Latin American countries (Er, 1997, p. 297).

man beings "preferentially copy the choices of individuals with high status or better access to critical information" (Little et al., 2011, p. 373).

Although copying is negatively evaluated by people (Van Horen & Pieters, 2012; Yang et al., 2013), even by children from different cultures (Yang et al., 2013), it is noticed that the consumer evaluation of copycats' brands depends on circumstances. People dislike copycat brands when uncertainty about the products' quality is low (they recognise the well-known brands and others available) but this preference changes when uncertainty is high (they do not know the available brands) despite the recognition of imitation (Van Horen & Pieters, 2013). Moreover, different kinds of imitation are identified and have been differently evaluated by consumers (Van Horen & Pieters, 2013).

Despite the recognised importance of design for enterprises (Borja de Mozota, 2006; Bruce & Bessant, 2002; Danish Design Centre, 2003; Dell'Era & Verganti, 2007; Design Council, 2007a, 2007b; Gemser & Leenders, 2001; Teece, 1986) and even though investment in design expertise is considered low risk (Bessant, 2002), the presence of a copy culture can be considered a way to reduce risks and investments, especially in SMEs where the company's foundation is a consequence of the unemployment condition as in the case of Latin America (Altemburg & Meyer-Stamer, 1999). In this context, the owner of the company is worried about survival, fears unemployment, and does not think as an entrepreneur. The need for immediate results to survive, and the lack of management skills to lead the business, drive the company to the copycat behaviour (Altemburg & Meyer-Stamer, 1999).

When the enterprise is immersed in a copycat culture or imitation it is possible to imagine the hypothesis that the company will decrease efforts in product development, focusing on designs that have achieved success in the market, but this hypothesis has not been confirmed (Dell'Era & Verganti, 2007; Gemser & Leenders, 2001; Roy & Riedel, 1997). Dell'Era and Verganti (2007) analyse 2.000 products launched by 210 Italian firms and conclude that imitators tend to present higher product variety while innovators limit new product languages in the market. The authors deduce that imitators "miss the capability to interpret the complex evolution of products signs and languages in the market" (Dell'Era & Verganti, 2007, p. 597). The Danish Design Centre (2003), Gemser and Leenders (2001) and Roy and Riedel (1997) demonstrate that more innovative design strategy leads to better results (e.g. turnover growth and exports).

Silveira da Rosa et al. (2007) notice that Brazilian enterprises in the furniture industry have not established a product design strategy despite the importance of design for competitiveness in this industry that is not technology-intensive. Some reasons considered are related to structural problems. Italian enterprises are considered references for the Brazilian furniture design, and the ease of imitation avoids the competition with Italian companies (Silveira da Rosa et al., 2007).

Heskett (2009, p. 75) points out that designs are widely imitated by competitors because some companies choose the "fast-followers" strategy, producing successful innovations at a low cost. In this sense, design is considered something that can be easily acquired at no cost (Heskett, 2009, p. 75). On the other hand, Dell'Era and Verganti (2007) evidence that imitators are not doing the "right" copies because they are not able to recognise the dominant design or language in advance.

The imitation or product modification is the major role of industrial design in the context of NICs where the generation of new products concepts and identification of new market opportunities are barely considered, avoiding costs related to users and market research (Er, 1997). Imitation does not mean the exact copy of the original product that presents financial and technological limitations in those local contexts but the redesign or adaptation of those products' designs to the local manufacturing condi-

tion or to cost reduction (Er, 1997). Imitation in those situations has different motivations depending on the country. Export-oriented Asian NICs focus on cost reduction through the imitation process, while in domestic-oriented Latin American countries, such as Brazil, the focus is on adaptation of products to local needs, and it can also depend on the industry orientation whether it is export or domestic market-oriented, such as in the Turkish export-oriented electronics, which modifies products for cost reduction and inward-oriented furniture industry that imitates to adapt products to different markets (Er, 1997). Then, the orientation of the economy or of the industry influences the aim and scope of imitation or of the product modification (Er, 1997).

Amir (2002) identifies the diverse roles of industrial design in Indonesia according to the type of organisation. He observes that multinational corporations and private local corporations use design to product adaptation to local needs as it happens in Latin American NICs (Er, 1997). Private local corporations that do not hire a designer usually practice plagiarism "as a means to minimize investment" since there is no legal protection for industrial design which enables freely copying products in the market. In this context, product research and development is seen as costly and uncertain. On the other hand, SMEs consider product development, having also designers as owners, and state-owned corporations, that support technology in high-tech-based industries where design plays a major role, seem to indirectly stimulate more positions to designers (Amir, 2002).

The lack of skills identified in different contexts (Altenburg et al., 1999; Dell'Era & Verganti, 2007) leads to the copycat behaviour. Adopting a copycat behaviour seems cheaper (Heskett, 2009) and easier than creating novelty or developing new ways of thinking (see also Sternberg, 2006, 2012). Copying can be seen as a process of social learning and has been noticed both in relation to human instinct and in relation to a design management style. When copying, an individual follows a 'model'. It is a way to avoid making efforts, such as interpreting changes in people's behaviour and needs, developing design criteria, creating options, and making decisions towards new directions. It can also be related to the lack of vision to associate design with diverse company and stakeholders' benefits or to the mindset of people (Poirier et al., 2017) in charge of a small company's top management.

Design is not adopted as a strategic resource to create value in the Brazilian furniture industry as it has been noticed in practice and sectoral reports although research (Fundação Getulio Vargas, 2015) has suggested this intention based on the perspective of the companies' representatives on product design. This approach is questionable considering the lack of design experience, awareness and understanding usually found in SMEs even in European contexts (e.g. Arquilla et al., 2015; Bruce, Cooper, & Vazquez, 1999; Cox, 2005; Filson & Lewis, 2000; Millward & Lewis, 2005; Schneider et al., 2015), where design is considered a source of indigenous innovation. Moreover, design at the strategic level surpasses product design issues. Another way to better visualise the design landscape in this industry could be looking at design leadership, design investment and design intensity (Roper et al., 2009), which point out the level of importance of design within the company.

The distrust among local stakeholders is a recognized constraint in Latin America (Altenburg & Meyer-Stamer, 1999). Prior research (Fonseca Braga, 2017a) in the Brazilian furniture industry and SMEs context has evidenced that this boundary can be overcome through the development of partnership and the ability to use external networks towards a shared goal.

This study (Fonseca Braga, 2017a) demonstrated the capacity for generating new visions connected to local communities' potentialities, deviating from the external environment where firms adopt, generally, a copycat behaviour. A

local social event, which helps connect people from different sectors, and the entrepreneur's mindset were key factors to introduce a new practice in the company culture. As claimed by Bruce, Cooper and Vazquez (1999), SMEs are managed in a personalized way, where the experiences and skills of the individual (generally the owner) become crucial. Despite an unfavourable environment to develop and implement new ideas, the entrepreneur's intrinsic motivation and mindset (see Poirier et al., 2017; Sternberg, 2006; 2012) can be drivers to surpass the constraints, envisioning and deploying new opportunities (Fonseca Braga, 2017a).

However, some constraints hinder the systematisation or consolidation of design innovation processes (Fonseca Braga, 2017a). For instance, the difficulty of commercialization can be considered a barrier, regarding the lack of a structured and diffused design knowledge throughout the firm's members and processes from ideas to market implementation with the participation of diverse stakeholders. Other constraints are related to the external environment, such as the cost-oriented market that is historically focused on the domestic market, the shortage of appropriate infrastructure, and the lack of design awareness and knowledge diffusion among stakeholders (e.g. users, suppliers, distributors, salesmen).

Brazil has broken up with its roots (Borges, 2011; Moraes Junior, 2002) and the copycat behaviour is common among the furniture industry firms. These aspects are not only related to organizations' culture, but to a range of disadvantages, such as the lack of skills, quality of education and other reported conditions to move towards more innovative contexts (Altenburg & Meyer-Stamer, 1999; Economic Commission for Latin America and The Caribbean [ECLAC], 2015; European Commission, 2015a; Galinari, Teixeira Junior, & Morgado, 2013; Organisation for Economic Co-operation and Development [OECD], 2013, 2014; Silveira da Rosa et al., 2007).

The introduction of a design culture requires long-run strategies and experience in design, and the lack of an appropriate environment puts at risk the development, continuity or evolvement of this approach towards design innovation as a consolidated companies' practice. Hence, the need for an appropriate infrastructure and effective design policies that support design education and diffusion at diverse levels (from micro to macro) are pointed out.

The South Korea case (Kim, 1997) evidences that imitation can lead to innovation depending on the adopted strategy and investment. South Korea copied (Er, 1997), and formally learnt the Japanese way of doing buying patents and evolved from this learning, creating its own innovation paths (Kim, 1997).

Similarly, Japan had previously evolved its own technologies by appropriation of American ones, identifying the need to have its own design and technology development in order to outstand in the global market (Margolin, 2007), changing its Original Equipment Manufacture (OEM) position to Original Design Manufacture (ODM), and having its national strategy 'copied' by other Asian countries as described by Margolin:

> "… countries that began by organising low-wage production for foreign companies, understood that if they were to develop their local industries, they would need their own designers. Japan was perhaps the first country to understand this and began in the late 19th century Meiji era to train its own designers for industry. During the 1950s, the Japanese learned to manufacture their own electronic products, adopting American technologies, such as the transistor before American companies did. By the 1960s, the Japanese had just about defeated the American television industry, went on to market many original electronic devices, and began to produce automobiles that were of higher quality than most of their American

counterparts. South Korea also began to follow suit and by 1967 produced its own automobile, the Hyundai. Now India and China are also growing as industrial producers." (Margolin, 2007, p. 114)

Julier (2017) explores design in informal and alternative economies. The case of China (shanzhai), where the approach to intellectual property is more fluid, particularly sheds light on how innovation emerges from copying and adapting mainstream products. This attitude, especially in Shenzhen, is related to Chinese cultural roots and folklore in which people operating outside the mainstream system broke the rules in the service of other people's needs or for a greater good. Another cultural aspect regards the notion of creativity. In Western philosophical tradition, creativity is related to originality and individual authorship; by contrast, in China, 'to create' in ancient Chinese texts means 'to make' or 'to cultivate', confirming a Confucian perspective in which people "should mold themselves on and reproduce patterns from nature", hence, creation is aligned with crafting and reproduction rather than originality (Keane, 2013 cited in Julier, 2017). Other factors also leveraged the mimicry:

- Shenzhen became part of China's Special Economic Zone, which enabled more flexibility in regional government and greater freedom in its market economy,
- Global electronics brands, such as Apple, Dell, Hewlett Packard, Nintendo and Sony based their manufacturing in Shenzhen where shanzhai producers are suppliers of these global brands, hence, the vast resource of components, knowledge, and materials in the formal economy were introduced into the informal economy.

According to Julier "As a cultural movement, shanzhai in its contemporary usage mimics but also menaces" (Julier, 2017, p. 125). This means that, on the one hand, the copycat products practice is evident but, on the other, there is the extension of capabilities by benchmarking original Western forms and technologies in order to fit them in the local culture which boosts innovation. Examples of these extensions are the shanzhai phones that may also be loaded with TVs, lights and razors, and the two SIM slots incorporation into shanzhai phones that emerged from the needs of China's migrant community, especially entrepreneurs who move between Hong Kong, Taiwan and Shenzhen (Julier, 2017). Costs are kept down because taxes (e.g. VAT, network license fees, sales tax, IP) are avoided in these processes.

The transactions between companies are usually made in cash, hindering tracking of operations, and technical information is shared freely and widely (e.g. 52RD.com and PDA.cn websites) between participants, constituting visceral open innovation processes which smooth the path towards innovation (Julier, 2017). Julier sums up this design context: "… a flexible, open ecosystem of design, components supply, production and distribution is achieved, based on informal procedures and relationships" (Julier, 2017, p. 126). By contrast, DIY (do it yourself) shanzhai ethos has enabled original inventive work with materials and technologies through open source, open innovation, makerspaces, and hacker activities, adapting to rapid changes in their availability and know-how (Julier, 2017).

Keane points out a trend for the shanzhai model from subcontractee of manufacture or Original Equipment Manufacture (OEM) to shanzhai copying and development or Original Design Manufacture (ODM) to creating own brand goods or Original Brand Manufacturer (OBM – post-shanzhai), forecasting implications and changes on products, strategy, Intellectual Property and Research and Development throughout this 'evolvement' (Julier, 2017). The main idea explored is that shanzhai will move towards the mainstream economy through open-source, makerspaces, and incubators which are supported by government or corporations (Julier, 2017).

Julier (2017) stresses the particularities of shanzhai creativity mode that relies on other features than the ones present in Western creativity paradigm, such as: "inventive combinations of pre-existing technologies and forms, clever networking between entrepreneurs across production and distribution, openness in sharing discoveries and advances that are derived through making, tinkering, trying out and unanticipated possibilities" (Julier, 2017, p. 130). The author (Julier, 2017) emphasises the contrasts between neoliberalisation conceptions based on individual property, individualism, free-trade, marketization, and the absence of state intervention, and the way China innovates which is bottom-up, diffused and shareable, involving a strong social fabric nurtured through gifts and favours, close relationships between state and entrepreneurs. All these factors suggest that China can move towards a different route than mainstream, capitalist practices.

In other words, imitation can also have a role towards innovation in contexts where learning comes from imitation that provides basic skills and infrastructure for further developments. China challenges the Western vision of intellectual property and creativity while shows that innovation can be accessed to and be dominated by everybody opposed to the domain of the ones who can afford it.

Another case in which design is not done from scratch come from India's frugal innovation, known as jugaad, where available resources were adapted to solve everyday problems and to satisfy immediate needs (Julier, 2017). Julier (2017) analyses some Indian cases that achieved success, such as Mitticool, a ceramic refrigerator that does not require electricity supply, which the author considers an exception within frugal innovation cases since the process involved prototyping and tests through the experimentation of different clays, soils, and fridge designs as well as was developed by a ceramist who has the know-how regarding the applied material and technology. The Indian ceramic refrigerator is closer to indigenous innovation (from that place/community) because it comes from an inspiration of traditional earthenware pots and uses the community know-how (village ceramist) throughout the development to deliver an accessible solution to the Indian population. On the other hand, frugal innovation, also recognised in other emerging economies contexts, such as Brazil, China, Kenya and francophone Africa, is generally about tinkering objects without a systematic process and evaluation regarding, for instance, the performance of objects, safety for users, and other risks (Julier, 2017). Hence, the limitation of this kind of approach is that these short-term solutions to everyday challenges can perpetuate "the routine practices that are part of the causes of poverty in the first place" (Julier, 2017, p. 133). The conclusion is that "a poor, illiterate and unhealthy population is unlikely to provide much of a context where design may prosper. Systemic innovation may require systemic change before it can happen" (Julier, 2017, p. 134).

These short-term solutions or routine practices are not causes of poverty but a consequence of poverty, although, as noticed by Julier (2017), they can perpetuate the poor conditions in which these people live. Thus, we cannot overlook that countries which present and have kept huge social inequalities combined with illiteracy, lack of access to healthcare and education, high rates of informal labour and where a major part of the population earns low wages and the productivity is low, do not provide conditions to the population in order to improve their own lives or access useful knowledge to develop more sophisticated and global standard innovation or even to organise grassroots movements towards change, hence, these people undertake what is possible in their actual conditions using available resources that leads to frugal innovation. The precariousness of this contexts can serve to keep the power in the hands of few people considered elite, then, this became a vicious cycle in which poverty is of interest to those who hold the power (including the power,

knowledge, tools and other resources to change this situation).

The importance of providing at least infrastructure conditions regarding education and healthcare in order to consider design dimensions was also evidenced in prior research (Fonseca Braga, 2010) in Brazil, particularly in an association of scavengers who were non-formal employees and earn from selecting materials from garbage and selling them to recycler companies. Household waste does not go through a standard selective garbage collection in Brazil, thus, people exposed to social fragility, poverty, and vulnerability gather part of this garbage before the city hall service does.

At the time, the research aimed at analysing more sustainable practices that could improve their conditions through design for sustainability practices and understanding how environmental aspects were considered and how they could be considered to create a better value to their activity in a carpentry factory that was part of the association.

Regarding environmental factors, it was noticed that materials in the selection process to sell to recyclers were prioritised according to their economic value since the everyday money gotten was used to immediate needs, such as the daily feed. So it is not by chance that Brazil is among the biggest aluminium recyclers. The price of aluminium is usually higher than plastics, paper etc. Therefore, the Brazilian aluminium recycling numbers do not reflect environmental awareness but are an evident consequence of the Brazilian social conditions. Hence, how could environmental criteria be followed in those conditions?

First, people need the basics to be alive; then, prioritising aluminium sounds reasonable in these conditions. Second, the municipality avoids high costs keeping this situation. It does not need to provide a systematic solution to the city's garbage, to pay wages and insurance, to provide training and safety conditions to do that job or to subcontract a company to do it. At the same time, the municipality can require the association to follow safety rules and to fit in the compulsory standards to keep doing the job, even though citizens pay a tax concerning the garbage gathering and destination.

In the case of the job done in the carpentry factory, two activities were analysed: the reproduction of designs from outside professionals made of recycled material bought in the market, and the reuse of materials and furniture donated by citizens, playing an important role in the city's furniture destination. The first process did not require intensive creative effort and basically was about taking up to scale small numbers of products from the same project. The second required more creative effort since the carpentry members had to design and recombine different pieces from diverse furniture. The first process was considered easier because of the low level of complexity of projects that were repeated and the profit margin was lower. The second was harder because it needed unique by-project and by-product solutions to produce only one piece but spurred the development of creative skills and had the potential to provide better profit margins.

However, the illiteracy of some (though they usually have attended elementary school or started high school, which evidences the low quality of the Brazilian public education), regularity in the attendance of members (who had more than one informal job to survive), the lack of technical knowledge (e.g. some furniture found was part of the history of the Brazilian design but was not recognised by the carpentry factory members) and appropriate (and safe) layout and training were some constraints to implement a more systematic way to reuse materials by proposing new designs.

The conclusion was that the furniture reuse could provide better opportunities to create economic value to products and to prepare people for labour market insertion or for entrepreneurship but the limitations aforementioned

should be overcome first in order to move towards the creation of value by design from the reuse of furniture.

Thus, in these contexts, generally found in emerging economies the trend of copycat products has its causes in economic, political and social conditions that people are exposed to, being more reactive in order to satisfy immediate needs. Bottom-up and grassroots movements and innovations also require skills in order to organise and form communities that seek for change or really want to dedicate to a cause of change. Then, in critical contexts where social inequality and poverty are extreme, some basic conditions should be considered for a better development towards the systematisation of innovation processes. In this case, it is up to people who hold the power, formal responsibility[22], and conditions to start doing something about it, and we will rely on the mindset, awareness, interest, and background of those.

Meanwhile, in Europe, communities' empowerment is noticed. The power and resources move to the citizens' hands. In this context, rethinking the citizens' motivations and attitude towards change is crucial (Manzini, 2018), as well as communities' capabilities to solve problems and develop innovative solutions. These aspects suggest that a design culture (cultura del progetto) might be the next basic communities' competency - as literacy was in the past, becoming a community's patrimony (D'Elia, 2018). On the other hand, the need to bring design capabilities into policy-makers skills is also stressed (e.g. Bason, 2014; Julier, 2017; Junginger, 2014; Mortati et al., 2016).

Different realities regarding the culture of citizens' participation in public decision-making are noticed across Europe. For instance, Denmark is traditionally used to involve citizens in these political processes, which makes its national culture principles convergent with design thinking and participatory methods. Meanwhile, in Italy, a democratic decision-making process is seen as a complex aim to be achieved through its political and institutional processes (Boeri, 2018).

Design is a situated practice (Desert & Rizzo, 2014; Julier, 2017), as well as its production and consumption (Julier, 2017). Thus, the contexts in which design takes place must be considered. This concern is highlighted by Julier as follows:

> "It [design] is the product of specific conjunctions of many features including material constraints and opportunities both in terms of where and how design is done, available technologies and knowledge, discursive and attitudinal makers among the design teams, interactions with external actors, such as clients, financial backers, supporting design practices and other specialists. It is also subjected to varying frameworks, such as differing legal parameters set by intellectual property law in different countries, environmental,

[22] For instance, politicians and government members are formally in charge, earn high wages, have several benefits, have conditions to access knowledge. What should their role in these contexts be? What is the sense in keeping high government expenses in countries where poverty and social inequality prevail? What is the sense of stimulating grassroots movements or innovation from 'nothing', or from frightful conditions of life while citizens pay for an expensive government system? Moreover, scandals and corruption increment this scenario in Brazil, evidencing that individual interests surpass the public good. Julier (2017) emphasises from prior research data by Kar and Spanjers that nearly US$1 trillion were moved illicitly out of developing countries in 2014.

> health and safety standards or logistical questions." (Julier, 2017, p. 167)

Julier (2017) points out the quandaries of this wave of policies fashioning which has rested on citizens' engagement to solve public problems that have taken place since the 2000s. The idea that citizens, public servants, and organisations can form networks or communities and the state can manage those networks reinforcing interdependence of actors towards shared goals can be recognised as networked governance or new public governance (Julier, 2017). In this scenario, some limitations emerge regarding conflict of interests, privileges of certain networks over others, inclusion or exclusion of individuals' criteria, or, if these represented citizens can be considered representative of all citizens and public interest, as well as the focus on what ought to be without further concern with implementation aspects, possible and politically desirable outcomes and impacts (Julier, 2017). Actually, these arrangements can be seen as "the relinquishment" of the state's responsibility for the welfare and other public services (Julier, 2017, p. 155). In addition, if these developments result in public money saving has been "hotly debated" (Julier, 2017, p. 153).

Therefore, even in advanced economies, where the welfare can be considered satisfactory compared to the aforementioned emerging economies contexts, the citizens' willingness, motivation, and capabilities, as well as its representativeness to promote and implement changes, have been questioned in terms of required conditions, attitudes and criteria to better succeed towards a shared public interest. Meanwhile, policy-makers' competencies have also been strongly taken into account in order to better solve citizens' needs and move towards desirable futures. These citizens' conditions and attitudes are connected to their life conditions (access to education, health, economic resources), and their country's cultural, social, political, economic, and institutional aspects.

CHAPTER 3

Design and MSMEs: a potential relationship[23]

Micro, small and medium-sized enterprises (MSMEs) are considered important sources of economic growth, job creation, and social cohesion in advanced and emerging economies (Cawood, 1997; Bell, 2015; Madeuf & Estimé, 2000; OECD, 2016a; Raulik-Murphy & Cawood, 2009b).

There is not a universal definition of MSMEs. MSMEs are, generally, non-subsidiary firms and the criteria used to define MSMEs are based on the number of employees, turnover and financial assets (OECD, 2006, 2016a). These numbers vary across countries (OECD, 2006, 2016a), as well as the definition and rules applied to employees in each country (European Commission, 2015b). In Brazil, the Brazilian National Confederation of Industry (Confederação Nacional das Indústrias [CNI]) considers as MSMEs firms in industry sectors that have fewer than 250 employees (CNI, n.d.c). The Brazilian Micro and Small Business Support Service (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [SEBRAE]) sets the limit at 99 employees for firms in the trade and services sectors (SEBRAE, 2014). Table 3 shows the values considered according to these institutions in Brazil (CNI, n.d.c; SEBRAE, 2014, n.d.a) and according to the European Commission in Europe (European Commission, 2015b).

[23] This chapter contains text fragments of the manuscript 'Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support' (Fonseca Braga & Zurlo, 2018). It was originally presented at DRS2018 Conference: Catalyst, held at University of Limerick, Ireland, 25-28 June 2018. An initial version of the paper was included in the Proceedings of the event. This is one part of the reviewed version of the paper, improved with the contributions from the Conference, and further literature review.

Table 3: MSMEs criteria adopted by diverse institutions

According to	Enterprise category	Headcount Annual Work Unit (AWU)	Annual turnover		Annual balance sheet
European Commission (2015b)	Medium-sized	<250	≤ €50 million	or	≤ €43 million
	Small	<50	≤ €10 million	or	≤ €10 million
	Micro	<10	≤ €2 million	or	≤ €2 million
CNI (Brazil) Industry	Medium-sized	<250			
	Small	<50	≤ 3.6 million BRL		
	Micro	<10	≤ 360 thousand BRL		
SEBRAE (Brazil) Trade and services	Medium-sized	<100			
	Small	<50	≤ 3.6 million BRL		
	Micro	<10	≤ 360 thousand BRL		

MSMEs generate four out of five new positions of formal jobs in emerging economies (Bell, 2015). They contribute to 45 per cent of formal employment and 33 per cent of national income (Gross Domestic Product [GDP]) (Bell, 2015). The World Bank estimates that there are between 365-445 million micro, small and medium enterprises (MSMEs) in emerging economies: 25-30 million are formal MSMEs; 55-70 million are formal micro-enterprises; and 285-345 million are informal enterprises (Bell, 2015). 600 million jobs will be needed before 2030 to absorb the global growing workforce (Bell, 2015), which reinforces the need for innovation in MSMEs towards a more sustainable scenario for these businesses, considering their potential contribution to creating jobs.

In the European Union (EU), 99 per cent of companies are MSMEs. They contributed 57 per cent of value added in 2012 (Airaksinen, Luomaranta, Alajääskö, & Roodhuijzen, 2015). Gross value added (GVA) and employment are the two main measures that have been used to describe the MSMEs contribution to economies. The first makes economies wealthier, and the latter keeps the unemployment rate low (Airaksinen, et al, 2015).

In Brazil, 99 per cent of businesses are MSEs, generating 52 per cent of formal jobs (excluding the agriculture sector) in 2013 (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [SEBRAE] & Departamento Intersindical de Estatística e Estudos Socioeconômicos [DIEESE], 2015) and contributed to 27 per cent of the Brazilian GVA in 2011 (SEBRAE, 2014).

The need to reduce inequalities related to MSMEs' productivity between mature and emerging economies through innovation, education and skills deployment is pointed out in order to consolidate the economic growth in developing countries (OECD, 2014; Economic Commission for Latin America and the Caribbean [ECLAC], 2015; European Commission, 2015a).

Despite the absence of a commonly agreed design definition (see for instance Arquilla, Maffei, Mortati, & Villari, 2015; Fonseca Braga, 2016; Swann, 2010), design as:

- a way to transform a current situation into a preferred one (Simon, 1996);

- a tool that drives innovation[24], competitiveness and national economic growth (European Commission, 2016; Thomson & Koskinen, 2012);
- a way to shape creativity towards innovation (Cox, 2005);
- a lever of non-technological innovations (D'Ippolito, 2014; Thomson & Koskinen, 2012; Verganti, 2008);
- a way to humanise technologies (Heskett, 2009);

is a potential instrument to drive change, innovation, productivity and economic growth at the micro and macro levels (from organisations to nations) as evidenced in several studies (Danish Design Centre [DDC], 2003; Design Council, 2007b; Design Council, 2015; European Commission, 2016; Julier, 2017; Junginger, 2008, 2014; Rae, 2013, 2014; Thomson & Koskinen, 2012).

The huge gap between design leaders and other regions suggests that only few, limited sectors of industry realise the design potential in leveraging successful business in Europe (Thomson & Koskinen, 2012, p. 23). There is a lack of design consultants in many regions and pilot projects seem to fail in motivating other businesses to integrate design (Schneider, et al., 2015). London concentrates more design workers and design-intensive firms in the UK (Design Council, 2015). Then, differences regarding the use of design are found across Europe regarding firms' sizes and sectors[25], regions, and countries (Bitard & Basset, 2008; European Commission, 2009; Thomson & Koskinen, 2012; Thenint, 2008), and the need to integrate design into small businesses is identified in diverse contexts.

Compared to large enterprises, SMEs are considered less affected by international business cycles playing an important role in times of economic depression (cited in Airaksinen, et al, 2015). When large enterprises are accounted for a sizeable portion of a country's economic output if the demand for their products falls, they affect all their networks and the whole supply chain across industries and countries (Airaksinen, et al, 2015). SMEs are less likely to secure bank loans than large firms, relying on internal funds to run their businesses (Bell, 2015).

The role of design for economic growth and competitiveness (Thomson & Koskinen, 2012), as well as the importance of design innovation for SMEs, have been recognised in diverse studies (e.g. Lawlor, O'Donoghue, Wafer, & Commins 2015; Moultrie & Livesey, 2009; Kang, 2015). The use of design has been related to benefits, such as better competitiveness, exports, turnover, and ROI in companies that present a coherent approach to design management at the firm level (DDC, 2003, 2007; Design Council, 2007b, 2015; Gemser & Leenders, 2001; Lawlor et al., 2015; Roy & Potter, 1993; Roy & Riedel, 1997; Walsh 1996).

[24] The relation between design and innovation has been emphasised mainly considering 2 mainstreams: (1) the use of design to make R&D or technological innovations marketable and suited to users (e.g. Thenint, 2008), and (2) the value of design as a 'learning by doing' process, as well as an experimental approach in a faster and uncertain world (e.g. Ito & Howe, 2016; Julier, 2017).

[25] Generally, large companies present greater design maturity and more intensive use than SMEs with the exception of high-growth firms.

The Design Economy report (Design Council, 2015) shows the contribution of design to the GVA and exports in the UK, pointing out the importance of the design economy for jobs creation and productivity in businesses.

On the other hand, the issue of how design contributes to economic benefits and to human resources development improving the competitiveness, and creating value, present few empirical pieces of evidence (Chiva & Alegre, 2009; Kang, 2015; Schneider, et al, 2015). Design is very "integrated into the fabric" of design-led organizations (Westcott, Sato, Mrazek, Wallace, Vanka, Bilson, & Hardin, 2013), being hard to distinguish the benefits directly related to it, and the company's performance is not just a result of design adoption (Chiva & Alegre, 2009; Gemser & Leenders, 2001; Roy & Riedel, 1997). Moreover, climbing the design ladder can be criticised in terms of the value created in each case (Fonseca Braga, 2016; Schneider, et al, 2015, p. 11).

MSMEs and design innovation have been considered important contributors to economic growth at a micro (within a business) and macro levels (countries, regions). Design support initiatives focused on the integration of design into MSMEs play an important role in building up the design capabilities of these businesses. However, some gaps are identified within these initiatives across Europe and some constraints referred to design management also have an impact on design policies (e.g. how to identify and evaluate the specific design contribution to the context).

The context of Design Innovation in MSMEs

The achievement of better financial benefits from the use of design has been related to long-run strategies and risk (see for instance Rae, 2013, 2014). Acknowledgement of and investment in design have been more connected to organisational culture aspects (see Borja de Mozota, 2006; Danish Design Centre [DDC], 2003, p. 14; Gemser & Leenders, 2001; Heskett, 2009; Micheli, 2014; Roy & Riedel, 1997; Walsh, 1996) than to the design outcomes themselves (see for instance DDC, 2003, p. 14; Gemser & Leenders, 2001).

The culture of SMEs often relies on beliefs of their owners (Bruce, Cooper, & Vazquez, 1999; Cawood 1997). The day-to-day activities in MSMEs are still demonstrating a shortage of appropriate conditions to adopt design innovation in diverse contexts (e.g. Bruce, et al, 1999; Cawood 1997; Cox, 2005; Nunes, 2014; Raulik-Murphy & Cawood, 2009b). MSMEs use design support to address immediate needs during a crisis, lacking long-term strategy vision (Cawood, 1997). The commitment of senior management is essential to the integration of design into MSMEs (Cawood, 1997; Schneider, et al, 2015). Acklin (2013, p. 157) reinforces that "... the owner/founder of the company [...] determines whether design knowledge classifies as useful or not" in the case of SMEs.

Different contexts where MSMEs were born influence the decision of being an innovator or behaving as a follower. SMEs are more likely to take innovative steps in Wales, where they were "born of innovation" (Cawood, 1997). Companies born in Latin America imitate pioneers' products as a reaction to the unemployment condition (Altenburg & Meyer-Stamer, 1999). In this case, the imitation is a survivor mode, also related to the infrastructural weaknesses found in this context.

SECTION 2

The research field and context

CHAPTER 4

Design policy

history, practice, and conceptualization

The design policy's practices are established (Raulik-Murphy, 2010); however, the research in this field is recent and there is the lack of theoretical foundations that support design policy practice (Boddington & Grantham, 2012; Er, 2002; Hobday; Raulik-Murphy, 2010). Most knowledge in this area comes from practitioners' know-how, and the publications lack criticism, being more descriptive once they are mostly not peer-reviewed or they are reports done by policy-makers or people who implemented that project or programme within a design policy, which can lead to biased analysis (Patrocínio, 2013; Raulik-Murphy, 2010).

The shortage of research in the design policy field is recognised (Er, 2002; Patrocínio, 2013; Raulik-Murphy, 2010). Design policy is in its fledgling conceptual and theoretical stage. Design historians (e.g. Heskett in the 1980s) were among the first to identify the relationship between design and policy; later, design management field dedicated attention to policy-making at the national level, and design policy issues arose in publications (Er, 2002).

Heskett (1999, 2001b, 2010, 2016) identifies two main streams of design policy: to create an image of identity for a country or nation and to stimulate eco-

nomic benefits. The first is noticed in a diversity of nations dating from "early urban civilisations, such as Sumer and Babylon, the Roman Empire and the terracotta army of Han dynasty China" (Heskett, 2010, p. 3). The second has gained attention and has been considered more important than a country's image (Heskett, 2001b, 2010).

The history of monarchy and absolutism in France from 1589 with King Henri IV to 1715 with King Louis XIV (or the Sun King) that built the legacy of French luxury products, such as fine textiles, tapestry weaving, wallpapers, ribbons, furniture, glass, and ceramics is a remarkable example of the second stream (Heskett, 2001b, 2010). The Sun King had an architect, Jean-Baptiste Colbert, as a minister who was a "decisive figure in linking the king's artistic aims to economic policies" (Heskett, 2010, p. 4).

The policy at the time was based on attracting and supporting highly qualified craftsman across Europe to establish their studios in France, to train apprentices, as well as to facilitate French craftsmen to upgrade their skills abroad. These interventions were the basis for the development of the French luxury industry, sparking domestic market demand and exports as emphasised by Heskett (2010, p. 4): "Stimulating the production of objects of conspicuous consumption for the wealthy aristocracy undoubtedly brought considerable prosperity to French cities, especially Paris, where the proportion of skilled craftsmen serving both internal and foreign clients remained high." (Heskett, 2010, p. 4)

The first design policies' initiatives are usually recognised from the 18th and 19th century with emphasis on world product and trade fairs contemporary with the Industrial Revolution (Patrocínio, 2013). The 20th century was characterised by the emergence of design councils, awards, and conferences (Patrocínio, 2013). The United Kingdom implemented its design council in 1944 (Swann, 2010). Japan had its first design policy office in 1958, and Finland, its first design policies in the 1960s (Schneider et al., 2015). These design initiatives were possibly carried out under other labels in Japan and Finland (Schneider et al., 2015). Bitard and Basset (2008) recognise the first design policies at the turn of 19th and 20th century and notice that design policies can be defined by a movement from Europe and the USA to the rest of the world. They describe successive moves of design policies until the early 21st century, showing the changes in the focus of design policy approaches from arts and crafts movements to industrialisation, branding, and strategic design.

The 1960s and the 1970s were dominated by debates about global-scale problems, such as energy, social inequalities, and pollution, which stimulate the discussion between policy decisions and design processes (Patrocínio, 2013). Design policies were recognised in the industrial and innovation policies' planning and implementation (Patrocínio, 2013). From the 1970s to the 1980s design promotion initiatives stood out from Europe to Asia with exhibitions, awards, and some investment in education (Patrocínio, 2013).

Governments can stimulate or hinder the use of design. Julier (2017, p. 144) stresses that "the public sector is a major user and stimulant of design activities" in the context of neoliberalisation processes in the West. This public sector role is highlighted through: (1) the massive and diverse fields of work, management and expenditure of the public sector, (2) the outsourcing of government functions to other organisations, (3) the investment in research, innovation and development, which can have further commercial applications, and (4) the use of design approaches and methods (example of fields: design thinking, service design, co-creation, participatory design, design for community, design activism, design for social innovation and design for policy) in public sector innovation and policy-making driven by the fiscal constraint in public budgets and by the

rise of public services' demand (Julier, 2017). Heskett (1999, 2016) also emphasises the role of governments in harnessing design by using design in the forefront:

> "If governments wish to encourage such developments, they will need to understand what they can and cannot do well. They can continue on the basis of the status quo, attempting to control or influence overall trends, or they can encourage a diversity of new design initiatives. They can do this by building infrastructure and exploring possibilities of how to use design in their own activities, demonstrating in environments, communications and products not just an aesthetic veneer for bureaucratic inertia, but leadership through an encouragement of possibility." (Heskett, 1999, 2016, p. 232)

Therefore, policy-makers' and government members' familiarity with users' or citizens' needs, and the awareness of the value which design can create across a country become crucial in order to harness design strategically at the national level, because one cannot recognise something one is not familiar with (see, for instance, Heskett, 1999, 2016; Junginger, 2014).

The conflict of interest is also identified in the neoliberalisation process. This highlights the need for a design outlook, especially as a human-centred approach, among government members and service providers. One example is the New Public Management (NPM), an approach to the public sector or part of the public services' marketization that has taken place since the 1980s. It is based mainly on outsourcing public services with the reasoning that better value, better quality, and more innovative services can be created from those third-parties in contrast with the stereotype of the state employees (Julier, 2017).

Thus, the citizen is seen as a consumer of public services instead of a user and is responsible for the choice of those services (Julier, 2017). The disadvantage of this approach is that third-party companies or services suppliers are mainly concerned with their investors, not with the public, and the focus on optimising the core of the services are overlooked (Julier, 2017). Other important criticisms are (Julier, 2017):

- the focus of public sector on procurement, logistics or getting the best value from suppliers instead of ensuring that the delivery is not poorly conceived and designed, being focused on the management of systems which are already configured rather than on "the best functions in use and working back from there" (Julier, 2017, p. 151)'
- the constant measurement and audit of processes and outcomes that drive the services arrangements in order to satisfy measurement criteria more than being designed to best serve citizens.

By the mid-2000s, service design jams, policy prototyping, and design sprints started bringing together civil servants and services users, working through human-centred and participatory approaches to users' experiences using prototypes in order to help understand networks of people and things at work, and in proposing insights and possibilities for the future (Julier, 2017). Then the design value shifts from "into the object" to the value in using design methods, designating a continuous transformation referred to a context and time rather than objects or outcomes themselves. The transparency and inclusivity in processes dominate through emphasis on design in action (Julier, 2017).

The 2008 financial crisis and the emergence of outcome-based budgeting[26] (OBB) as a way to rethink public services configuration from about 2010 spur the use of design within governments (public sector), pushing the public administration into "more innovative and flexible modes" (Julier, 2017, p. 152). In this context, problems are not predefined about the sort of design outcomes but the most appropriate and effective response is to be sought (Julier, 2017).

Government-funded labs[27], small-scale design consultancies[28], think tanks and innovation groups (funded through endowments and sponsorships)[29] focused on public sector innovation, with a background in service design mixed with experience in local government, have emerged across Europe, and the large design company IDEO has been moving towards public sector innovation for global clients since the 2000s (Julier, 2017), demonstrating the growing interest in design in policy and government (Kimbell, 2016), which can place design in a strategic role to make nations thrive.

The initiatives to introduce design capabilities into the public sector, promoting social innovation, were addressed by design support programmes that were first dedicated to businesses (see for instance Ball et al., 2011; Boult, 2006; Whicher et al., 2013), and, with the growing interest in the topic, have moved towards other specialisms or fields, such as design for policy (e.g. Bason, 2014; Bentley, 2014; Junginger, 2014; Kimbell, 2016).

The 21st century has been focused on integrating design into innovation policies and boosting design across Europe through European Commission initiatives (see for instance Thenint, 2008), reports, programmes, and projects that encourage the formation of networked continent (fostering the participation of diverse countries within projects) towards the use of design to thrive, promoting economic growth and building resilience against economic crisis, as well as improving the social welfare using also citizens as resources. These programmes and projects were selected based on criteria concerning their economic and social outcomes and impacts (or immediate and long-term contributions) evidenced by measurable variables in an approach that

[26] Also known as outcome-based commissioning (OBC), OBB is considered a response to the NPM criticisms and a very user-centred approach that focuses on what one wants to achieve at the user end (Julier, 2017). It can be seen as a reverse engineering process that takes into account where the competencies (e.g. combination of organisations, institutions, departments) are needed and how best to achieve desired results (e.g. healthier citizens, cared-for elderly, literate children) (Julier, 2017).

[27] e.g. Mind Lab (Denmark), La 27e Région (France), Helsinki Design Lab (Finland), The Australian Centre for Social Innovation (TACSI, Australia), Public Policy Lab (New York City), PolicyLab (UK)

[28] e.g. Innovation Unit, FutureGov, Design Affects, Snook, Uscreates (UK); STBY (Netherlands); Nahman and Yellow Window (Belgium); Greater Good Studio (USA)

[29] e.g. Nesta, Young Foundation (UK); GovLab (New York City); MaRS (Toronto)

tends to be rationalist or positivist to policy evaluation. The current debate in the design policy field argues on the need for explicit design policy dedicated to design initiatives – or national design plan or strategy (e.g. Whicher & Milton, 2018; Zitkus, Na, Evans, Walters, Whicher, & Cooper, 2018) in contrast with the inclusion of design policies and programmes into other branches of national policies.

A timeline of design policy history (Figures 10, 11, 12), including the design movement towards policy-making in the last decades, was developed based on this literature review on design policy. This timeline aims at illustrating the main emphasis raised in each period rather than providing a complete list of design policies and other initiatives.

*Intention to position the British industry as an international-focused market. Profits were invested in the land where the Victoria and Albert Museum, the Science Museum, and the Natural History Museum were built

Figure 10: Design policy timeline – 18th and 19th centuries

CENTURY — **20th**

EMPHASIS

councils, awards, conferences, promotion, social and environmental responsibility, emergence of the role of design for less advanced economies, professional associations, innovation standards; the need to evaluate and measure the economic benefits of design in businesses

CATALYSTS

Second World War (1939-45)
Globalisation

- EVENTS & AWARDS
- DESIGN BODIES
  CENTRES
  LABS
  GOVERNMENT AGENCIES
  ASSOCIATIONS
- POLICIES, PROGRAMMES & PROJECTS
- PUBLICATIONS & TOOLS

- 1944 Council of Industrial Design (COID) (current Design Council, UK)
- 1946 Britain makes its exhibition at Victoria and Albert Museum
- 1951 Design Policy in Industry Conference (Council of Industrial Design, Royal College of Art, UK)
- 1952 Japan Industrial Designers Association
- 1953 German Design Council
- 1954 Industrial Forum (IF) Design Award, Germany
- 1955 Red Dot Award, Germany
- 1956 The Management of Design Conference (Victoria and Albert Museum and Royal College of Art, UK)
- 1956-7 Japan Industrial Design Promotion Organization (JIDPO)
- 1957 The G-Mark Design Award, Japan
- 1958 Design policy office, Japan Ministry of International Trade and Industry (MITI) (under other label)
- 1960s Design policies in Finland (possible under other labels)
- 1963 OECD Standard Practice for Surveys of Research and Development or first edition of the Frascati Manual
- 1964 Who Designs America? The American Civilization Conference (University of Princeton, the USA)
- 1972 Papanek's Design for the real world
- 1973 Schumacher's Small is Beautiful
- 1973 Bonsiepe's Development through design
- 1979 UNIDO's & ICSID's Ahmedabad declaration on Industrial Design for Development: major recommendations for the promotion of industrial design for development
- 1980s the concept of National System of Innovation arise (C. Freeman, R. Nelson and B. Lundvall)

Figure 11: Design policy timeline – 20th century

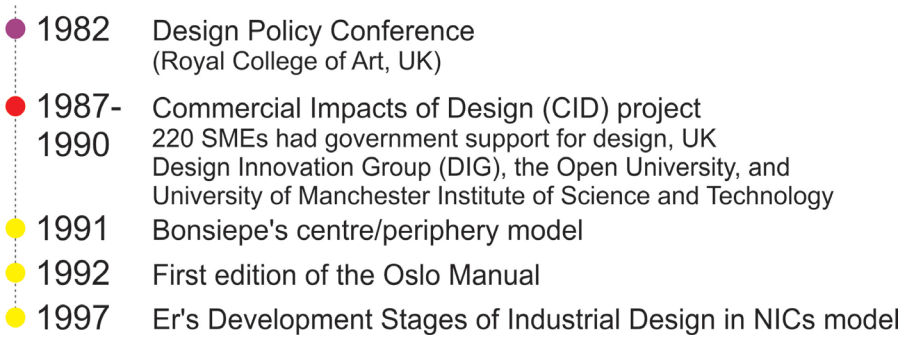


Figure 11: Design policy timeline – 20th century

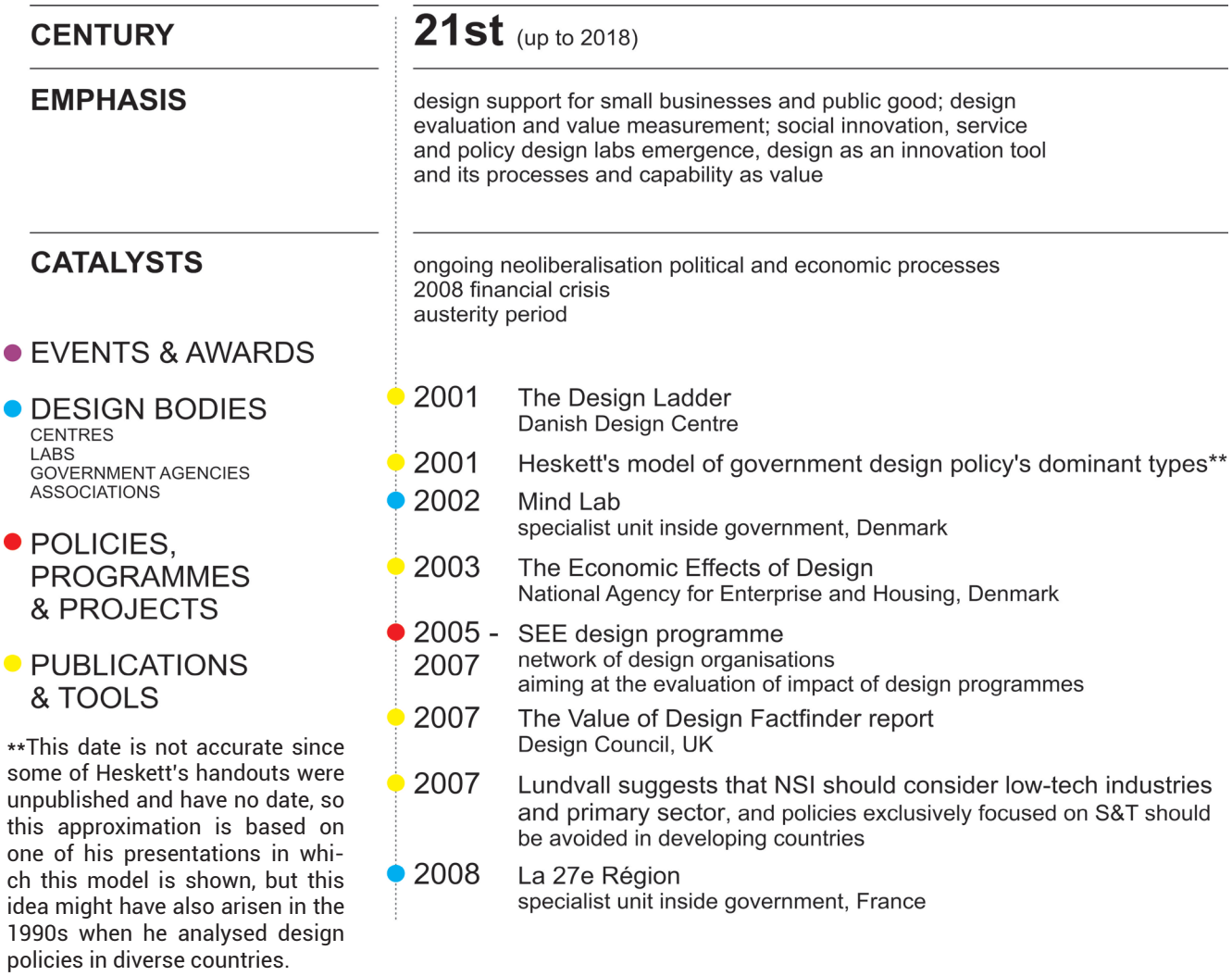


Figure 12: Design policy timeline – 21st century

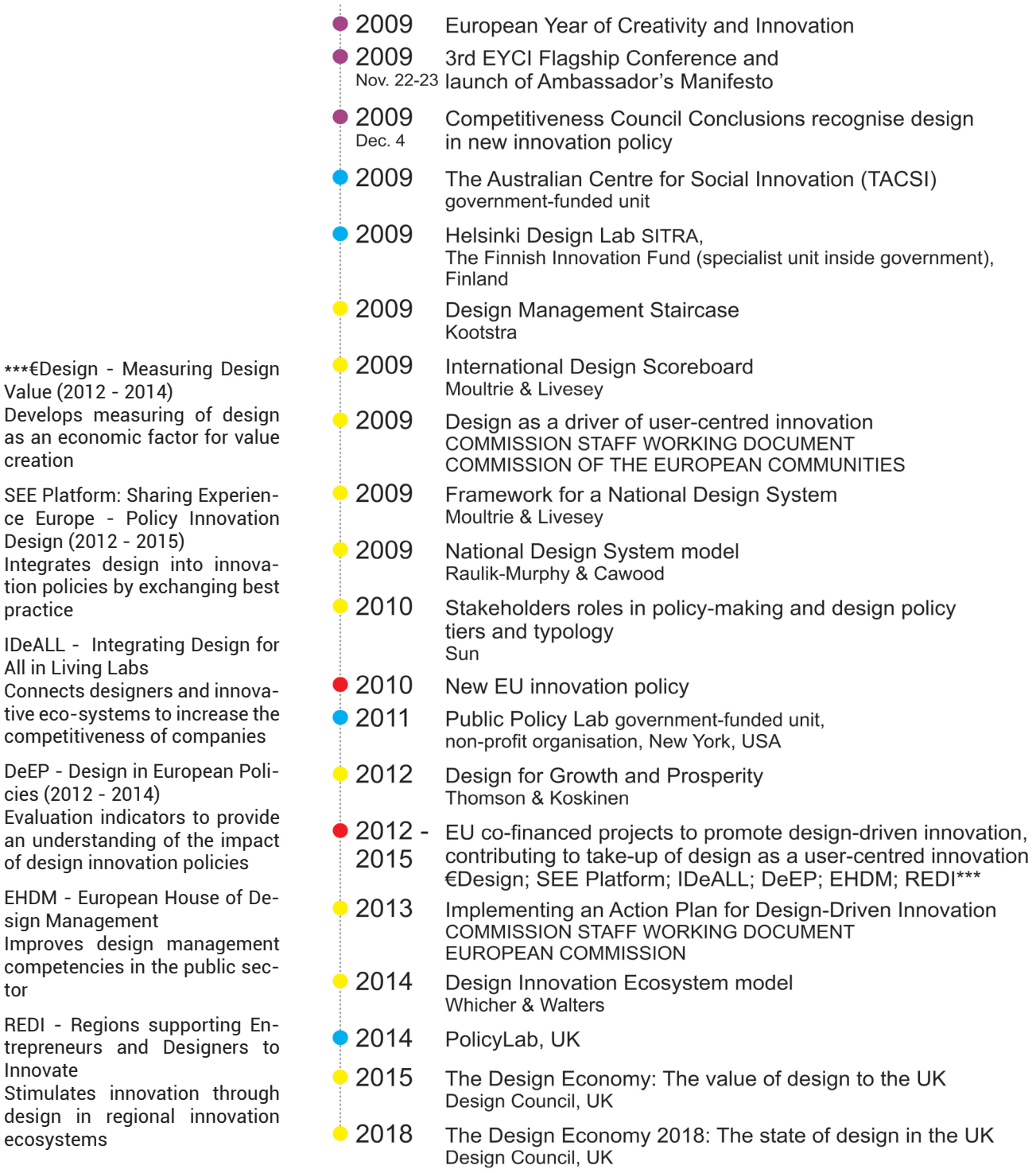


Figure 12: Design policy timeline – 21st century

Europe is considered to be at the forefront of design policies (Patrocínio, 2013), which is reinforced by public-funded initiatives and labs that are related to national strategies for competitiveness and quality of life improvement, contrasting with the USA's more neoliberal approach to the design industry (Bitard & Basset, 2008). European countries have a strong position in design as noticed in international design rankings (European Commission, 2009). The UK and Denmark are examples of the core design role for value creation in the country. The UK has demonstrated a continuous effort to describe design contribution to economic growth, which is evidenced in systematic research and reports (e.g. Design Council, 2007b; 2015). Denmark was a landmark with its report 'The Economic Effects of Design' (Danish Design Centre [DDC], 2003) and the Design Ladder tool in 2001 (DDC, 2007), which evidenced the growing national interest in understanding design evolution in businesses and has achieved global dissemination. The Public Sector Design Ladder reflects on the public bodies and policy-makers needs to innovate the way they make policies, being an outcome of the joint effort of the Danish Design Centre, Aalto University (Finland), the UK Design Council, and Design Wales through the SEE project, and supported by the European Commission (McNabola et al., 2013).

Research attention has also been devoted to non-European countries. Among less advanced economies countries, such as Indonesia (Amir, 2002), Turkey (Er, 1997, 2002); China (Er, 1997; Heskett, 2006, 2010, 2016; Julier, 2017; Sun, 2010; Xihui Liu & Jun, 2015), Taiwan (Er, 1997; Heskett, 2006, 2010, 2016; Julier, 2017), Singapore (Bitard & Basset, 2008; Er, 1997; Heskett, 2001b, 2001c; Lerner, 2010), Malaysia (Er, 1997); Hong Kong (Bitard & Basset, 2008; Er, 1997; Heskett, 2006; Julier, 2017), Brazil (Er, 1997; Mazzucato & Pena, 2015; Nunes, 2013, 2014; Patrocínio, 2013; Raulik-Murphy, 2010), Argentina (Er, 1997), Mexico (Er, 1997; Heskett, 2001b, 2001c), Cuba (Heskett, 2001b, 2001c), India (Julier, 2017; Raulik-Murphy, 2010; Sen & Poovaiah, 2015); Russia (Soviet Union at the time by Heskett, 2001b, 2001c); Kenya and South Africa (M'Rithaa, 2015) have been analysed. Among advanced economies, Japan (Heskett, 2001b, 2001c, 2006, 2010), South Korea (Bitard & Basset, 2008; Cho, 2004; Choi, 2009; Choi et al., 2010; Chung, 1993; Er, 1997; Heskett, 2001b, 2001c, 2006, 2010, 2016; Kim, 1997; Raulik-Murphy, 2010), Germany (Heskett, 1993, 2016), Australia (Bason & Schneider, 2014; Bentley, 2015; Bitard & Basset, 2008), the USA (Bason & Schneider, 2014; Bitard & Basset, 2008; Heskett, 1993, 2016; Mazzucato, 2013), and Canada (Giard, 1996; Bason & Schneider, 2014) also have received attention.

This literature review does not go in-depth in every country's design and innovation policy case; instead it goes into the main design policy mainstream cases and models, generally related to European and Asian (South Korea and Japan) contexts, and emphasises the main studies and models that have addressed less advanced economies contexts (e.g. Amir, 2002, 2004; Er, 1997, 2002; Raulik-Murphy, 2010; Sun, 2010) and the Brazilian context (Raulik-Murphy, 2010).

Some of these studies analyse design policy by comparing different country contexts. Bitard and Basset (2008), Choi (2009), Choi et al. (2010), Raulik-Murphy (2010), and Sun (2010) are examples of comparative analysis in the field. Their research brought significant contributions in terms of models that help systematise design policy's analysis. The need to consider the context in which design is embedded has been stressed in several studies (Amir, 2002, 2004; Choi et al., 2010; Er, 1997, 2002; Giard, 1996; Raulik-Murphy, 2010). Giard clearly stresses this aspect:

> "… industrial design did not and could not exist in a contextual vacuum. In fact, it never has. Industrial design has always been an integral part of the greater picture of a nation, a picture that includes the political system, the economic model, and the cultural milieu. All three

factors are intertwined and inseparable." (Giard, 1996, p. 28)

Although design policies vary across countries and regions, Bitard and Basset (2008) identify common features of design policies regarding their legal characteristics and main objectives. Concerning legal aspects, the authors identify two types of design policies used by countries (Bitard & Basset, 2008, p. 38):

1. Explicit or dedicated national design policy implemented with defined strategy, objectives, plan, and timeframe, being held at the national or regional level. Examples of this category are North European countries (e.g. Sweden, Norway, and Denmark), Ireland, the Netherlands, South-East Asian countries (e.g. South Korea, Singapore), and Victoria State in federal Australia. Within this category of "design policy" countries, a further distinction can be made:

   1.1. Those where the whole process is conducted by public actors (Asian model)

   1.2. Those where a public/private partnership is created to lead the design policy (Scandinavian model).

   1.3. Private actors intervene at one or several steps of the process: state initiative with mixed funding and implementation, or even elaboration of the design policy in cooperation with design private actors (e.g. Sweden, Denmark).

2. Businesses-oriented design initiatives usually known as design support programmes. They can be launched at the global level but are more targeted at defined needs. These initiatives are punctual and adapted to specific issues. Implementation is generally ensured at the local level and consists of assistance and support to enterprises, with punctual problem-solving programmes. Funding and implementation are mostly assured by private actors, although public funds are not excluded. Good examples of this promotion model include the UK, Germany, and Italy.

Proper cases of dedicated design policies are still scarce (Bitard & Basset, 2008). Recent research (Zitkus et al., 2018) identifies European countries with national design strategies or action plans, including Denmark, Estonia, France, Finland, Ireland, and Latvia.

Considering the main objectives, Bitard and Basset (2008) classify policy aims in two main streams that are seen as mutually supportive:

1. Competitiveness: design as one of the main assets for innovation and competitiveness, anticipating user's needs, adapting products and making them more attractive. The scope of needs can be specific (e.g. related to a specific industry sector, product or service, business problem or opportunity) or more global (e.g. reducing environmental impacts), hence, affecting directly the use of design in enterprises and indirectly impacting social issues.

2. Quality of life improvement: refers to the use of design by a diversity of actors to tackle social issues, such as health care, ageing, education, urban planning, housing, democracy participation, environment protection, and accessibility.

According to Bitard and Basset (2008), public actors can focus on one aim or both aims combined, it will depend on the country's or region's cultural background, on the features of the local economy, on political priorities and on available budgets. Initiatives carried out are the consequence and evidence of this choice. Most countries' design strategy combines competitiveness and quality of life improvement, and specific national design strategies are aligned with the economic approach adopted when designed (Bitard & Basset, 2008).

Raulik-Murphy (2010) compares four countries in different stages of economic development: Finland, South Korea, Brazil, and India. The author establishes 7 categories that are interrelated for a comparative analysis of design systems: design programmes (promotion and support), design education, professional design sector, rationale, design policy, national design system, national context. This research also contributes to identifying some shortfalls that hinder the consolidation of the research field, such as diversity of programmes, shortage of comparable data and common indicators, difficulty in isolating design results, lack of formal theoretical rationales and empirical academic studies, lack of terminology that, hence, hinder communication and knowledge exchange. The exploitation of elicitation method from grounded theory enables to map National Design Systems that are visually represented by Raulik-Murphy (2010) who addresses the four countries contexts that compose her case studies and proposes the method as a tool for policy-making in the design field.

The author observes that the national context and the type of approach or political regime adopted by the government are definitive to adopt different strategies for design and to establish the relationship of those with the government. Thus, the national context analysis (social, cultural, political, and economic context) is critical to policies on design which has also been stressed in other studies (Raulik-Murphy, 2010). She notices from the countries' case studies that the government plays a key role in establishing national strategies and coordinating the design system in advanced economies, while professional sector and NGOs share the lead with the government and public institutions in less advanced economies (Raulik-Murphy, 2010).

Looking at the relationship between national context, design programmes and design policy, Raulik-Murphy (2010) suggests a transition of policy focus according to the stage of economic development and to different country's needs. This transition of policy focus is addressed as follows: less advanced economies policy must focus on building a stable system for the operation of the economy, such as improving public and private institutions, infrastructure, education, health, and the macroeconomy; countries at intermediary stages should focus on improvement of the efficiency and quality of products and processes, exploiting higher education and technology to boost competitiveness; and, in advanced economies, which have higher production costs, policy should focus on highly innovative products, intensively exploiting design or technology to keep competitive (Raulik-Murphy, 2010).

Another discussion pointed out by the author is the need for a national design policy that has been widely advocated worldwide (Raulik-Murphy, 2010). She observes that a policy on design can help address a design strategy and agenda across a country, on the other hand, a design policy might not fit in the rationality used to improve national competitiveness as it happens in the case of free market competition adoption by government, therefore, it will depend on, for instance, the political and economic circumstances. She also notices that Finland and Korea have design policies that coordinates different design programmes; meanwhile, Brazil and India do not. However, patterns of programmes are not distinguished between advanced and less advanced countries studied and nor is the influence of a design policy in those programmes. The author concludes that, although there is a trend in adopting a design policy in diverse nations, "there is still limited understanding of its scope and advantages or the risks involved" (Raulik-Murphy, 2010, p. 209).

European countries that have advocated design as a competitive asset, such as the UK and Denmark, present diverse approaches regarding design policy. The UK has fostered design through a robust and knowledgeable design ecosystem composed of a high quality of design

higher education, Design Council, PolicyLab, small-scale design consultancies, think tanks and innovation groups. The UK's approach is fed by measuring the design benefits to organisations and to the country, which assures that it will keep investing in design. Design has not yet been addressed in a national design policy but research (Zitkus et al., 2018) on national design plans and strategies has suggested that this will be the UK's next step.

By contrast, Denmark has a national design policy from 1996 (Thenint, 2008) beyond the knowledgeable and consistent design ecosystem. The pioneer MindLab (policy lab) is Danish, and the attractiveness of Danish cities for citizens is one of the government concerns (see for instance Julier, 2017). Though 'The Economic Effects of Design' study (DDC, 2003) was considered a pioneer in measuring design benefits across companies in a country, a systematic control of those measures does not play a fundamental role to provide continuity of design investments in the country. Denmark relies more on the cultural aspects to address design. This is shown, for instance, through its political history in which politicians are used to participatory approaches, fostering citizens' actions, participation, and collaboration as peers as part of political traditions in leading the country. The austerity period has led to shrink the public budget, and design expenses should be clearly justifiable.

Two types of models considering less advanced economies have been stressed in literature concerning design policies: one regards different nations position taking into account factors, such as their economic development stage, kind of political regime, and government role in design policy (Heskett, 2001b, 2001c). Another concerns design development stages in a country in a peripheral economy (Bonsiepe, 1991 cited in Er, 1997), and in newly industrialized countries (NICs) (Er, 1997).

Heskett (2001b, 2001c) identifies general categories of government design policy. They vary according to two main variables: the government ownership (or not) of the organisation where design is being practised, and the kind of control (direct or indirect) carried out by governments in policy implementation (direct or indirect). Figure 13 shows Heskett's (2001c) model of these dominant types.

Heskett (2001b) defines the main features of each general category as follows:

- Statist - government organizations promoting design and the means of production are directly owned and managed by the government, being typical of communist regimes in the 20th century (e.g. Russia, China, and Cuba).
- Centrist - organizations promoting design are directly controlled by the government, being part of their administrative structure, but the means of production are not owned (e.g. Japan, South Korea, Taiwan, and Singapore).
- Dirigiste - There may be ownership of the means of production by government, but indirect control over how design policy is implemented (e.g. France, Spain, Mexico).
- Devolved - government policy is held through a body not directly controlled as part of a governmental administration, and with the means of production also out of the hands of the government (e.g. Britain, Germany, and the Netherlands).

Another type identified by Heskett (2001b) but not represented on the matrix is 'indirect', which means the absence of a design policy (e.g. the USA). However, it does not mean that government decisions do not impact design activities. It does through legislation on product liability, standardisation, etc. Heskett defines the combination of centrist and devolved models as the most successful design policy type (Er, 2002; Raulik-Murphy, 2010). Er (2002, p. 173) interprets this indirect or hybrid design policy type as "a transitory phase of either centrist or de-

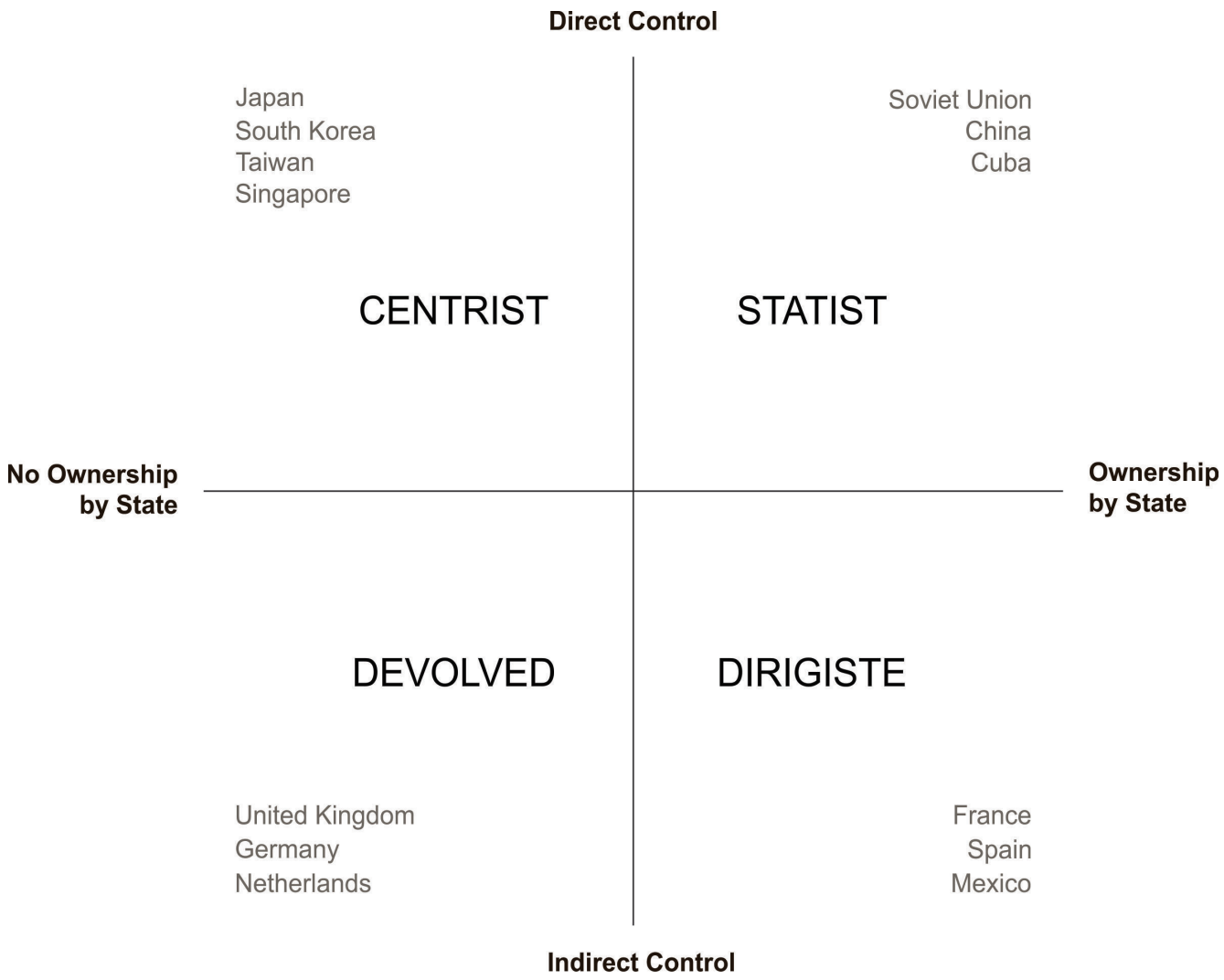


Figure 13: Heskett's (2001c) model of government design policy's dominant types

volved design policies already implemented for a while" and points out that it seems not appropriate for governments planning their first design policy initiative.

Heskett's model is further interpreted by Giard (1996) and Er (2002). Giard (1996) highlights design policy roles and its existence or absence according to each model at the time of his research, reinterpreting statist, centrist, devolved and indirect models. Er (2002) proposes an additional type called integrated, which arose in the mid-1990s and regards the integration of design policies into macro policies, such as innovation policy or SMEs development policy. The author (Er, 2002) suggests Finland as an example of this kind of design policy.

Heskett (2001b) notices that varying natures of design practices promoted by governments do not differ regarding the basic approach, varying only in terms of details. The author stresses that competitive advantage has not been sought through 'a radically different approach

to design, how it is conceived, applied and practiced' or through new ways of shaping design education. Heskett (2001b) also emphasises that the design evolvement has been highlighted in advanced economies while there is a lack of 'examples of design being used strategically at a national level to help build up an undeveloped economy'.

Er (1997) corroborates Heskett's observation, stating that little is known about less advanced economies' strategic use of industrial design, and new and broad research is still needed to enable industrial design role understanding, as well as to update and review former models related to industrial design in these economies (Er, 2015).

Papanek's (1972) and Bonsiepe's (1973; Bonsiepe, 1977 cited in Er, 1997) developmentalist approaches are considered fundamental contributions to the role of design in less advanced economies. Bonsiepe (1973, p.12) provides advice for a design policy in less advanced economies by emphasising the role of design in improving social conditions: "… it becomes necessary to establish priorities of design projects or design areas according to their global social benefits and development potential". Stressing the differences between design in advanced and less advanced economies, Bonsiepe (1973, p.13) states: "… in developing countries the volume of needs is bigger than the capacity of the productive forces".

Papanek (1972) focuses on the moral role and responsibility of designers in improving social conditions, while Bonsiepe (1973; Bonsiepe 1977 cited in Er, 1997) considers dependence of less advanced economies on advanced ones regarding technology development and finance or economic and political relations (Amir, 2004), exploiting the idea of central (advanced economies) and peripheral countries (less advanced economies) in a "Marxist-oriented dependency framework" (Amir, 2004, p. 68). However, the developmentalist approach presents shortfalls regarding the consideration of social, economic, and political systems in which design is embedded (Er, 1997). For instance, Bonsiepe (1973) presents a clear focus on technological and productive aspects rather than analysing the complexity of Latin American countries' political contexts that impact on these systems. Later, Bonsiepe (2006) reflects on crucial of political nature issues in his text 'Design and democracy' reinforcing the economic dependence of peripheral countries on central economies:

> "… to mention today the role of government in promoting industrialization can appear almost as an offense to good manners. The role of public intervention has been demonized with one exception, paying the debt of a bankrupt, privatized service. In that case, public resources are welcome, thus reinforcing the idea that politics is the appropriation of public goods for private purposes" (Bonsiepe, 2006, p. 32)

Nevertheless, Bonsiepe's (2006) arguments are still open-ended issues without practical responses on how to change this vicious relationship between less advanced and dominant advanced economies, with the exception of how designers can act as 'translators' of economic data for a public understanding of those (which also is likely to be affected by the dominant political direction and context's stability in order to be allowed – e.g. in the situation of corruption in the government and lack of political 'willingness').

A historical model of development for industrial design in the periphery is proposed by Bonsiepe in the late 1980s. Bosnsiepe's model is composed by five phases as follows (Bonsiepe, 1991 cited in Er, 1997, p. 296):

1. The period of proto-design (from independence to the end of the Second World War);
2. Gestation period of industrial design (decade of the 1950s);
3. Period of incipient institutionalisation (decade of the 1960s and 1970s);
4. Period of expansion and incipient consoli-

dation (decade of the 1980s);

5. Sovereignty phase, that may be reached in the future.

Though Bonsiepe's model is a significant contribution to understanding industrial design in undeveloped economies, this model is based on Latin American countries contexts that are inward focused, not being representative of Asian contexts and so of the whole less advanced economies (Er, 1997). Furthermore, Bonsiepe's model does not address the progress of design from one phase to another (Er, 1997).

Margolin (2007) reviews the evolvement of the development concept from economic to the inclusion of social, environmental, and cultural perspectives, emphasising the importance of Bonsiepe's centre/periphery model to the integration of design into the development construct, particularly focused on the less advanced economies or on 'design for development', but calling for the need to review this model according to the global economy context, for instance, considering changes spurred with the global practices of multinational corporations that separate design from manufacturing activities, placing design activities in industrialised developed countries and the production in lower-wage countries, such as China. Margolin (2007) urges this review of design for development scope: "Design for development needs to broaden its brief from an emphasis on poverty alleviation to include the strategic creation of products for export" (p. 115).

Prior to Margolin's statement, Er (1997) starts paving this way, relating the rise and development of industrial design in less advanced economies to the economy's and industry's market orientation which are largely determined by government policies in global contexts. He notices that export-oriented industries and economies promote a nature of competition which favours the development of industrial design. The author evolves Bonsiepe's model setting out seven phases and their respective characteristics which are described through six categories of analysis (see Table 4).

Er (1997) clarifies that his model does not suggest a linear development or sequential phases in every NIC but proposes common patterns of industrial design development in NICs. The author (Er, 2015) highlights the need for a conceptual framework for an economic policy on global design within the worldwide economic system in order to grasp design discipline in local and global scale. Er (2015) considers that his research findings (Er, 1997) are still valid except for product changes as the main role of industrial design in Newly Industrialised Countries (NICs). He stresses that "without a perspective of political economy, it is not possible to understand the development of design in the periphery" (Er, 2002, p. 162).

Table 4: Er's (1997, p. 301) Development Stages of Industrial Design in NICs model

	DEVELOPMENT STRATEGY	Sectorial Scope of Industrial Design	Industrial Design at Firm Level	Industrial Design Education and Research	Government Design Policy	Design Discourse
1 Proto-Design Phase	Primary Specialization in Raw Material Export. Pre-industrial Growth (All NICs)	N/A	N/A	N/A	N/A	N/A
2 Embryonic Phase	Import Substitution I (Asian NICs late 1950s and early 1960s, Latin American NICs, India, and Turkey 1950s and 1960s)	Design-oriented low-scale, low-tech industries. e.g. giftware and furniture for home use.	Self-formed artist-designer or architects. Outsider to industry. Design as a cultural mission.	Individual courses are created as extension to art or architecture programmes. First ID schools in India and some Latin NICs.	ID is seen as a sort of development tool, but there is no clear policy about how to use it within an ISI framework. Finance of the establishment of some early design schools.	Articles on ID as a cultural phenomenon appear in art journals. Design is an image of modernization.
3 Emergence Phase	Import Substitution II (Latin American NICs, India, and Turkey 1960s and 1970s) Export Promotion I (All Asian NICs 1960s and 1970s)	Design-oriented, large-scale, investment-driven industries. e.g. furniture for home and, office use, ceramics and some basic consumer goods.	ID as a tool of 'imitative' product modification. Individual designers employed by firms.	First generation ID teachers with art, architecture degrees or from foreign countries. 4 or 3 years Id degree programmes.	Finance of the ID education at university level. Scholarships for postgraduate education in advanced countries.	In architecture, interior and graphic design journals, articles written by industrial designers dealing with ID as a separate discipline.
4 Development Phase I	Export Promotion II (Asian NICs, Malaysia early 1980s) Liberal Trade Policies (India, Latin American NICs, and Turkey.	Investment-driven, standard technology industries. e.g. household appliances and most consumer goods.	In-house ID teams. ID as a tool of systematic product differentiation and adaptation on the basis of product modification (redesign). The recognition of ID as a competitive tool.	Second generation ID lecturers with mostly postgraduate degrees from advanced countries.	Design groups are incorporated into government agencies in some NICs such as small scale industry promotion, but there is no overall design policy.	In related design journals, special sections or issues on ID.
5 Development Phase II	Export Promotion III [deepening] (Asian NICs 1980s)	Specialized export industries e.g. consumer and, business eletronics, sports equipment etc.	In-house design teams + use of design consultancy firms. Design as a marketing factor.	Postgraduate ID courses. Faculty staff with professional experience. Localization of ID education starts.	ID is incorporated into some government policies such as export promotion.	Same as above. But ID discourse is differentiated from others.
6 Take-off Phase	Global Strategy (Korea...? since the early 1990s)	Investment-driven, relatively more capital and technology-intensive sectors. e.g. capital goods such as transport vehicles.	Large specialized ID departments. ID is recognized as part of corporate strategy.	Specialization occurs within design like transportation design. Study programmes get a strong theoretical input.	ID is recognized as part of a national competitive strategy.	Specialized magazines dedicated to ID.
7 Maturity Phase	...?	New product development is practised in all major branches of industries.	Design as a leading force in company strategy. Product innovation.	Differentiated and fully equipped institutions. Courses contain scientific lecture programmes.	ID as an element of innovation is part of industrial culture. Design centres run by professionals.	Books on ID are published dealing with standard practices, history, theory.

Policy cycles models have also been developed. In the design for policy field, for instance, Junginger (2014) proposes the policy design cycle adapted from Howlett and Ramesh (2003 cited in Junginger) in which she proposes 'policy-making as designing'.

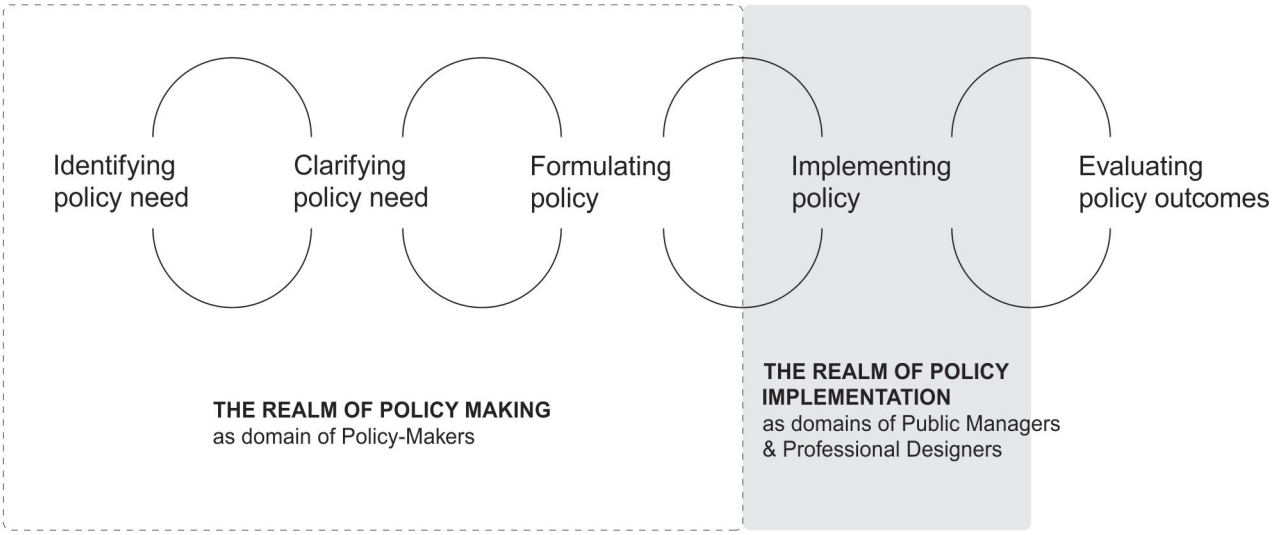


Figure 14: Policy design cycle adapted from Howlett and Ramesh (2003 cited in Junginger, 2014, p. 58)

Junginger (2014) stresses that policy cycles generally derive from a problem-solving approach that separates policy-making from policy implementation, emphasising the gap it creates once policy-makers are usually not familiar with citizens' problems. Thus, a human-centred design approach can shed light on the problem causes and can go beyond, contributing to building desirable futures, being future-oriented rather than reactive and responsive to existing problems (Junginger, 2014).

Models of design policy's cycle have been developed in recent design policy literature. Design policy evaluation has been considered a critical factor (see for instance Bitard & Basset, 2008; Maffei et al., 2014a; Raulik-Murphy, 2010; Thenint, 2008). Bitard and Basset (2008) highlight that proper evaluation of design policies implies a clearly defined policy or programme and a centralised organisation of the evaluation. They notice that most design policy evaluations are scarce limiting to "the number of projects conducted under the evaluated policy, the number of participants involved and of sums spent" (Bitard & Basset, 2008, p. 49).

The DeEP project[30] aimed at developing a common framework of design policy evaluation across Europe, promoting a shared vision of design within the European innovation system. The DeEP project (Maffei et al., 2014a) describes a classical policy cycle composed of five steps (Maffei et al., 2014a, p. 43), and sets out a policy evaluation cycle by linking policy cycle and evaluation stages (Maffei et al., 2014a, p. 44).

[30] The DeEP project (2012-2014) has its origin in the European Plan for Design-Driven Innovation and is set among the European Design Innovation Initiative (EDII), which aimed at harnessing design for innovation, as well as strength the connection between design, innovation, and competitiveness (Maffei et al., 2014).

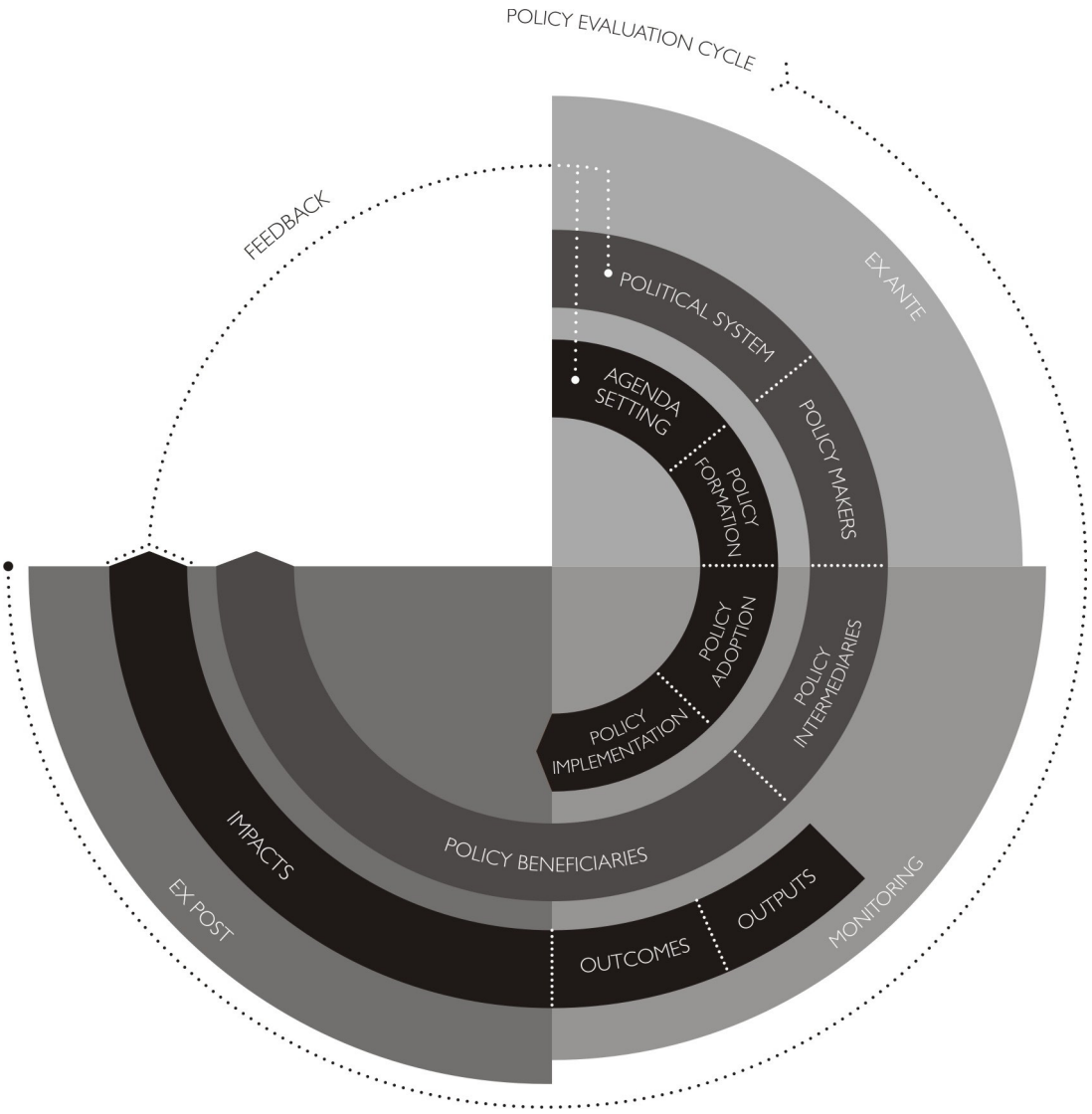


Figure 15: DeEP Policy Cycle (Maffei et al., 2014a, p. 44)

In addition, the DeEP project suggests micro and macro indicators to policy evaluation to contribute to understanding outcomes and impacts of design policies and initiatives (Maffei et al., 2014a, pp. 45-49).

Raulik-Murphy (2010) proposes a generic design policy process (Figure 16).

She observes, based on the experience of the policy document PBD 2007-2012 Strategic Plan formulated by the Brazilian Programme for Design, that the Brazilian design policy cycle stops at the proposal stage. Some reasons are the lack of focus and the weak relationship between the national government and the design system (Raulik-Murphy, 2010). Conversely, Finland and Korea cases evidence the completion of the design policy cycle, especially in the Korean design policy cycle in which feedback information and periodical evaluation serve as an input to implementation process and new policies formulation (Raulik-Murphy, 2010).

She observes, based on the experience of the policy document PBD 2007-2012 Strategic Plan formulated by the Brazilian Programme for Design, that the Brazilian design policy cycle stops at the proposal stage. Some reasons are the lack of focus and the weak relationship between the national government and the design system (Raulik-Murphy, 2010). Conversely, Finland and Korea cases evidence the completion of the design policy cycle, especially in the Korean design policy cycle in which feedback information and periodical evaluation serve as an input to implementation process and new policies formulation (Raulik-Murphy, 2010).

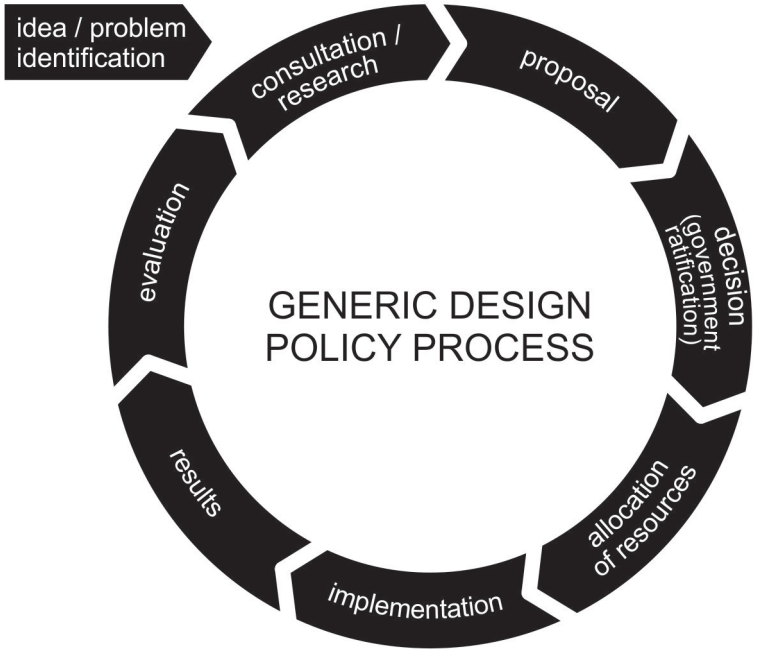


Figure 16: Raulik-Murphy's (2010, p. 182) generic design policy process

Patrocínio (2013) cites the differences between policy and political cycles, highlighting that the first can range from around 5 years to generations, while the second varies according to political and personal cycles in democracies, ranging from four to ten years (Dror, 2006 cited in Patrocínio, 2013). This reinforces the need for stable and committed governance and government, as well as policies aligned with the country's priorities and needs, in order to implement and complete policy cycles.

Julier (2017) provides an optimistic outlook through the Kolding city case (Denmark) that has shown how a bottom-up approach was structured, involving the citizens and public sector members, and led by a private consultancy to develop a strategy and vision to make the city more attractive and enjoyable. The duration of the policy that corresponded to the developed strategy was to last over a 10-year period, extending over 2 municipal election cycles. Julier (2007) points out that the slow and participatory nature of this development keeps citizens, politicians and other stakeholders committed to the project to some degree, which enables stability for longer-term initiatives. The vision for the city was adopted by the Kolding Municipal Council in 2012, and by 2015, the strategy was

saving the city €6.6m per year according to the Kolding Municipality (Julier, 2017).

By contrast, in Indonesia, where industrial design plays diverse roles according to the type of organisation, technological development, including industrial design in state-owned corporations, policy is sensitive to political change (Amir, 2002). As highlighted by Amir (2002, p. 43): "once the government changes, the policy also changes. Consequently, the position of industrial design is fragile unless these corporations are separated from government involvement".

Changes in political directions and agenda also influence design policies and their approach in other countries. Giard (1996) evidences how a change in the Canadian political direction was a peak for changing the approach to design policies, leading to the dissolution of design centres and doubts on supporting the design sector in a government's neoliberal approach to the economy, which moved from industrial-based to post-industrial-based. The author observes that this kind of change has already been experienced in Great Britain and the USA. Giard (1996) notices the shortcomings on Canadian design policies by modelling them on the basis of foreign design policies, pointing out the need to craft design policies that take into consideration the economic, political, and cultural context of the country, otherwise, the design policy effectiveness is jeopardised. South Korea design policies seem also affected by the political climate (see for instance Choi et al., 2010).

The Asian case has been considered successful (Er, 2002; Heskett, 2006). Japan established the main model that has been followed by other Asian countries (e.g. Korea and Taiwan). Malaysia, Thailand, and China also have their own national design policies aiming at enhancing competitiveness in global markets.

Japan set out its design policy (possibly under other labels) through the Ministry of International Trade and Industry (MITI) by the 1950s (Heskett, 2006; Schneider et al., 2015). MITI's design policy was aligned with its major strategy of economic reconstruction, being integrated into macro-level industrial and trade policies (Er, 2002). The initiatives for economic reconstruction were focused on exports and included: introducing latest foreign technology, protecting domestic industry while rebuilding, and using the home market as a springboard for exports (Heskett, 2006). Designers were trained in Europe and the USA; and an effective mechanism for design promotion was created, the Japan Industrial Design Promotion Organization (JIDPO) (Er, 2002; Heskett, 2006).

The role of design in Japanese businesses involved strong top management support, interfunctional teams (e.g. designers, engineers, marketers), incremental rather than radical design, use of well-proven off-the-shelf components, manufacturer and supplier cooperation, long-term investment in development (Heskett, 2006).

The Korean case is an example of industry-led government initiatives that were structured with a long-term strategy. Chung (1993, 2015) looks into the Korean national strategy to develop its industry, especially the Korean auto industry. He stresses that "the Korean government's well-thought-out long-term policies, as well as its step-by-step support, were crucial to the success of Korean automakers" (Chung, 1993, 2015, p. 72). The Korean economy has changed from a traditional agricultural economy to an industrial one from the early 1960s to 1990. The Korean government promoted strong support to industry structure and technology development from the early 1960s, after 35 years of Japanese domination (1910-1945) followed by 5 years of civil war which distorted the national economy, letting most Koreans in absolute poverty, and dividing Korea into two entities: democratic South and communist North (Chung, 1993, 2015). Six consecutive Five-Year Plan (FYP) were the answer of the military government composed of 'well-educated technocrats' to change the

country's situation. Chung sums up these six FYP that supported the Korean economy transformation and development:

Table 5: Major policies for the motor industry in each Five-Year Plan (Chung, 2015, p. 66)

FYP Duration	Government Intent	Key Actions from the Motor Industry	Major Policies for the Motor Industry
1st FYP (1962-1966)	Focus on key industries—energy, raw materials, road building	Preparation for reconditioning	Five-Year Plan for the motor industry (1962) Motor industry Protection Act (1962)
2nd FYP (1967-1971)	Focus on light industries— textiles, footwear, wigs, plywood	Production of parts and assemblies	Machinery industry Promotion Act (1967) A Basic Plan for the Motor industry (1969)
3rd FYP (1972-1976)	Focus on heavy and chemical industries	Establishment of major automotive plants	High protective tariff on foreign cars (1973) A Long-term Plan for the Motor industry (1974)
4th FYP (1977-1981)	Rationalization of industrial structure	Mass production of domestic models and specialization by each firm	Motor industry selected by government as a major export-led industry (1979) The Motor industry rationalization Measure (1981)
5th FYP (1982-1986)	Focus on industries with competitive advantages	Achievement of a basis for large- scale export of domestic cars	KAICA* established (1985) Startup of new businesses in the market sector (passenger cars; minivans; light trucks) prohibited for three years (1986)
6th FYP (1987-1991)	International competitiveness	Civilian-led globalization	Repeal of the rationalization Measure (1987) Freedom to import foreign cars (1988) KAMA** established (1988) Atmospheric Contamination Protection Measure (1991)

* Korea Auto Industries Cooperative Association
** Korea Automobile Manufacturers Association

According to Chung (1993, 2015), a milestone that triggered Korean design development was the Pony project (by Hyundai) that was held within the 3rd FYP period. Hyundai's counterpart turned down its support and Hyundai had to organise to develop a product by itself. The company used the assistance from Mitsubishi to develop the powertrain and chassis, and from ItalDesign to develop the body styling and design. The outcome was the Pony model that had its prototype exhibited in the Torino Motor Show in 1974. The Pony was the beginning of

the cooperation between Hyundai and ItalDesign towards the development of the in-house design capabilities at Hyundai. The company first sent a team of five engineers to be trained in Italy. In 1975, the in-house design and R&D functions were established at Hyundai and the design studio employed "five industrial designers whose first job was to put ItalDesign's engineering plans into the Pony's development" (Chung, 1993, 2015, p. 67).

The national strategy first led by a military junta promoted strong support to the Korean industry or its *Chaebols*[31] combined with protection of the inward market and other measures, such as tax cuts, labour control, and import tariffs. Support and incentives decreased with the democratisation process that was consolidated in 1988. The domestic market was opened to foreign automakers, including Ford, GM, BMW, Mercedes-Benz in the auto industry but the industry had already built its structure and know-how or capabilities to develop its own products, consolidating its export market, especially in North America, which, along with the continuous expansion of the domestic market, enabled the Korean auto industry to keep its competitive power (Chung, 1993, 2015). Although support is not heavily held by government anymore, the Korean industry built its capability to compete with leading global companies, and design has increasingly gained attention, being considered a 'key competitive weapon' in the auto industry. The perspective is that investment in R&D and design shall still increase (Chung, 2015).

Design development has been related to industrial policy in Korea, being a key element in Korea's growth strategy (Cho, 2004). Cho (2004) advises that national design initiatives should expand, integrating also the quality of life improvement within their scope. From this idea he proposes the 'Four stages of the design revolution' model characterised by four stages:

1. Connection among conventional design industries;
2. Expansion of design domain;
3. Application of design principles of new fields (e.g. politics, economics, social system);
4. Integration of multiple design ideas or integration of the diverse prior stages.

Choi et al. (2010) looks at the UK's and South Korea's National Design Centres (NDCs), observing that both countries are representative of effective design policy in which design is seen as a tool for improving competitiveness and economic success. They suggest that NDCs should have independence from government, being independent of political agendas, establishing more proactive, anticipatory and participatory approaches through engagement in new and innovative practices underpinned by research. The authors observe that governments tend to reactive approaches with limited and short-term objectives addressing short-term failures, and NDCs have flawed to address industry trends and needs, lacking connection to industries' realities. Choi et al. (2010) state: "There are fewer long-term propositions for the support of design and industry based on foresight and long-term planning. In addition, contribution to national policy formation at the governmental level is subject to personal influence and design relevance factors" (p. 65).

The Korean pathway was not a smooth one. Crises emerged within the FYP periods but the government answered them with specific measures, which sometimes were quite harsh

[31] Several leading Korean conglomerates (Chung, 1993, 2015)

to take, directly affecting the direction of the industry and economy, as well as the citizens' lives. However, the impacts for current generations are visible not just in terms of wealth and industry competitiveness but in terms of education.

Frameworks of design policies including definitions, stakeholders and roles can be found in Bitard and Basset (2008), Er (2002), Raulik-Murphy (2010), Sun (2010), the Design in European Policy (DeEP) project final report (Maffei, Arquilla, Mortati, Villari, Evans, Chisholm, & Londoni, 2014a), Mortati, Villari, Maffei and Arquilla (2016) (i.e. convergent with the Design Policy Beacon framework by the Design Policy Lab [2018]), Whicher and Walters (2014), and in SEE platform publications, particularly policy monitor publications (e.g. Whicher, Swiatek, & Cawood, 2015).

Bitard and Basset (2008) classify design policies activities in the following categories: awareness raising and promotion on the local and international scenes, contact and information (to help the general public familiarise with design features and approaches), national and international events, education and training, research and networking, free and fee services to the private sector, public consultations and open democracy mechanisms, grants and tax incentives, regulation (norms and intellectual property).

Mortati, Villari, Maffei & Arquilla (2016) propose a categorisation for design policies according to their diverse aims (see Table 6).

The definitions of the diverse stakeholders' role in the design policy context considered in the empirical cases analysis of this dissertation come from the Design Policy Beacon[32] framework (Design Policy Lab, 2018):

Funder – Refers to bodies, organisations or groups which have allocated funding for a design policy or initiative. Funders are often not in charge of designing the policy.

Policy-maker – Refers to bodies, organisations or groups (e.g. governmental departments, offices, think tanks etc.) with the responsibility of originating the policy or initiative, determining its rationale, course of action, aims and objectives. They will also generally determine how, and by whom, the policy should be implemented.

Intermediary – Refers to those organisations involved in the implementation of a policy or initiative (i.e. by fulfilling its aims and objectives through practical engagement with the intended beneficiaries). In addition, by the nature of their involvement, intermediaries also assist in the promotion and dissemination process.

Beneficiary – Includes individuals, communities or organisations (e.g. enterprises, public sector organisations, associations, even regional or local authorities) that are intended to benefit from the implementation of a certain design policy or initiative.

[32] The Design Policy Beacon is an initiative launched by the Design Policy Lab at Politecnico di Milano, and part of Design for Europe (2014-2016), a three-year programme to support design-driven innovation across Europe co-funded by the European Union as part of the EU's Action Plan for Design-Driven Innovation. It is an evidence-based online resource which uses data visualisation to pinpoint the network of initiatives and organisations in support of design across Europe, documenting the most pressing issues for design and policy in order to support policy-makers who deal with design as a key part of national and regional policies for innovation and growth (Mortati, 2015; "Supporting design-driven innovation across Europe", n.d.).

Table 6: Categorisation of design policies (Design Policy Lab, 2018; Mortati, Villari, Maffei & Arquilla, 2016, p. 38)

CATEGORIES		
FRAMEWORK DEVELOPMENT	**HUMAN DEVELOPMENT**	**ASSET DEVELOPMENT**
Policies that provide direct financial interventions and measures for promotion & advocacy – aimed at creating awareness of design and the value of design.	Policies that build design capabilities – aimed directly at the development of organizational or individual design capabilities, that support research –directed at improving the quality and applicability of design research, for services supply – measures that enhance the demand of design-related services.	Policies that support technical development - directly addressing technological and technical issues facing organizations, and networking and collaboration – measures to improve connectivity and collaboration.
SUBCATEGORIES		
Financial support The policy or initiative provides direct financial support for design (organisations or individuals).	**Capability building** Measures aimed directly at the development of organisational design capabilities.	**Technical support** Empowerment of pre-existing technological assets (hardware), acquisition of new technological assets, and facilitation to acquisition of prototyping services and facilities.
Promotion and advocacy Measures aimed at creating awareness of design and the value of design.	**Support for research** Measures directed at improving the quality and applicability of research and design.	**Networking and collaboration** Measures to improve connectivity and collaboration.
	Services supply Measures that enhance the demand of design-related services.	

Evaluator – The term 'evaluator' includes individuals, experts or organisations that are in charge of evaluating the results and impact of a policy or initiative.

In the empirical cases further analysed in this study, designers and consultants who are representatives of consultancy firms in the design industry play the intermediary role.

From the analysis of the UK and South Korea's design policies, Choi et al. (2010) propose four alternative structural models for developing and implementing a national design policy, emphasising design support initiatives as follows:

Model 1 (Figure 17) is characterised by design units in each government department working closely with national design centres where representatives from each government department are board members of the national design centre.

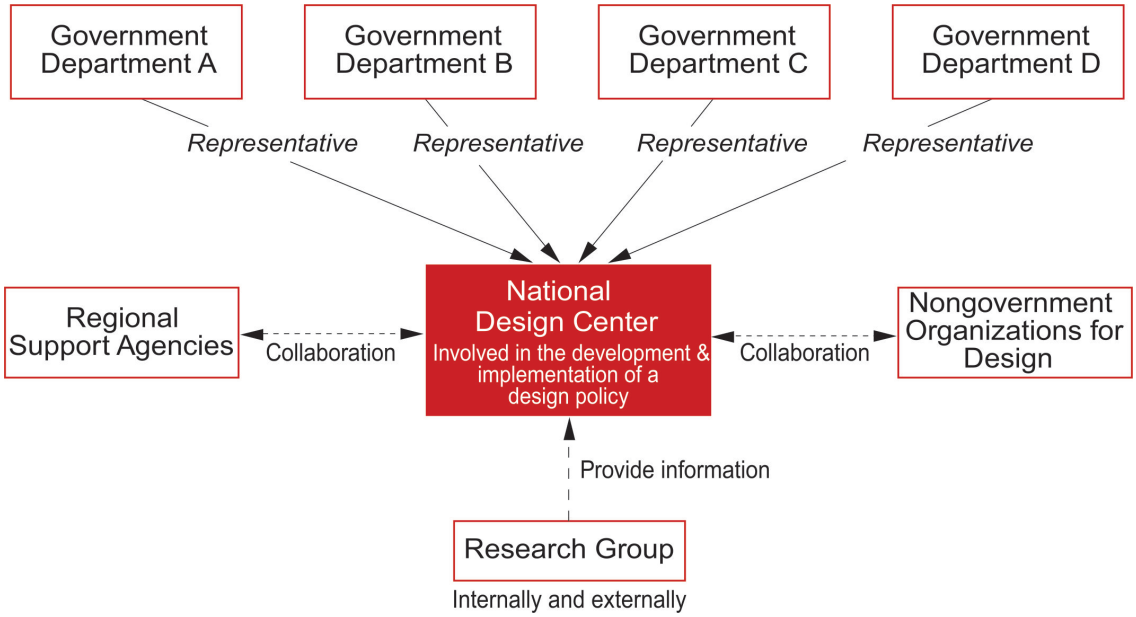


Figure 17: Model 1 - Development and implementation of national design policy should be led by national design centres (Choi et al., 2010, p. 68)

Model 2 suggests a government department responsible for design dealing with all design-related affairs nationally, working with national design centres, and which concerns itself with the development and implementation of the design policy.

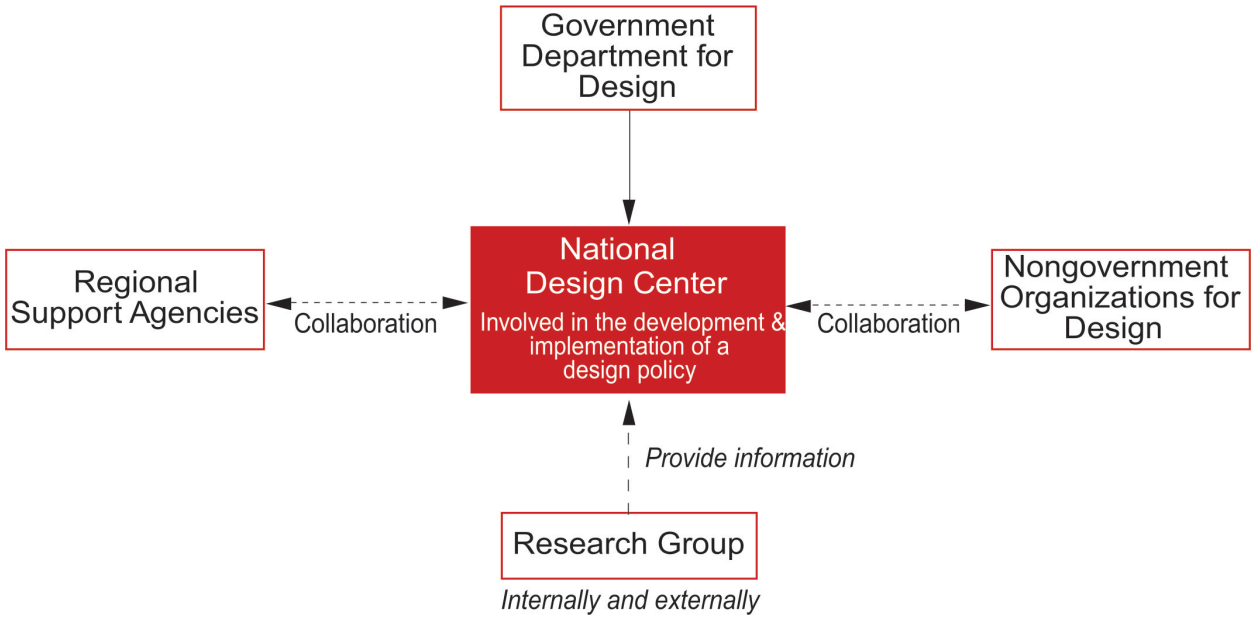


Figure 18: Model 2 - Development and implementation of national design policy should be led by a government department in collaboration with national design centres (Choi et al., 2010, p. 68)

Model 3 puts forward a central government department as responsible for the design and dealing with all design-related affairs at a national level. The government department creates a design policy and delegates implementation of the design policy to the regional support agencies.

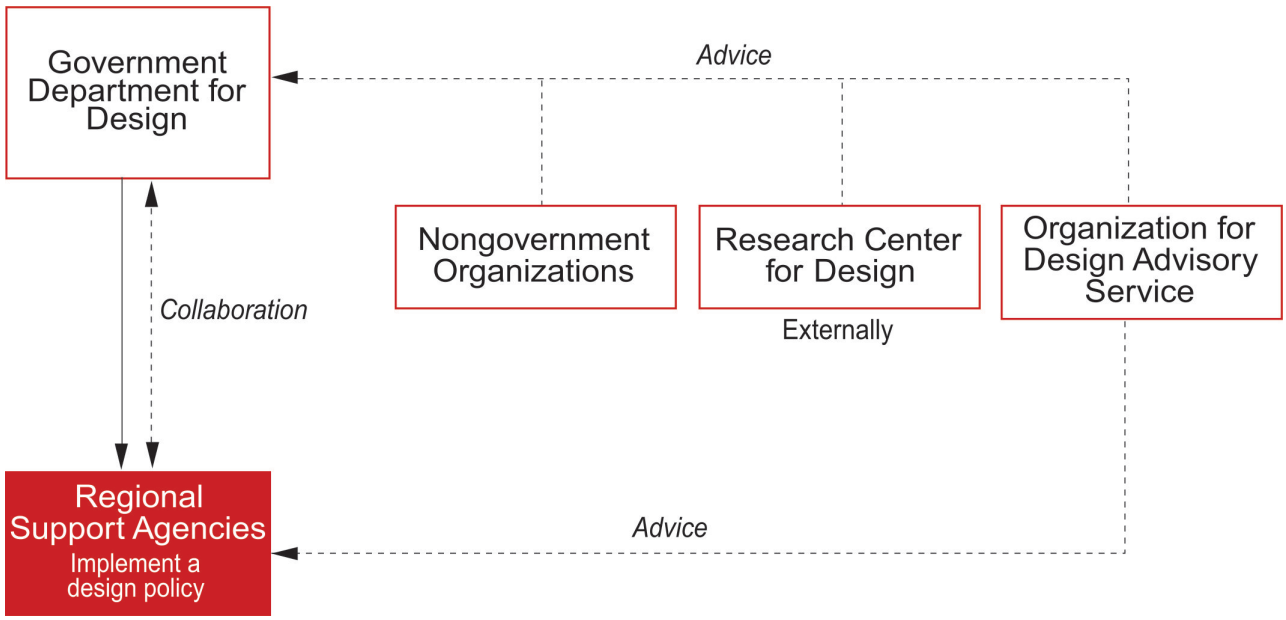


Figure 19: Model 3 - Development of national design policy should be led by a government department and implemented by regional support agencies (Choi et al., 2010, p. 69)

Model 4 has a liberal approach underpinned by market forces demand rather than by a government-driven approach. There is no national design policy, and design NGOs offer activities based on their individual aims.

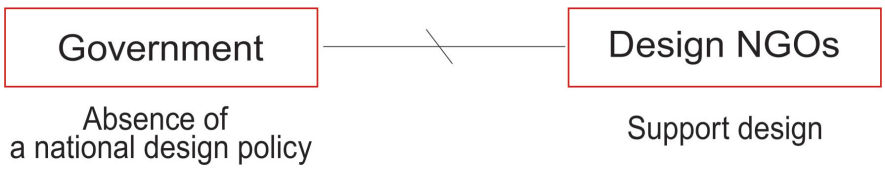


Figure 20: Model 4 - Absence of national design policy; instead design NGOs' activities (Choi et al., 2010, p. 69)

All models present advantages and disadvantages regarding participation and influence of key stakeholders, the autonomy of National Design Centres, and design activities funding (Choi et al., 2010). Choi et al. (2010) advise that government decisions on design policy should be made case-by-case considering local conditions, resources, priorities, culture, and extent of government intervention in economy and autonomy of design bodies.

Analytic tools or models to support design policies analysis have also been developed. Raulik-Murphy (2010) suggests a tool for developing an understanding of the design activities'

network within a country (Raulik-Murphy, 2010, p. 233), the National Design System (Figure 21):

DESIGN EDUCATION includes the traditional education (degrees and post graduate courses) as well as professional training for designers.

DESIGN PROMOTION schemes are usually targeted at the wider public with the objective of raising awareness of the benefits of design through many different ways (e.g. exhibitions, awards, conferences, seminars and publications).

DESIGN SUPPORT programmes are implemented to assist companies in using design for their business advantage. As an example, these programmes build 'bridges' between designers and industry.

DESIGN POLICY can be defined as the process by which governments translate their political vision into programmes and actions in order to develop national design resources and encourage their effective use in the country.

Figure 21: Raulik-Murphy's (2010, p.109) schematic representation of the elements of a National Design System and their definitions

Sun (2010) looks at design policies in the UK and China, emphasising the current Chinese supportive schemes, indicating the need to focus on tier 2 policies (see Figure 22) that can improve the quality of design supply and demand in China. She (Sun, 2010) distinguishes the role of diverse stakeholders in the design policy-making process and categorises different design policies according to the aims and roles involved (Figure 22).

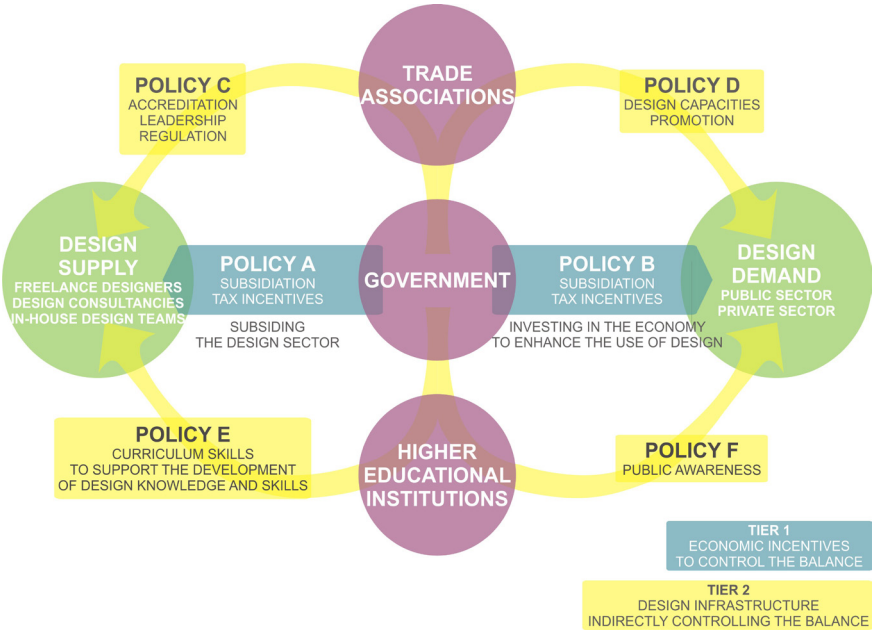


Figure 22: Sun's map of the role of diverse stakeholders in the design policy-making process (Sun, 2010)

Whicher and Walters (2014) evolve Raulik-Murphy's framework, also from the analysis of other research (i.e. Sun, 2010; Raulik-Murphy & Cawood, 2009) (i.e. Love, 2007; Moultrie, 2008; Whicher & Cawood, 2012; and Finnish Ministry of Economy and Employment, 2013 cited in Whicher & Walters, 2014), developing the Design Innovation Ecosystem framework which evidences key aspects that can influence on harnessing design across a region, country or continent. This framework has been used to monitor design in Europe through SEE project initiatives, supporting the analysis of weaknesses and strengths of Design Innovation Ecosystems.

A Design Innovation Ecosystem or a Design-Driven Innovation Ecosystem (Figure 23) is a policy construct which aims at tackling the gaps and capitalising on the strengths (Whicher, Swiatek & Cawood, 2015). According to Whicher, Swiatek & Cawood (2015), the elements which set up the Design Innovation Ecosystem are:

- Design users: from private to public organisations sectors that use design services;
- Design support: policy instrument for improving the use of design and can include one-to-one mentoring ranging from light-touch to more specialised interventions, as well as subsidies, tax credits, and export schemes;
- Design promotion: policy initiatives which aim at raising the awareness and enhancing the understanding of design among different target audiences;
- Design actors: design centres, associations, clusters, and networks that often act as the link between government, enterprises, the design sector, academia, and other actors;
- Design sector: design firms in the creative industry;
- Design education: aims at ensuring the supply of quality designers from primary and secondary school through to undergraduate level and up to masters and doctoral levels, being represented by higher education institutions and their networks;
- Design research: research networks, associations, and centres, as well as initiatives regarding knowledge exchange between academia and industry;
- Design funding: policy instruments for governments to incentivise innovation (e.g. innovation vouchers, grants, and tax credits);
- Design policy: government intervention aimed at encouraging the supply of and demand for design to tackle the failures and capitalise on the strengths of the Design Innovation Ecosystem.

Evans and Chisholm (2014) emphasise that the main aim of a design policy is to improve "directly or indirectly the capabilities for people-centred innovation of the enterprise system" (p. 6).

Design promotion and design support are part of a design policy. Raulik-Murphy and Cawood (2010) distinguish design promotion and design support. The first is "planned to raise awareness about the benefits of design" (Raulik-Murphy & Cawood, 2010, p. 121). Design promotion programmes "target the general public through exhibitions, publications, events etc.; or they target groups through conferences, workshops, promotional campaigns etc" (Raulik-Murphy & Cawood, 2010, p. 121). Design support programmes "work directly with businesses and the public sector, providing advice and assisting them to make effective use of design" (Raulik-Murphy & Cawood, 2010, p. 121).

Tether (2006) notices that design support like one-to-one advice activities is more expensive than design promotion activities, such as seminars and workshops, that can reach a larger audience of firms (see Figure 24). Tether (2006)

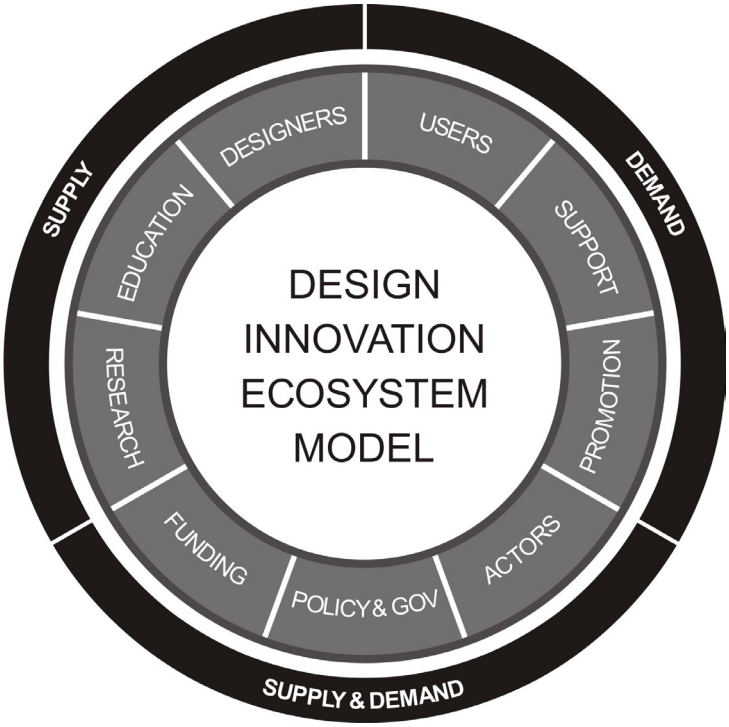


Figure 23: Whicher's and Walters's (2014) Design Innovation Ecosystem framework

suggests a more cost-effective option with the development of a portfolio approach to design support which combines design promotion activities that should be held first and design support initiatives after, in case some firms still need more focused design support. The reasoning is that not all firms receive design support but just the ones that evidence the need for it.

The author comments on the diversity of design programmes' strategy across Europe, stressing that: "… there is little consensus about need for design support or promotion, and the appropriate balance between the different forms of promotion and support." (Tether, 2006, p. 10). Thus, the kind of initiative which should be prioritised in a country, as well as the appropriate balance between support or promotion, have not been agreed at all (Tether, 2006). Some countries started with design support and move towards promotion, ceasing design support programmes and focusing on promotion, while others emphasise one kind, for instance, design promotion (see for instance Raulik-Murphy, 2010). This choice is also guided by the kind of political and economic approach adopted in each nation.

Thenint (2008, p. 12) points out that successful promotion and support initiatives in Europe present the following features:

- An accurate identification of needs and opportunities resulting in a good positioning;
- Precise objectives and expected results;
- An efficient implementation within government departments (business, education, etc.) and appropriate multi-level governance;
- A systematic evaluation of programmes and a continuous evolution/adjustments of the programmes.

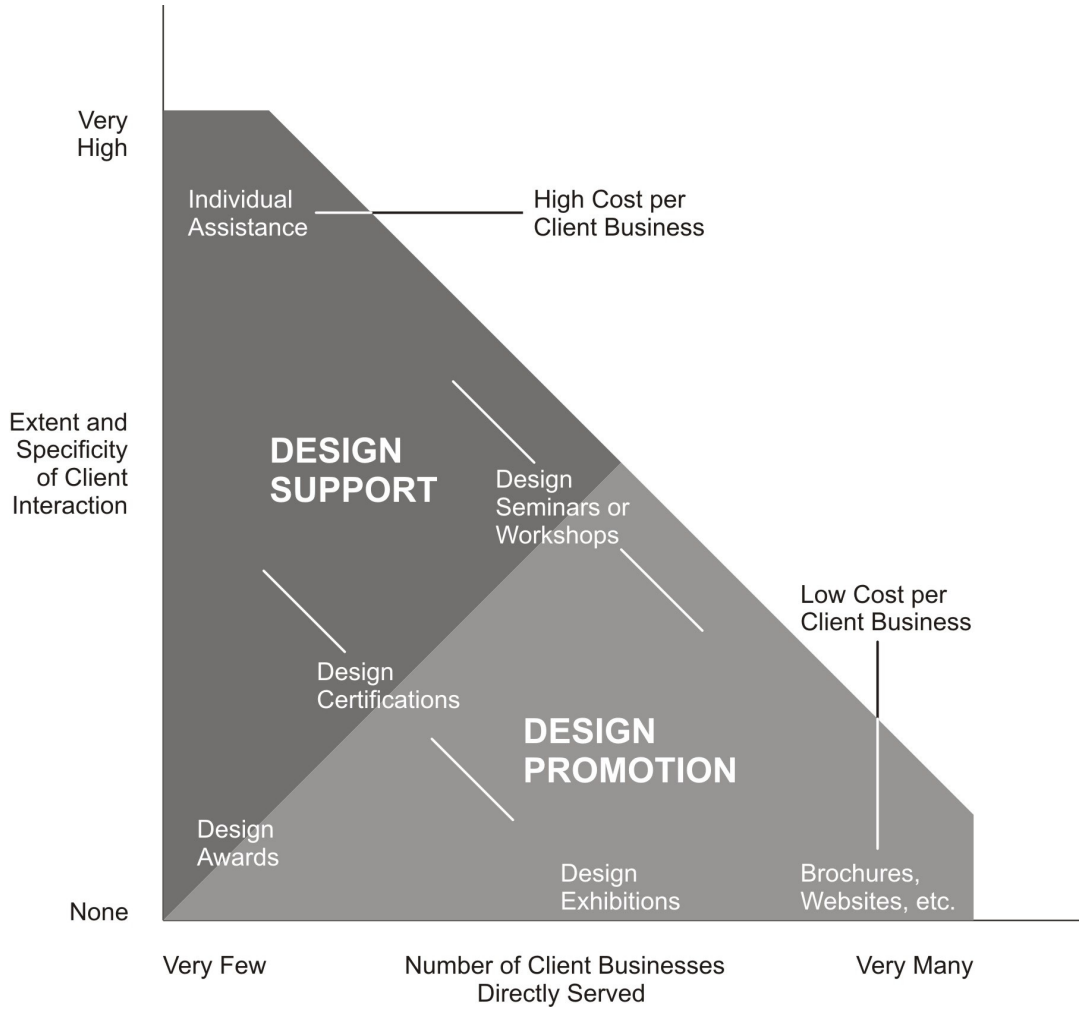


Figure 24: A Schematic Representation of Design Promotion and Support (Tether, 2006, p. 9)

Er (2002) defines design support as

> "reinforcing design and design management capabilities of companies, creating and managing funded-programs and fiscal instruments, such as tax rebates to support the in-house design capabilities and the development of a national design consultancy industry. It also includes the transfer of new design knowledge and skills to companies, and the provision of consultancy services for strategic design issues". (Er, 2002, p. 174)

Whicher, Cawood & Ryan (2013, p. 4) define design support programmes as

> "policy instruments aimed at improving the demand for design by raising the understanding and capability of design among SMEs and/ or public officials. Design support programmes can also focus on the supply of quality design expertise in the professional design sector through training and mentoring." (Whicher, Cawood & Ryan, 2013, p. 4)

Schneider et al. (2015, p.10) distinguish different forms of business design support recognizing three routes: awards, facilitation (easing up the access to design services), and the integration of design. Activities of integration of design

into businesses through a design policy include (Schneider, et al, 2015, p.10): capacity building, dedicated advising, and bespoke support.

Activities of design integration into businesses can be understood as part of design support activities in the definition proposed by Whicher, Swiatek, Cawood (2015, p. 14). A common feature among diverse design support definitions is that design support is usually related to businesses or organisations design capabilities development.

Beyond the lack of terminologies, the existing ones are still confusing as previously observed by Raulik-Murphy (2010) and Patrocínio (2013). For instance, Schneider et al. (2015) recognise awards as design support, while Raulik-Murphy (2010), Tether (2006), Whicher, Swiatek and Cawood (2015) classify awards as design promotion, and Sun (2010) proposes another way to distinguish design policies according to the diverse stakeholders' role in the policy-making process.

Raulik-Murphy (2010) also stresses cases of transfer of practices failure and success. Models that have failed in transferring practices disregarded the national context characteristics of the country in which the practice should take place, not being properly adapted or not considering critical differences between the country in which the practice originally played out and the one which received the transfer of 'best practice' in terms of programmes, policy, or design council model.

The change towards a more intensive use of design at a national level has been related to combined factors which influence and pressure, 'force' or spur, a country to advance and implement policies that encourage exports, market openness, and search for differentiated and higher quality offers that depends more on skills and knowledge than on materials or natural resources availability to create value. Examples of these 'forces' or events are: global drop in the price of raw resources that are among main sources of GDP or exports in a country, as in the case of the oil in Indonesia in the 1980s (Amir, 2002), the Asian financial crisis in 1997, as in the case of Korea (Raulik-Murphy, 2010), the austerity period in the occasion of the financial crisis from 2008, as well as the approach of New Public Management (NPM) that leads government's budget to be continuously shrunk, which triggers the use of design in the public sphere in Europe from around the 2000s (Julier, 2017). China has also started to receive the attention of its politicians who have encouraged the transition from 'Made in China to Designed in China' (Heskett, 2010, p. 6).

On the other hand, these 'forces' are not enough when there is not an appropriate and comprehensive political approach and vision to support change and transition periods. Turkey is an example. Although the country has also passed through an oil crisis (1973-4), the government approach was not supportive to design capabilities development at the time. The emergence of design use as a routine part of Turkish companies' operations has happened in Turkish businesses after the late 1980s with the quality-based competition importance in its export markets and in its liberalised domestic market, in which design capabilities are mainly developed in companies in the export-oriented industry, such as consumer electronics as Vestel and Beko (Er, 2002).

Heskett (2010) emphasises the role of policies in encouraging a transition from copying to the development of design capabilities in diverse countries contexts. The beginning of the industrialisation process is usually characterised by a copycat behaviour that can change according to political visions and policies initiatives that foster design skills and competencies development. Japan, Korea, and Taiwan are examples of countries that made design capabilities development integral to their economic policies in a 'systematic and long-term in intention' (Heskett, 2010, p. 6). South Korea's design policy originated in its industrial policy with a focus on

education and has integrated demand-oriented initiative relying on public procurements, being mainly government driven and funded (Thenint, 2008). The first dedicated design policy in South Korea emerged in 1993 (Bitard & Basset, 2008).

Design policy is still an under-researched field when compared to innovation policy. Hobday, Boddington and Grantham (2012) emphasise:

- The little tradition of design policy models conceptualisation;
- The need for design-based research on 'wicked problems' in order to assist in developing more effective, dynamic and responsive design policies.

Awareness of divergences among key stakeholders and the need to create a common ground including shared assumptions and expected goals in Italian SMEs are noticed for crafting innovation policies (Massa & Testa 2008, p. 405).

Er (2002) emphasises the need for a design policy particularly in less advanced economies:

> "… in a peripheral economic context where markets may frequently fail for a number of reasons, a government policy is necessary to facilitate the development of strategically competitive capabilities, such as design. Government intervention through design policy appears to matter for national competitiveness, especially in export markets". (Er, 2002, p. 190)

However, harnessing design in a country might go beyond the need for a design policy as it can be noticed in the Brazilian case. The Brazilian experience showed that the lack of linkages of the design policy to major macro policy priorities, the lack of design awareness among decision-makers, the nature of competitiveness based on inward-focused markets, as well as the fragmented design innovation ecosystem, in which key stakeholders usually are not connected to each other or aware of one another's initiatives and aims, hindered the implementation of the Brazilian Design Programme (Programa Brasileiro de Design [PBD]) (see for instance Raulik-Murphy, 2010).

Amir (2002) analyses the Indonesian design policies and their flaws. The design development in Indonesia was hindered by several factors according to Amir (2002): the association of design with fine arts and crafts influenced by Dutch occupation in the 1930s, which consolidated a marginal role of design in industrial process, the dependency on imported technology (including industrial design), the absence of a legal protection that allows local companies to practice plagiarism, and the lack of industrial design awareness among policy-makers in government. The author advocates for government policies that consider industrial design in an environment in which economy is strongly influenced by government decision-making. The lack of association of design with technology and industry led to the implementation of design initiatives under a Ministry branch that has no political influence and does not contribute to fostering connections to industrial corporations either large or SMEs, which dissociate industry needs from design policies.

Though Amir (2002) makes a crucial point of design awareness among policy-makers, he does not structure an idea on how this could be achieved in detail, suggesting to set design initiatives (e.g. Indonesian Design Centre) under the Ministry of Trade and Industry, which is in charge of national industry policy, and to associate design with technology through "including industrial design in technological-oriented schools as opposed to fine arts-oriented ones" (Amir, 2002, p. 48). The problems of fostering design capabilities might be not solved changing Ministry if the lack of design awareness among decision-makers remains.

Later, Amir (2004) emphasises the need to change the mainstream of design policies in less advanced economies. He sets out the decision-maker role of politicians and policy-makers, emphasising the need to consider the po-

litical context to use design in the Third World[33]:

> "In a broad sense, public policy is construed as the pursuit of particular purposes, where the government as the holder of public authority decides the policy objectives and the way to achieve them. Hence, design policy is a form of the government's political and economic intervention into public sectors to influence the development of design in society." (Amir, 2004, p. 70)

The consideration of design capabilities among decision-makers (e.g. policy-makers, politicians) who can provide a strategic vision to integrate design into national policies towards competitiveness based on quality and innovative design, and welfare improvement, is a crucial issue to be considered, rather than a design policy per se that can lack a comprehensive approach towards national priorities and policies in the absence of design capabilities among decision-makers, and in the absence of a shared vision to the desired future and changes. The trial of convincing policy-makers has also been a non-effective approach in countries where there is not a design awareness or background among decision-makers as evidenced in the Turkish case (see Er, 2002).

There is a lack of design understanding in a broadened sense and a lack of design awareness among key stakeholders, such as policy-makers and businessmen, as Thenint (2008) stresses looking at the European context:

> "Because it is commonly limited to the aesthetic and ergonomic aspects of a specific object, design awareness has been too narrowly linked to creative industries. Besides, the lack of clear understanding of the meanings of design has often led to neglect or the development of inappropriate policies and strategies in government, higher education institutions, industry and professions. Policy-makers and a majority of executives are in general insufficiently aware of the potential of design and how it might contribute to strengthen the competitiveness of firms." (Thenint, 2008, p. 4)

Thenint (2008) emphasises the importance of good reputation and excellence in design policy, and in developing design culture and practices to influence policy-makers and top management in firms referring to the European context: "high-level stakeholders are the only ones likely to influence national and regional governments (and companies' top executives)" (p. 11).

The lack of design understanding and awareness among decision-makers and diverse kinds of organisations which play significant roles in a country development, as well as the lack of connection of design to development theories used by governments and funding agencies, are highlighted by Margolin as critical barriers (2007):

> "… design is insufficiently understood among the myriad organisations involved in the development process, particularly in its less advanced stages… more important, is that if design begins to contribute to the success of large national enterprises, it may upset even further the asymmetric trade advantages of the developed countries. The examples of Japan and South Korea should become models for more countries and aid organisations should help to strengthen larger enterprises, as well as the SMEs and the small-scale cooperatives. It is also true that the impact of some multinational corporations is so great in the countries where they operate that it would be extremely difficult to compete with them without some changes in trade legislation. Lastly, design is barely considered in the development theories on which governments

[33] Third World refers to "a group of countries in Asia, Africa, and Latin America whose social history is characterized by the postcolonial culture". This term is "widely used to refer to two groups of countries separated by a considerable gap in economic and political power in global affairs" (Amir, 2004, p. 68).

> and outside funding agencies base their policies." (Margolin, 2007, pp. 114-115)

Moreover, the need for infrastructure that enables industry, technology, and research to flourish parallels to export-oriented and domestic market liberalisation policies are previously required initiatives once the Brazilian nature of competition (inward-focused and heavily protected from international competition) and the infrastructure conditions do not favour either design capabilities development nor their consolidation in the current situation, especially in MSMEs.

Furthermore, the assessment of impacts of design policies on national competitiveness is still lacking (Er, 2002) and, although recent research (Maffei et al., 2014a) suggests a framework and indicators to evaluation of design policies, their implementation in practice is challenging, involving building a culture of evaluation (Arquilla et al., 2015) and Latin American countries lack data, such as scoreboard indicators proposed in European frameworks and global design scoreboards.

On the other hand, Arturo Escobar stresses the foreign debt of the Third World to First World countries that keep the vicious cycle of financial dependency (Amir, 2004). From the early post-World War II period there is the emergence and consolidation of a development idea "which conformed to the ideas and expectation of what First World countries judged to be a normal course of evolution and progress" (Amir, 2004, p. 70). Following the development logic of First World countries and considering the financial dependency conditions, Third World countries try to increase the value of their exports; however, this economic solution is not easily achieved by them in an environment of rigorous international trade combined with their conditions, as emphasised by Amir (2004): "these societies still are submerged in many social and economic dilemmas, such as poverty, lack of adequate shelter, poor health facilities, lack of education, malnutrition, and so forth" (p. 69).

Although Amir's (2004) statement about an emergent trend of the rise of design awareness in Third World governments evidenced by the "establishment of design centres and institutes, and the growing number of design schools" (Amir, 2004, p. 70), in practice this trend (Amir, 2004) is not noticed at more strategic levels which is observed with the absence of an effective national design policy or innovation and industrial policies that usually do not address design in any way and level (e.g. Brazil). Moreover, although design centres and design schools exist and can be diffused throughout a country, their design capabilities and quality of education can vary (see for instance Nunes, 2013), and their political influence can be low as evidenced in Amir's (2002) prior research in Indonesia.

Design policy comes into the Third World countries to raise their industrial product competitiveness inspired by South Korea and Japan cases, advocating advantages of design for the economy (Amir, 2004). Even though there are differences in policy implementations regarding the diversity of political and economic systems, the mainstream of design policies is common: design as a strategic tool for industrial competitiveness (Amir, 2004).

Amir (2004) calls for a change in design policies' mainstream in the Third World countries from competitive economic purposes to human-centred purposes. In a developmentalist[34]

[34] Although the author stresses that his study is different from prior research (e.g. Papanek, Bonsiepe), considering the political dimension, the fundamentals of his proposal are convergent to those approaches and the role of 'government willingness', political orientation and approach to policy are not further analysed.

approach, the author proposes human-centred policy design inspired by Richard Buchanan meaning of design for human dignity and human rights or Buchanan's human-centred design approach in which "design is for people" (Amir, 2004, p. 73). In order to institutionalise this 'new' mainstream of design policy, Amir (2004) proposes three principles: (1) an orientation towards people's needs and interests or design as a social and cultural tool for creating a better life; (2) the extension of the design role in enhancing sociality and equity in Third World societies; (3) a participatory model involving the participation of many stakeholders, such as design practitioners and academicians, and local communities.

Amir's proposal is very significant to Third World countries but it is naive in its essence. First, it recalls a discussion initiated in design studies in the 1970s (e.g. Papanek, Bonsiepe) that lacks practical implications considering political and economic contexts, as well as decision-makers background, mindset, and interests which compete with the public good achievements in several Third World countries that have historical records of corruption, lack of politicians' commitment to citizens and, hence, lack of trust among key stakeholders which already hinders participatory approaches to policy-making. These aspects are also evidenced in the Global Competitiveness Report 2017–2018 (Schwab, Sala-i-Martín, & Samans, 2017).

Second, considering the above-mentioned aspects, the change of these contexts go beyond design grounds. Although the author seems aware of government importance and role in change: "Certainly, this requires the willingness of the government, as well as the design community (designers and design scholars) involved in design policy to include local people's needs, desires, and interests in national design agendas" (Amir, 2004, p. 74), he does not analyse in depth the government role, interest, and dignity, as well as designers' conditions to work in these contexts. For instance, a designer might have design skills needed to improve social conditions, but in practice, he/she can be embedded in a context that does not support the implementation of these skills. A politician might not have appropriate skills and vision to change a context, or he/she can be aware of social inequality and poverty conditions but is not interested in improving these aspects, keeping his/her power and position.

Lerner (2010) analyses barriers to effective implementation of public programmes which aim at promoting entrepreneurship in Singapore, exploring the appropriate role in public policy. The author compares Singapore and Jamaica development decades after both countries became independent. They had similar features by the mid-1960s, such as a centrally located port, tradition of British Colonial rule, similar wealth (GDP), population and geographical dimensions. Jamaica had advantages regarding natural resources. However, political directions and related macro policies evolved in a very different way between both countries. About four decades after the independence, Singapore's per capita GDP climbed from $2,650 (in 1968, US dollars) to $31,400 (in 2006) while Jamaica had little improvement moving its per capita GDP from $2,850 to $4,800. Some reasons for these contrasting changes have been related to political contexts that took place in both nations. Jamaica experienced a dramatic political instability passing through shifts from a market economy to a socialist orientation and vice versa, with an attendant inflation, economic instability, crippling public debt, and violence, which hampered a consistent long-run economic policy. Meanwhile, Singapore strongly invested in infrastructure, "such as its port, subsidized its system of education, maintained an open and corruption-free economy, and established sovereign wealth funds that made a wide variety of investments" (Lerner, 2010, p. 256), harnessing its strategic position on the key sea lane in relation to East Asia (Lerner, 2010).

In short, improving Third World countries con-

texts is not a new matter in design and in other grounds (e.g. economy, political economy, policy, entrepreneurship, public management, sociology, pedagogy). An isolated design policy is likely to be not enough to address all required changes in these contexts, as well as design itself. Some countries need a change in perspective and ethics in politics. Moreover, a change in cultural aspects that were consolidated by people getting used to 'bad things' might be required in order to truly consider citizens needs and to improve people's conditions of life. These issues go beyond design issues, requiring also meritocracy among decision-makers and strategic political visions about desired futures associated with effective macro policies that consider the country's economic, political, and cultural context.

Design support

Design support initiatives targeting businesses with no design experience seem to start in the 1970s (Schneider et al., 2015). Design support programmes are usually focused on small business (Schneider et al., 2015; Whicher, Cawood & Ryan, 2013). Whicher, Cawood and Ryan (2013, p. 3) highlight the need for government support: "governments need to play a role in enhancing the understanding and capability of design", and notice that 12 European countries had an active design support programme in 2012. The reasoning in providing design support for SMEs in Europe takes into account that (Whicher, Cawood & Ryan, 2013):

- SMEs comprise the majority of the European economy,
- although design as a tool for innovation has been increasingly recognised by governments across Europe, the absorption of professional design services among SMEs is still challenging.

On the other hand, the focus on companies that already have design experience and use design at a strategic level has also been noticed from the 2000s, for instance, when Denmark started to promote design support programmes to these firms, changing its design support programmes strategy and repositioning the Danish Design Centre (cited in Raulik-Murphy, 2010). Besides that, Finland presented a national design policy initiatives' focus on large enterprises that were already familiar with design, addressing design issues related to smaller and inexperienced companies to its regional design centres (Bitard & Basset, 2008).

Although design support programmes have focused on industry sectors in economic decline, the trend of design support programmes towards more strategic roles related to design leadership through the promotion of innovative tools and design management in organisations is also recognised in advanced economies (Boult, 2006).

Generally, design support programmes are typically justified on the basis of market failure (Tether, 2006), and are government funded but there are also predominantly self-financed initiatives, such as the Essex Designers network, funded by its own membership and with some light touch government funding (Boult, 2006).

Approach and methods applied to craft, develop, implement, and evaluate design support programmes, as well as the background of key stakeholders, are crucial aspects to be considered. The SEE design programme (2005-2007), a network of European design organisations that can be considered as a prior version of the SEE Platform: Sharing Experience Europe (2012-2015), had the evaluation of design programmes as one of its main goals, facing diverse challenges in assessing these initiatives, evidencing the lack of comparable data and common terminology, as well as the diversity

of programmes and their aims' nature[35], which hamper a common evaluation framework (Raulik-Murphy, 2010; Tether, 2006). SEE design programme also revealed the way design programmes were transferred between diverse national and regional contexts without a diagnosis of the country or region in which the programme was going to be transferred (Raulik-Murphy, 2010), and the difficulty in replicating practices considering the existing differences in local priorities and finance (Tether, 2006).

The diversity of programmes also reveals the adopted ad hoc basis "with little if any reference to 'best practice'" (Tether, 2006, p. 9). Tether (2006) identifies five models of design support programmes (Table 7):

Table 7: Tether's models of design support programmes (Tether, 2006, p. 8)

Model	Description and examples	Role of design support agency
Mode 1 The direct provision of design consultancy to individual firms.	SEE design (2005-2007) partners do not provide this type of support.	Individual assistance. The design support agency acts as a design consultant.
Mode 2 Subsidising investments in design in individual firms.	Examples of this kind of initiative include bringing together designers/design consultancies and firms that had never previously used design or providing placements for designers in companies. Examples of programmes: Czech Republic's scheme, and the Danish Design Icebreaker	Individual assistance. The design support agency directly assists firms with their design projects.
Mode 3 Individual counselling and advisory services	Agencies first help firms identify their needs, then assist the selection of designers if appropriate. The relationship between agency and firm ceases when firm and designer match, or may continue until the end of the project. Examples: One-to-One Advisory Scheme (Design Wales), and the Design Pilot Scheme (the Centre du Design Rhône Alpes, France).	The agencies act as advisors.
Mode 4 Workshops or seminars providing design advice	These activities bring together firms with similar needs and deliver information to them as a group. Some examples of SEE partners are: the Trend, Style and Colour Events (Design Wales), the 'Design Makes a Difference Workshops' (Design Flanders), and seminars for 'no-design' companies (the Centre du Design Rhône-Alpes).	The design support agency does not provide individual business assistance, working on activities that are taken up scale.
Mode 5 Recognition of design achievements through awards or certification	Endorsements through the granting of an award or certificate generally held through open competition seeking to recognise excellence in design, or to recognise products or indeed processes that satisfy certain criteria. Examples: the Green Home scheme (CSM, the Experimental Centre for Furniture and Furnishing, Tuscany, Italy)	The award making body involvement can range from no involvement to an active partnership.

[35] Tether (2006) notices the diversity of programmes' goals ranging from improving economic performance to non-economic grounds, such as maintaining or enhancing cultural values or fostering environmentally sustainable design practices.

Modes 4 and 5 are also recognised as design promotion depending on the source. Tether (2006) considers the scalability of those activities rather than typology to classify them as design support or promotion (see Figure 24, p. 107).

Schneider et al. (2015) question the value in climbing up the design ladder considering empirical evidence that has shown that

> "design does not need to be "integral" to the strategy of the business before it achieves a huge impact [...] a business can stand at the intermediary steps of the "design ladder" but there might be little or no value to climb up [...] the key success factor is to find the right fit between the business strategy, its competencies, capacities, the markets it wishes to serve and the design skills that should turn these factors into tangible products, services and signs". (Schneider et al., 2015, p. 11)

Recognising specific design financial outcomes and impacts have been considered a harsh topic as discussed in Chapter 1, especially within SMEs.

Long-running programmes, such as the ones delivered by Design Wales and Designing Demand in the UK, have influenced other programmes at the regional and national level (Ball et al., 2011). The need to identify best practices and to build a legacy that lead to improve further design support programmes was explored by Ball et al. (2011) in the publication Building Next Generation Design Support Programmes, a SEE platform booklet, based on insights from the Meeting of Minds workshop held in Estonia, which was formulating a proposal for a national action plan for design (Ball et al., 2011).

Jonathan Ball and Justin Knecht created a tool, the Business Support Canvas[36], which is a framework aimed at supporting design, set-up, delivery, and evaluation of support programmes (Ball et al., 2011). This tool was used to analyse design support programmes during the Meeting of Minds workshop. Next[37] and best practices among programmes in different countries were identified during the workshop, contributing to the outline of Estonia's support programmes for implementing design.

The design support programmes considered were (Ball et al., 2011):

- Innovation by Design, Ireland;
- The Service Design Programme, Wales;
- Better by Design, New Zealand;
- Criação Paraná, Brazil;
- Design Boost and 360° Design, Denmark;
- Design Support Programmes, UK.

The presence of a Brazilian design support programme is coherent with the idea that Estonia, like Brazil, can work as a case that is not convergent with the UK, New Zealand, and Denmark programmes once they are embedded in very different contexts regarding political and economic environments. Then, it can contribute to insights that concern a different reasoning related to the context.

[36] This Business Support Canvas tool and its questions can be downloaded at http://www.businesssupportcanvas.com/downloads/

[37] regarding changes in working practice as they occur, considering learnings from prior or current programmes

The need for long-run strategies and the key success factors for economic impact are stood out through two speeches from members of design support programmes' best practices:

> "We started with the design audit, but soon realised that just pointing a company in the right direction was not enough. It's got to be a journey; it's got to be a long-term relationship with big helpings of both inspiration and practical support along the way […] We're in the business of transformation, so it's all about changing hearts and minds, and the key person you need to influence is the CEO." Judith Thompson, Better by Design Director (cited in Ball et al., 2011, p. 4)

> "There are four things that are critical for your programme's success, for economic impact and a sustainable legacy within the businesses. Content, meaning your processes, tools and techniques. Design associates. Client readiness. The right designers." Jonathan Ball from UK's Design Support Programmes (cited in Ball et al., 2011, p. 5)

The 'next practice' suggestions or a basis for future programme development were organised under seven key headings: Policy, Define, Set-up, Delivery, Promote, Measure, and Impact, indicating what to do and what not to do (Ball et al., 2011). The synthesis of these next practices' headings by Ball et al. (2011, p. 6-7) are described below:

Policy:

- DO align with key policy objectives and measures;
- DO the right thing. Though it is important to tie into key policy, a programme should prioritize the needs of target companies through desired outcomes rather than volume;
- DO be prepared to change your language for different audiences beyond business, such as policy-makers and government members, in order to communicate design-led programmes benefits.

Define:

- DO define client readiness at the outset. As participant selection is critical for any programme success, it is important to select participants that are "ready" based on the desired outputs of the programme;
- DO prototype before piloting or scaling your programme;
- DON'T choose breadth over depth. This means dedicating programmes to lasting impact and definitive economic benefit unless the only programme ambition is design awareness.

Set-up:

- DO charge for participation to keep partner and clients involved;
- DO map both the journey and the destination. Provide a visual map of the overall process from the programme's milestones;
- DON'T allow a company on the programme without CEO participation, the 'CEO + 1' rule. If senior management does not take part, the company should not join the programme.

Promote:

- DO promote economic impact, quantify benefits;
- DO use the right language. Straightforward business language. DON'T use jargon.
- DO visit the companies. Invest a lot of time to ensure you are selecting the right companies and invest in relationship building with existing support networks and agencies for strong client referrals.

Deliver:

- DO take risks, especially in the prototyping phase, where there are meaningful learnings when something goes wrong

more than when everything goes right;

- DO use action-based learning, begin with tangible topics;
- DO use visual tools and frameworks, or a common language for everyone involved in a programme.
- DO build local capability for delivery. Identify and involve the right design partners that should be regional or national resource in the long-run;
- DON'T keep the wrong company on a programme. When a company is not committed to the programme, those resources should be better invested in other participants.

Measure

- DO build evaluation into procedure at the outset. Define measures before the beginning of the programme and monitor them considering the desired impact. Do periodical reports and collect images and quotes throughout the way to build compelling case studies and stories.

Impact

- DO measure impact, quantify it. Stories are not enough for future funding.
- DO maintain legacy. Do follow-up with past participants to understand every aspect of your programmes legacy. Turn past clients into advocates.

Whicher, Cawood and Ryan (2013) provide an overview of design support programmes and recommendations from their analysis. 'Reviewing Design Support Programmes in Europe' (Whicher et al., 2013) is a complementary publication to 'Building Next Generation Design Support Programmes' (Ball et al., 2011) that aimed at informing "the development and delivery of new support programmes that fit the particular circumstances of regions and nations rather than encouraging replication" (Whicher et al., 2013, p. 3). They (Whicher et al., 2013) review the following programmes:

- SME Wallet – Flanders, Belgium;
- Design for Export – Czech Republic;
- Design Boost – Denmark;
- Design Bulldozer – Estonia;
- Service Design Toolkit – Central Finland;
- Extraversion: Competitiveness of Enterprises – Greece;
- Innovation by Design – Border, Midland, and Western Region of Ireland;
- Design Silesia – Silesia, Poland;
- The Service Design Programme – Wales, the UK / The Design Leadership Programme – the UK.

They describe the focus of reviewed programmes that

> "range from subsidies for design costs (SME Wallet and Extraversion), promoting design as a factor for export (Design for Export and Design Boost), specialised service design intervention (the Service Design Toolkit, Design Silesia and the Service Design Programme), piloting intensive intervention (Design Bulldozer and Innovation by Design), improving the expertise of designers (Design Bulldozer, Design Silesia and the Service Design Programme) to a broad package of support (Design Leadership)" (Whicher et al., 2013, p. 3)

Whicher et al. (2013) emphasise the importance in considering each context features in order to better craft design support programmes: "each programme was developed as a result of a unique mix of political, economic and stakeholder circumstances that were intended to address a particular regional or national issue or objective" (Whicher et al., 2013, p. 3). The report seeks to explore programmes learnings in their contexts rather than define best practices, providing "recommendations for government and insight on changing attitudes to design in SMEs" (Whicher et al., 2013, p. 4).

Most programmes focus on SMEs but with

particular specialisms, profile, and targets (e.g. export companies, tourism sector, or manufacturing) (Whicher et al., 2013). There is the trend towards more strategic and specialised intervention to fewer companies (e.g. 360° Design programme - Denmark, Danish Design Centre) instead of offering limited intervention to a large number of companies as noticed in prior design support programmes (Whicher et al., 2013). The companies' contribution to the cost of programmes has been considered by programme coordinators as a way to keep business managers committed and to make them realise the value of the service (Schneider et al., 2015; Whicher et al., 2013). The total annual spending of a country on design support programmes is difficult to be identified because "design can feature in multiple programmes, delivered by multiple organisations and funded at multiple levels of governance (national, regional and local)" (Whicher et al., 2013, p. 9).

The majority of programmes do ex-post evaluation (when the programme is over) focusing on a number of activities held and participants, and developing qualitative case studies to show successful cases rather than measuring impact indicators (e.g. new products or services launched, new spending on design expertise following programme intervention, and return on investment) that are considered costly assessments to be carried out (Whicher et al., 2013).

Two tools used to analyse the programmes were: the Design Support Blueprint (Figure 25), an instrument that supports design stakeholders and policy-makers through the process of planning, delivering, and reviewing design-led business support programmes, and the Programme Evaluation Wheel (Figure 26) (Whicher et al., 2013).

DESIGN SUPPORT BLUEPRINT

Country/Region:
Organisation:
Contact:

PLANNING			DELIVERY			REVIEW	
Context	**Aims**	**Actions**	**Set-up**	**Management**	**Promotion**	**Evaluation**	**Sustainability**
What are the regional/ national priorities for innovation?	Who are the target audience? [All, start-ups, high-tech, high-export, SMEs, etc.]	What is the budget? What approval is needed? What is the programme timeline?	Who will develop the content? Are there any IP issues? How will you ensure client readiness? Will you prototype a service?	What are the key milestones?	What are the key messages for different stakeholders?	What indicators could be part of the evaluation? [Danish Design Ladder, DME Staircase, new spending by participants, etc.]	Does it need to be sustainable? If so, what activities should be continued?
How can you get political commitment?	What impact do you want to achieve? [Industrial design, service design, design management, branding, social design etc.]	What activities will be conducted? [Phone service, diagnostic session, visits to the company, workshops, training, seminars, strategic intervention over a longer period etc.]	How will you recruit design mentors? How will you train the mentors?	What is a typical customer journey?	What are the routes to engagement? [Business networks, media campaign, tradshows, social media, stakeholder mapping, personas etc.]	When will the evaluation take place and who will do it?	How can we prepare for future funding changes?

Figure 25: Design Support Blueprint (Whicher et al., 2013, p. 4)

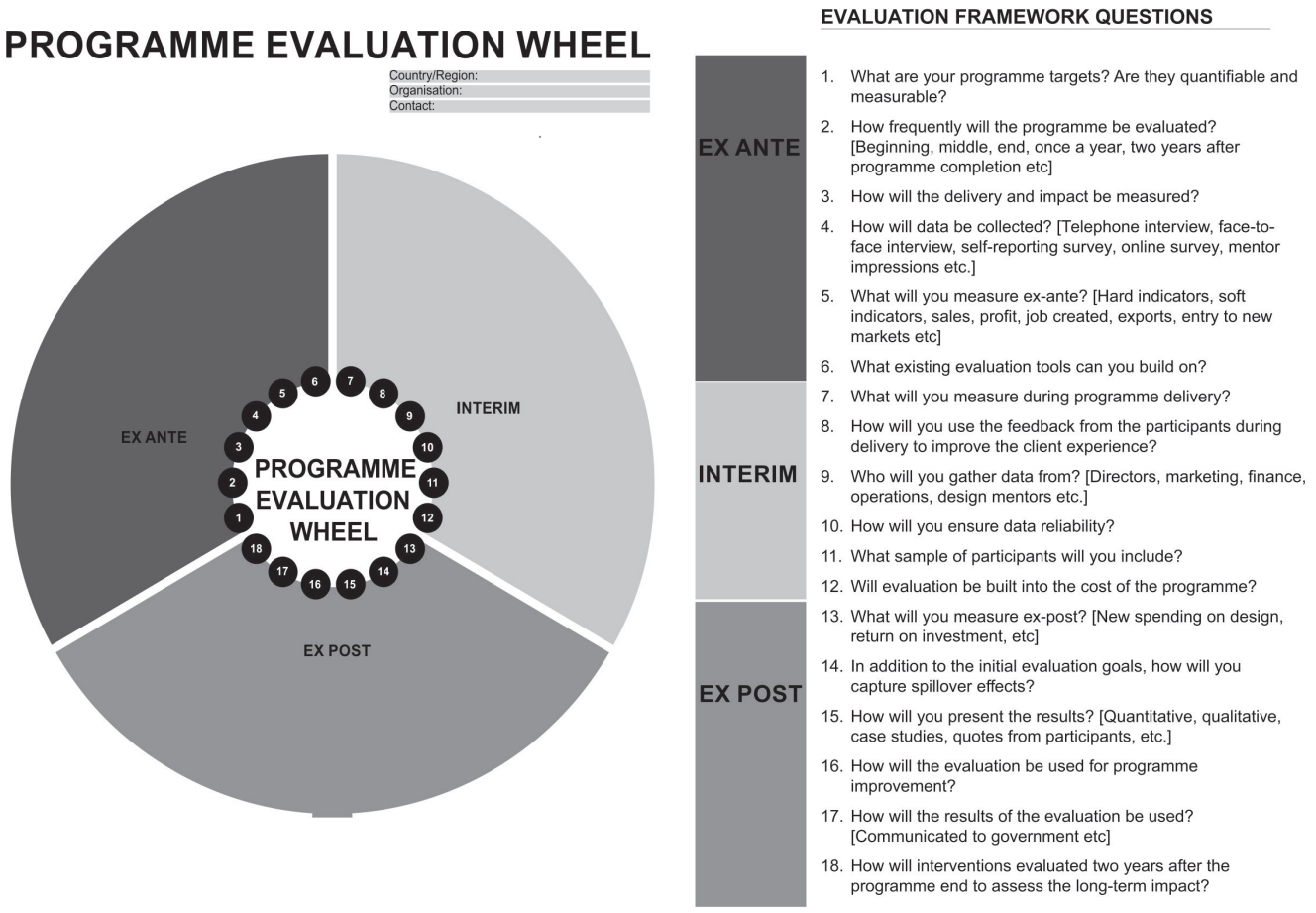


Figure 26: Programme Evaluation Wheel (Whicher et al., 2013, p. 5)

Their conclusion points out that there are still barriers to scale up design skills in small businesses and in the public sector across Europe, noticing that design is not considered in the broader innovation and business support programmes. Hence, their main recommendation is "to integrate design as a component of broader innovation and business support programmes and promote the take-up of design in national programmes targeted at SMEs" (Whicher et al., 2013, p. 14).

They advocate for the implementation of specific innovation policy targets with specific sectors, such as manufacturing and healthcare, emphasising the importance of design quality: "Demand for design will only increase if the supply of design expertise is of a sufficient quality" (Whicher et al., 2013, p. 14). Hence, they report the need to improve the skills and business models of the professional design sector (design supply), as well as to train companies and public officials to use design methodologies and user engagement tools (Whicher et al., 2013).

The programmes' measurable impact and results should be used to further policy development and to improve the programme. One example of best practice regarding this aspect is the Designing Demand programme, which has kept the UK Government support based on its measurable impact on companies (Whicher et al., 2013).

Whicher et al. (2013) advocate an explicit promotion of design within innovation support programmes, arguing that design can be hidden and might be rarely accessed by business. On the other hand, the authors (Whicher et al., 2013) emphasise that design support programmes and policies should be aligned regarding policy aspirations and implementation.

Linzi Ryan provides some outcomes of a research that targeted traditional manufacturing firms in Ireland within this report (Whicher et al., 2013). The study is spurred by the discovery that most SMEs in Ireland use design as style, not recognising strategic design that was considered outside normal activities. The result was the proposition of some rules that can help familiarise small businesses with strategic design. They refer to:

- top management support,
- awareness of the dominant culture in order to question the value of that to current and future initiatives,
- focus on the value proposition considering tangible and intangible assets to make customers clearly recognise the value of the offerings,
- definition and communication of a clear design strategy in the company,
- strong customer relationships building,
- communication to staff about reasons for change and to customers showing new offerings benefits beforehand,
- learning from mistakes, avoiding future ones. The need for changing operations to implement new strategies can spur mistakes, staff members should feel comfortable and confident to freely make suggestions, being supported by an open innovation mindset from top management that should be less risk-averse,
- measure success considering the value of design within company processes and activities, and awareness of the indirect value offered to their customers.

Other findings were that most design intervention programmes target small businesses that "lack a maturity of organisational structure and management expertise" (Whicher et al., 2013, p. 14), so to increase the impact in medium and large-sized organisations the programmes should be more focused and specialised; moreover, the need to evidence the value of design for innovation through defined metrics with ex-ante and ex-post data evaluations is emphasised.

However, the problem of measuring, especially the ROI (return on investment) of design (see for instance Cooper et al., 2016; Schneider et al., 2015; Westcott et al., 2013) has been evidenced. Thus, methods to measure design value are still lacking a solid basis that considers the broad implications of design beyond design intensity (based on sales). Moreover, the design investment is usually complementary to other investments, such as R&D and marketing (Cooper et al., 2016; Tether, 2006; Tether, 2007), then its pay-off should not be realised without those (Tether, 2006; Tether, 2007).

On the other hand, the need to evidence design benefits is highlighted to influence organisations' decisions in investing in design, as Thenint (2008) claims:

> "It could be argued that one should not persist on measurement issues but the lack of factual evidence of design's added-value constitutes a mental barrier to business strategists' choice. As a matter of fact, aversion to risk and returns on investment are two major management decision criteria." (Thenint, 2008, p. 7)

The need for effective measurement of design benefits is felt among researchers, practitioners, and design advocates (Bitard & Basset, 2008; Raulik-Murphy, 2010; Thenint, 2008). Bitard and Basset (2008) highlight the need for measurement and for an effective official statistic system to justify policies in support of design.

Whicher et al. (2013) explain that evaluations generally focus on measures of activity, such as the number of enterprises assisted, the number of individuals assisted, and the number of collaborative R&D projects. They (Whicher et al., 2013) describe the Common EU-level indicators of impact that are used to 'understand' the programmes' impact, they are: the number of jobs created, the number of enterprises created, profit benefit, the number of products, processes or services registered, the number of new or improved products, processes or services launched, and the value of new investment induced. The authors stress the need for quantitative, as well as qualitative evidence of benefits from design support programmes (Whicher et al., 2013).

The Design in European Policy project (DeEP), a European Commission design innovation initiative (Maffei et al., 2014a) provided a compelling framework to ex-ante and ex-post evaluation. They (Maffei et al., 2014a) suggest the following macro and micro design indicators (Tables 8, 9):

Table 8: DeEP's macro design indicators

Macro Design Category	Macro Design Indicator		Data Source
Design Investment	INV01	Public Investment in Design Support (as a % of GDP)	International Design Scoreboard
	INV02	Public Investment in Design Promotion (as a % of GDP)	International Design Scoreboard
	INV03	Government Spend on Design Services (as a % of GDP)	Official Journal of the European Union (OJEU)
Design Supply	SUP01	Design Courses at Graduate Level (as a % of all courses)	OECD – Education at a Glance
	SUP02	Design Courses at Post Graduate Level (as a % of all courses)	OECD – Education at a Glance
	SUP03	Design Graduates (per million population)	International Design Scoreboard
Design Sector	SEC01	No. of Design Businesses (per million population)	International Design Scoreboard
	SEC02	Turnover of Design Services Sector (as a % of GDP)	International Design Scoreboard
	SEC03	Creative Services (Exports) (as a % of total services trade)	UN Conference of Trade and Development (UNCTAD)

Table 9: DeEP's micro design indicators

Micro Design Capabilities	Micro Design Indicator	
Design Leadership Relates to the presence of a holistic view of design inside the organisation and to the focus on understanding how people give meaning to things. Design leadership can be perceived when design is a participant in determining the strategic choices available to a firm or organisation.	L01	Number of new products launched in the last year that integrates functional, emotional and social utilities (as a percentage of total number of new products launched during last year)
	L02	Number of new products launched in the last year that involved customers in co-creative processes (as a percentage of total number of new products launched during last year)
	L03	'There is a clear connection between design activities and overall strategy' (measured using a 4-part Likert scale: 'completely agree', 'agree', 'disagree', 'completely disagree')
	L04	Number of products launched in the last year that exceeded sales expectations (as a percentage of total number of new products launched during last year)
Design Management The ability to manage design resources - in terms of human resources; design processes and creativity; and economic resources.	M01	Investment in design-related training programs in the last year as a percentage of total revenues during last year.
	M02	Number of employees involved in design-related activities in the last year (as a percentage of the total number of employees)
	M03	'Design activities are managed through explicit design management processes' (measured using a 4-part Likert scale: 'completely agree', 'agree', 'disagree', 'completely disagree')
	M04	Number of new products launched in the last year that involved external design professionals (as a percentage of the total number of new products launched during last year)
Design Execution Involves the presence of human resources with technical skills, design technologies and infrastructures, investments in the New Product Development process. It is related to the skills visualising/prototyping and applying new technologies.	E01	Number of new products launched in the last year that improved the customer experience, and the user interface through new technologies (as a percentage of the total number of new products launched during last year)
	E02	Number of prototypes developed in the last year (as a percentage of the total number of new products launched during last year)
	E03	Investments in hardware and software technologies enabling design activities as a percentage of total revenues
	E04	'Visualization (e.g. storyboarding) and/or materialisation (e.g. prototypes) techniques play a crucial role in concept development' (measured using a 4-part Likert scale: 'completely agree', 'agree', 'disagree', 'completely disagree')
Outputs	O01	Revenues from new products launched during the last year enabling new user experience / Total revenues.
	O02	Number of design or innovation awards received during the last year / Total number of new products launched during last year.
	O03	Number of industrial design rights and patents associated to design projects developed during the last year.
	O04	The design activities allowed to develop new products that would not have been developed otherwise.

The proposed DeEP measures fit especially in European contexts, not being possible, for instance, to apply all of them in some emerging economies contexts that lack data regarding design, such as the ones proposed in the International Design Scoreboard (Moultrie & Livesey, 2009), and some of them can have different evaluations depending on the background of the evaluator. This indicates the need for a design background and skills not just for identifying problems and opportunities, crafting, developing, managing, and implementing initiatives, but also for evaluating them considering the target businesses' design maturity. However, some of the suggested measures are common to any organisation which enables further analysis and adaptations to other contexts.

Tether (2006) emphasises the need for evaluations not just to keep design support programmes active but to recognise when design support should cease in firms, particularly when its benefits do not make a difference anymore, or when diminishing returns have set in.

Tether (2007) presents a framework for design support programmes evaluation based on data gathered considering the perception of programmes' impact from client firms of SEE design partners' programmes. Nevertheless, these outcomes are based on client firms' (or beneficiaries) perceptions since gathering "information that is not normally collected" directly from client firms sounds like an "awkward intrusion" (Tether, 2007, p. 3).

Tether (2007) observes the importance of managing firms' expectations considering their design experience, whether they have already used design and at which level they have experienced it or whether they are 'novices'. This survey (Tether, 2007) answered by beneficiary firms shows that:

- 85 per cent had increased their awareness of design,
- 80 per cent had also increased their investment in design,
- Nearly 60 per cent had increased their sales turnover,
- About 60 per cent had increased their profitability,
- Around half had increased their exports,
- 40 per cent had increased their employment.

The author clarifies that these positive results are not just related to design support programmes "but it is likely that design has played a part in these successful outcomes" (Tether, 2007, p. 4). This survey also points out that design has similar significance to R&D for firms - which is corroborated in more recent research by Cooper et al. (2016) - although policy-makers tend to be more favourable to providing investment in R&D (Tether, 2007).

Schneider et al. (2015) provide criticism and identify best practices in design support programmes across Europe (e.g. the UK, France, Spain etc). They (Schneider et al., 2015) provide an in-depth analysis of six programmes which have demonstrated an active engagement with businesses beyond dissemination of the design role and good practices, including:

- Design Leadership Programme for Business (formerly Designing Demand), British Design Council, the UK;
- The Design Integration Programme (next step of Better by Design initiative), New Zealand Trade & Industry, NZ;
- Innovation by Design, Centre for Design Innovation, North & West Ireland, IE;
- Design 360 and Design boost, Danish Design Centre, DK;
- Design-driven Innovation Programme, Norwegian Design Council, Innovation Norway & Research Council of Norway, NO;
- SME support pilot programme in Brittany and Picardie regions, APCI, FR;

- Red dot "young designer", Design Zentrum Nordrhein Westfalen, DE.

The Red dot is considered within the scope of design promotion schemes in this thesis. These programmes were inquired through the Regions Supporting Entrepreneurs and Designers to Innovate (REDI) initiative.

Among these design support programmes studied, two were considered noteworthy by streamlining "in a broader perspective on innovation" beyond "pilot schemes" approach, and having a narrow target group and focus, they are: the Design Integration Programme (NZ) and the Design-driven Innovation Programme (NO) (Schneider et al., 2015, p.2).

Their findings (Schneider et al., 2015) emphasise the importance of mentoring, including individual support by an advisor or consultant with a background in design management. The authors stress that (Schneider et al., 2015, p. 2): "Programmes that have focused on getting the design project being done without some preliminary audit seem to have poorer results: matchmaking is not sufficient in the long-run".

Other observations stand out throughout this report (Schneider et al., 2015), such as when the programme or budget ends, the continuity of design use by these businesses is at risk. This fact is also noticed by Julier (2017), who observes the dissolution of communities and networks with the end of design for social innovation initiatives. The key issue still is how to make these initiatives (that are funded through public money) more sustainable in the long-term, scaling them up. Other issues identified by Schneider et al. (2015) are that:

- most business managers' lack of design awareness and understanding,
- programme managers believe that a contribution in cash to the programme could improve businesses commitment towards design support initiatives,
- the good reputation of design professionals can contribute to business recognition of the value of design,
- a key criterion for business selection is the commitment of top management member(s) that can be demonstrated by attending activities and being part of the project team.

Causes of design support programmes failure are also pointed out as follows (Schneider et al., 2015, p. 37-38):

- Timeframe, short deadlines,
- The absence of a diagnosis,
- The lack of designer acceptance by the company,
- The shortage of a business model analysis, including a consistent financial analysis before launching the design project,
- Business and project strategies are not aligned,
- The company is not ready to invest time and money,
- Other urgent projects get the priority,
- Lack of top management commitment,
- The study phase is too long for the manager,
- The global cost of the project.

Furthermore, the report (Schneider et al., 2015) offers a range of recommendations on crafting design support initiatives regarding: target businesses, target audiences prioritising, activities typologies, and programme architecture.

Concerning target businesses, they (Schneider et al., 2015, p. 32) suggest:

- To define a specific objective for the action,
- To adapt the communication to the targets and level of interest of the business,
- To distinguish between design experienced managers, users in a specific de-

sign field and novices.

The architecture of design support programmes is a topic of major interest in this inquiry. Schneider et al. (2015, p. 37) summarise a standard approach and methodology for individual support from the initiatives studied, which can contribute to "qualitative, scalable, rooted in values, context and companies' legacy" (Schneider et al., 2015, p. 13). The steps summed up are (Schneider et al., 2015, p. 37):

1. Diagnosis of the needs: to match a clear demand with the company's strategy. Phase to be accomplished by people with a background in marketing and finance;
2. To assess the potential of the programme through an evaluation committee if a specific grant is proposed;
3. Selection process of a design consultancy, definition of the tendering brief;
4. Development of the project: to follow the launch of a call for tenders to identify appropriate services providers. A private contract between the company and the design consultant is set.

European design support initiatives studied by Schneider et al. (2015) stop at the establishment of the private contract (step 4 – development of the project). In Brazil, the main design support programmes include the contract of the design consultancy (or of the intermediary that is going to implement the project) using a public call for tenders or using design firms database of the design support agency. After that, the action implementation is monitored and evaluated (ex-post) by the design support organisation which offers the programme. Generally, the non-profit private entities, which are in charge of design support initiatives, set temporary or by-service contract to hire a design consultancy for business. Tendering brief for the service provider, the design of the support initiative, its monitoring (standard audits of the implementation process), and its evaluation are managed by these non-profit private entities.

Schneider et al. (2015) propose a beneficiaries' contribution to design support programmes or a fee to join a programme: €300 for a diagnosis, and €600 for support, much lower values than the service value. They also emphasise the need for specific funding to develop tools, methodologies and optimise resources (Schneider et al., 2015).

The difference between countries and regions in Europe is also highlighted: "There are still nations in Europe in which "design" does not appear on any innovation policy document, be it at the national, regional or even local level […] many industrial regions in Europe have no access to design services…" (Schneider et al., 2015, p. 45).

Schneider et al. (2015) bring light to the design support initiatives in a compelling manner, providing significant insights; however, some key issues risen are not explored in depth, for instance, the unsustainability of these actions after the programmes are over, the need to change stakeholders' mindset and to design programmes from the business perspective rather than from a policy-maker point of view. The evaluation of the programmes, as well as the need for a regional or territory focus rather than an individual business focus, are also not inquired with more accurate propositions on how to promote this needed changes which are set as future research.

The awareness of design and its value is a key issue rather than the access to design services since there is not a true business' design demand when there is no design awareness, understanding, and commitment within businesses. And, if the senior management of the company is not able to take part in the programme activities, this can suggest that the company is not ready to join that kind of project. Hence, it brings a reflection on most projects' targets, architectures, as well as on design support programmes' typologies that have been

employed.

Another criticism that has been discussed is to attain government support. Boult (2006) highlights the issue: "… if design support is to develop it will need to be heard in that most difficult of places, the public governmental arena. This is probably the greatest challenge of all." (p. 7). Boult (2006) stresses the need to build evidence of benefits of design support programmes, stating the difficulty in gathering tangible results directly related to these initiatives, then suggesting the development of soft metrics "into schemes which can become equally as convincing and compelling" (Boult, 2006, p. 7).

Another aspect that is generally overlooked in design management studies and programmes schemes is the difference among designers and design consultancies, which is observed by Boult (2006) and Schneider (2006). Boult (2006) claims "… not all designers or design consultancies do the same thing or even do similar things to the same level. Thus realistic ways to identify and apply relevant design competencies will need to be explored" (p. 7).

Projects of integration of design into MSMEs or design support initiatives have presented shortfalls related to the capacity to build an innovative culture[38], as well as their approaches and instruments throughout the development process, such as:

- The shortage of qualitative studies that look at design and management (Schneider, et al, 2015, p. 7);
- The support of the competitiveness of individual businesses, rather than sectors or regions (Schneider et al., 2015, p. 14-15);
- The lack of a broader perspective, such as macroeconomic or socio-economical approaches: e.g. focus on some sectors, territories, quality of jobs — raising the knowledge or skills intensity (Schneider, et al, 2015, p. 14-15);
- The need for criteria that would assess in a broad manner the innovation capacity of businesses vs. evaluating the innovation in a given product or service (Maffei, Bianchini, & Mortati, 2014b; Schneider et al., 2015, p. 14-15);
- The failure in the selection of the design policies' beneficiaries suggesting that the selective processes of beneficiaries have not achieved the 'right companies' with the potential to innovate (Maffei, Bianchini & Mortati, 2014b);
- The focus on quantitative aims (such as the number of SMEs supported) rather than on the quality of the approach, design work, and capacity building (Schneider et al., 2015);
- The difficulty in evaluating design impacts at the firm level (Cooper et al., 2016; Schneider et al., 2015; Westcott et al., 2013), as well as building a culture of evaluation at the design policy level (Arquilla et al., 2015).

[38] An innovative organisational culture is based on the implementation of ideas (Kenny & Reedy, 2006, p. 119). Innovative cultures are risk-taking, engage all members promoting participation, encourage creativity, learning, share responsibilities, are committed to innovation (Kenny & Reedy, 2006; cited in Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2016), and can be measured by a number of innovative services or products launched (Kenny & Reedy, 2006) and investment in innovation (Rao & Weintraub, 2013).

Rationales for design policies

This section draws on literature regarding design use and policies, and their relations to economic and political approach. Heskett (2010) relates the origin of the development of luxury product industry and design education in France to its monarchy and absolutism history from 1589 which had its peak with the Sun King, Louis XIV. The presence of an architect as a minister (the strategic position shows the importance and power attributed to that background), and the fact that this policy was sustained for generations reinforced the position adopted by the government, as well as its values, consolidating the French competitive power in the luxury domestic and international market through the quality of work (Heskett, 2010). As stressed by Heskett (2010, p. 5) the competitive and strategic French position was built upon sustained policies and political vision instead of being an innate asset:

> "The role of France as a leader of taste in Europe was not an accident, and had nothing to do with any innate quality of taste in French culture. Instead, it was the outcome of long-term consistency in political policies, and support for design practice and education in quality manufacturing." (Heskett, 2010, p. 5)

Heskett (1999, 2016) states that evidence that design policy can promote economic competitiveness is mixed, relating to two factors:

- Authoritarian characteristics in government (e.g. absolutism in France [17th century], or a guided economy in Japan [the 1950s]);
- Relative industrial stability in industries which tends to incremental innovation (ceramics and tapestry [18th century], automobiles and domestic electrical products [late 20th century]).

In the UK, design is perceived as a tool for economic growth in the 1980s; however, it was not addressed within a major framework of industrial policy, for instance, being fragmented in diverse design programmes that lacked a comprehensive strategy to enhance competitiveness at the time (Er, 2002). The lack of linkages of design policies to national economic strategy is one of the main reasons for failure (Er, 2002), and the industrial instability, although industrial stability and authoritarian governments tend to produce incremental rather than radical innovation (i.e. Heskett, 1999, 2016). Failures in addressing design policies include cases in countries, such as Canada, Britain and the Netherlands (Er, 2002). Design policy's role and benefit in economic competitiveness are not agreed upon and clearly evidenced (Er, 2002).

In the late 1990s, some countries in Europe (e.g. Finland) started to integrate design policy into macro policies in related areas, such as innovation policies usually directed to SMEs (Er, 2002). This approach is still adopted in many European design support programmes but some countries in Europe, such as Finland and Denmark, have moved towards support to enterprises at strategic levels including also large enterprises from the 2000s (see for instance Bitard & Basset, 2008; Raulik-Murphy, 2010; Whicher et al., 2013).

Looking at more recent studies we can still state the definitive role that adopted policies, political position, and economic approach play in supporting or not design and innovation in a country. The argumentation of this section explores these political and economic influences. Among these studies, Heskett (2009) discusses how design can be related or not to different economic theories, Swann (2010) points out economic rationales for design policies in the United Kingdom, Tether (2007) highlights different economic positions to design support, Julier (2017) brings into light how design has changed according to the political and economic changes, Mazzucato (2013) emphasises the role of the government in national innovation investment, Er (1997, 2002) highlights the role

of government strategies in defining the nature of the competitive environment, and Raulik-Murphy (2010) stresses the need to review the rationales for design programmes.

Heskett (2009) and Swann (2010) build upon economic theories and are concerned with which one is more convergent with design potentialities (Heskett, 2009) and the need for a policy justified by economic rationales (Swann, 2010). Tether (2007) briefly describes how different economic approaches are favourable or not to design support, while Julier (2017) notices design development as a discipline and practice being shaped by and shaping economic and political changes, he focuses on how design provides responses to those changes and, at the same time, shape them, rather than seeking for one rationale within economic theories. Mazzucato (2013) focuses on the government as a fundamental player in research and development that is further exploited for market purposes. Er (1997, 2002) points out the fundamental role of learning by exporting in the development of design capabilities in a country, highlighting the role of government policies in stimulating this. Raulik-Murphy (2010) observes that rationalities for design programmes have been more related to the market failure, constituting a corrective measure rather than a preventive one.

Heskett (2009) argues that the Neo-Classical theory is not appropriated to get and to evidence design benefits because their logics are contradictory: design "by definition creates imperfect competition… a state of disequilibrium as a permanent condition" (p. 74). The author (Heskett, 2009, p. 83) proposes a compelling reflection on the relations between design and economics, emphasising the limitations of economic theories to consider design as an element of change and a way to envision potential futures, pointing out that economic theories fail to get the context of use and the roles played by design which affect people's lives beyond the point of sale.

Swann (2010) provides a framework that relates how design policies can find specific economic rationales according to three main theories: Neoclassical and New Growth theories from economics, and the 'footloose multinationals' theory from international business. These three perspectives do not exclude one another; they address different issues according to Swann (2010). The author proposes generic design policy options for the UK, addressing different economic rationales according to each perspective. Swann (2010) suggests that three main areas should receive strong support: Creating National Design Assets, Design for Complex Systems, and Standards for Design Strengthening the Design Profession; and other two should receive some support: Public Expenditure on Design, Stronger IP and Tax Credits Education about Design.

There are different positions about the role of government intervention in private businesses. Free market liberals argue that the government should not interfere or interfere with the minimum necessary. Tether (2007) points out diverse perspectives that reflect on providing or not providing design support to business:

> "Free market liberals argue that design should be treated as any other investments in intangibles made by the firm, such as advertising or R&D. Firms should make their decisions about whether to invest in design, just as they decide to invest in advertising or R&D, whilst it is up to designers and design agencies to promote their services to potential clients. Opponents argue that design, like R&D, is likely to suffer from "market failure", particularly due to asymmetric information, and consequently firms are likely to under-invest in design. Others argue that design should be supported because it plays an important role in cultural expression." (Tether, 2007, p. 3)

The characteristics and behaviour of small businesses suggest the need for design interventions. In a political point of view, Swann's (2010) reference to Abraham Lincoln sheds light on that: "The legitimate object of government is to do for a community of people, what-

ever they need to have done, but can not do at all, or can not so well do, for themselves in their separate and individual capacities." (cited in Swann, 2010, p. 1).

Economic rationales can differ not just in terms of the economic theory considered, but they also depend on the specific conditions in which the country is immersed (e.g. governmental approach to economics, such as the level of protectionism and interventions in economy, and the kinds and weight of taxations), as well as the sociotechnical aspects, which can also be rooted in diverse aspects, such as culture, history, society, politics, and infrastructure. In other words, some economic rationales can be more important in one context than in another depending on circumstances in which a country is embedded, and they can also change according to time and achieved 'design evolvement' in a country.

Although some contexts can be observed in the light of market failure perspective, the systems' failure (New Growth Theory from evolutionary economics) seems closer to shed light on rationalities for design interventions, even if it does not get all design dimensions as emphasised by Heskett (2009). Knowledge is a key driver in the New Growth Theory, which advocates that governments should invest in knowledge since citizens and the private sector cannot have appropriate resources to do so, and economies cannot rely on physical resources to develop and grow. This theory also advocates the importance of public sector investment in infrastructure that can generate better revenues, attracting external investments and reducing production costs.

Bitard and Basset (2008) address initiatives proposals to harness design through a common framework for a European design policy organising them within the scope of market failure, setting out specific support measures "in case the market for "design activities" does not perform efficiently" (Bitard and Basset, 2008, p. 60), and systems failure, which refers to initiatives that should aim at facilitating relations, providing efficient interfaces and framework conditions for firms to adopt design-driven innovation strategies.

Thenint (2008) argues that

> "market failure could not be an adequate way to justify support to design since it is not a sector or a structured activity. As discussed during the meeting, design does suffer from significant transaction costs and, above all, information asymmetries between design users, design providers as well as design education and research. Hence, to justify a design support policy, it would be better to talk about systems failure". (Thenint, 2008, p. 10)

Julier (2017) provides a compelling outlook of how design has been shaped in response to the political and economic environment, particularly drawing on the neoliberalisation processes in Western contexts, especially in Europe, that have spurred design changes, diversification, and specialisations. In his reasoning, design offers responses to the diverse political and economic changes and challenges rather than being aligned with or considered within economic theories that justify its use.

This idea suggests that external economic and political contexts are definitive to design evolvement, understanding, and use. Thus, design in a defined context and time is a product of or response to its environment while it also produces substantive changes in the context of networked governance through the role of designers in policy-making processes that leads to re-imagine "what the state, publics and their relationship might be" (Julier, 2017, p. 157).

The role of government as innovation risk sharer comes from the post II war period in advanced economies, and the State's demand to stimulate innovation is historically related to the R&D effort of the defence sectors in the USA, being intensively practiced throughout the 20th century (Torres Freire, Massami Maruyama & Polli, 2017). Since the 1980s, the USA's government has shared innovation risks with

small businesses and has stimulated demand for technology from them. The Small Business Innovation Research (SBIR) is one example of non-refundable public resources use (Torres Freire, Massami Maruyama & Polli, 2017).

Mazzucato (2013) points out the role of the public sector investment in innovation in the USA concerning research and development funding[39]. The USA's government plays a significant investor role. Some outcomes of its investments in R&D are, for instance, technologies that were applied to some Apple products. Mazzucato (2013) argues that the state as an innovation investor should get better returns from these innovations that went into the market in order to provide a better reinvestment from the public sector. Thus, following Mazzucato's reasoning, the state is a key player in innovation investment across a country while such risky investments could not be done by the private sector. An environment where research and development are well developed and receive appropriate investments favours design activities that can contribute to those towards the market through the human-centred approach, envisioning future applications and desired features.

Er (1997) highlights the role of government policy in stimulating outward-looking industries. Government policies "determine not only trade regimes – the direction of market orientation – but also the mode of technology transfer through foreign investment policy and industrial structure through sectoral policies" that defines "the nature of competitive environment in which firms operate" (Er, 1997, p. 299). He notices that export-oriented economies and industries tend to better develop design capabilities systematically in the NICs (Er, 1997). Hence, the capacity of governments to integrate design into their development policies appears crucial to a country's design capability development rather than providing design support and promotion to firms, as observed by Er (1997, 2002):

> "… the development prospects of [industrial] design in NICs are related to the extent to which governments are prepared to absorb design as an integral part of their long-term development strategies, rather than to the extent to which they give direct support to design institutions and promotion" (Er, 1997, p. 299; Er, 2002, p.167)

Er (2002) advocates the need for a design policy in Turkey in order to improve the competitiveness potential of Turkish businesses in an environment of domestic market liberalisation and export-oriented economy, once companies by themselves have not been able to integrate design into their routines, although they have started to recognise the need for design but do not know what to do.

Germany in the 19th century and Japan in the 20th century are examples of countries which harnessed systematic government-led industrial and technology policies within their framework of national economic strategies, catching up or even taking over leading countries (Er, 2002).

Raulik-Murphy (2010) stresses that design programmes' rationales have been more corrective, for instance, addressing business' market failure, instead of promoting preventive measures, for example, ensuring a good quality of design education and fostering connections between design students and graduates, design

[39] Although the USA adopts a more neoliberal approach to the design industry (Bitard & Basset, 2008).

professional sector and companies.

The author (Raulik-Murphy, 2010) notices that focus on market failure also took place in the case of technology and innovation policies, which have moved towards a system failure approach that is based on the network of actors that depend on one another to support innovation activities, and in which the interaction of actors works as generators of knowledge transfer, collaboration and competition. Thus, a well-functioning network becomes critical to attaining success (Teubal, 2002 cited in Raulik-Murphy, 2010).

According to Raulik-Murphy (2010), design policies should have broadened rationales aligned with country priorities and agenda in diverse sectors, contributing to the country competitiveness and welfare. Er (2002) corroborates this idea, emphasising that:

> "The lack of linkages to major government policy areas such as trade, industry and technology is a serious weakness in both understanding the design policy options within a dynamic and coherent fashion, and in implementing design policies in an effective way." (Er, 2002, p. 163)

Er (2002) reinforces the appropriate use of diverse policies in a consistent way, as well as the policy-makers' ability to develop and change policies over time as crucial success factors: "... any meaningful link between development issues and the possible contribution of industrial design to the economic development process requires an evaluation of the role of design in the wider context of macro-level government policies" (p. 168).

CHAPTER 5

Design in Brazil

a brief history and context[40]

"… we could begin to trace the history of design in Brazil before the arrival of the Portuguese. In this case, we would mention the capacity of indigenous Brazilians to objects - networks, screens, baskets and banks - in perfect harmony with nature and with an inherent artistic expression" (Borges, 2009, p. 57)

[40] This chapter contains fragments of the manuscript 'Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support' (Fonseca Braga & Zurlo, 2018). It was originally presented at DRS2018 Conference: Catalyst, held at University of Limerick, Ireland, 25-28 June 2018. An initial version of the paper was included in the Proceedings of the event. This is one part of the reviewed version of the paper, improved with the contributions from the Conference, further literature review, especially on the Brazilian design support programmes.

The influence of architects, such as Oscar Niemeyer, Lucio Costa, and Sergio Rodrigues, as well as Joaquim Tenreiro's and Zanine Caldas's furniture design, marked the basis of modern design and architecture in Brazil since the 1940's (Borges, 2009). In 1964, the Industrial Design College (Escola Superior de Desenho Industrial [ESDI]) was founded in Rio de Janeiro, and held the first higher education design course in South America; the educational programme followed the Ulm School in Germany, having some professors from there (Borges, 2009; Moraes, 2006; Moraes Junior, 2002). The professors' backgrounds were in architecture and engineering (Borges, 2009).

Design policy initiatives took place from the 19th century in Brazil. The timeline (Figure 27, 28, 29) shows events and initiatives related to design policies cited in Raulik-Murphy (2010), and other complementary sources (Borges, 2009; Cabello & Martins Costa Póvoa, 2016; CBD, Apex-Brasil, MDIC, 2014; Patrocínio, 2013).

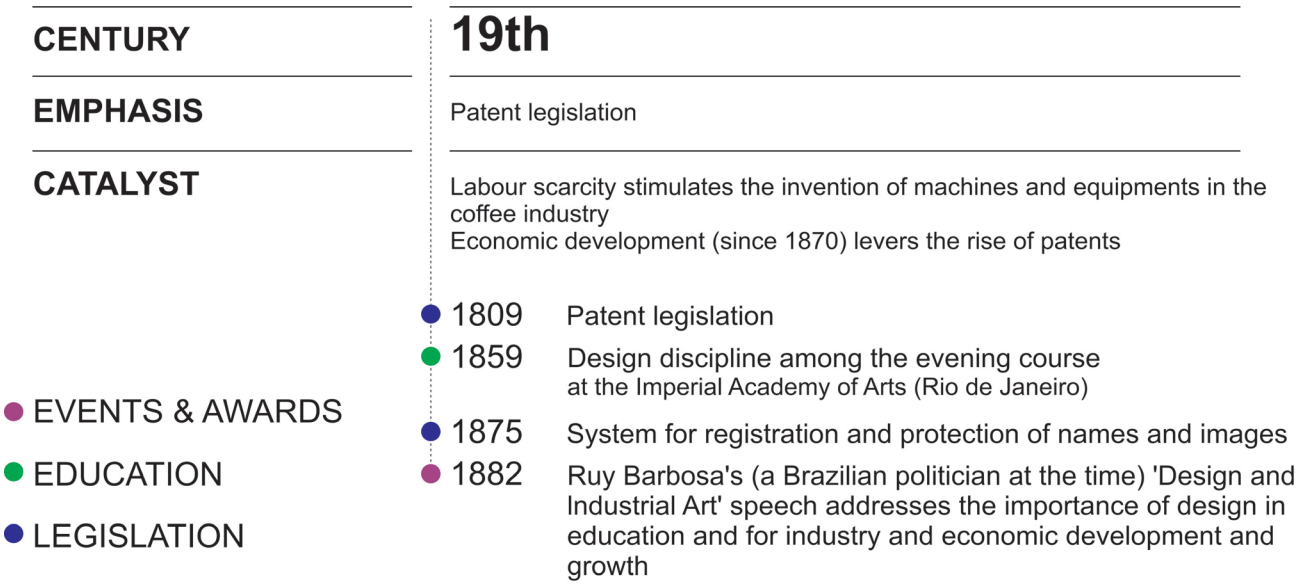


Figure 27: Brazilian design policy timeline – 19th century

CENTURY — **20th**

EMPHASIS

Juscelino Kubitscheck government (1956-1961)
Emergence of first design initiatives

Transition after military regime (1980s-1990s)
Emergence of design centres

CATALYSTS

Juscelino Kubitscheck government (1956-1961)
Brasilia (national capital) building
Ambitious projects and economic boom
Government support for manufacturing industry
Quick expansion of automotive industry
Companies started developing products using designers' services

Transition after military regime (1980s-1990s)
Hyperinflation and economic stagnation
Policies aimed at removing restrictions on free enterprise, increasing competition, privatising public enterprises and boosting productivity
Brazilian products were introduced to the global market
National industries faced international competition and needed to seek commercial advantage for their products
Design became part of business' competitiveness

- EVENTS & AWARDS
- DESIGN BODIES
  CENTRES
  LABS
  GOVERNMENT AGENCIES
  ASSOCIATIONS
- POLICIES, PROGRAMMES & PROJECTS
- PUBLICATIONS & TOOLS
- EDUCATION
- LEGISLATION

- 1930s 1940s — Specially commissioned objects within the modernist art movement
- 1950 — Recognition of design as a professional activity
- 1950 — Contemporary Art Institute of the Art Museum foundation
- 1950s — International recognition of Brazilian designs through international awards (e.g. Mole armchair by Sergio Rodrigues)
- 1960s — Emergence of important Brazilian brands and design icons (e.g. Petrobras, the Brazilian oil company)
  First design promotion initiatives
- 1963 — Superior School of Industrial Design (ESDI)
- 1963 — The Brazilian Association of Industrial Design (ABDI)
- 1968 -70 -72 — International Design Biennials in Rio de Janeiro
- 1972 -73 — Design support - Programme 06
  Ministry of Industry and Commerce
- 1973 — Design promotion campaign (Ministry of Trade and Industry)
  programme of packaging standardisation aiming at improving exports
  (Industrial Design Institute [IDI] in Rio de Janeiro)
- 1975 — First design centre established by the Federation of Industries in São Paulo (Industrial Design Centre [NDI] until 1982, after that, it became part of the Department of Technology [DETEC])
- 1980s — The Brazilian Ergonomics Association (Abergo)
  Emergence of design centres
  Laboratories of Product Development/Industrial Design (LBDI)
  (three laboratories were opened but just one thrived)

Figure 28: Brazilian design policy timeline – 20th century

* PBD aimed at formulating a national design policy and at creating a synergy between diverse design initiatives in the country. This programme's operation and leadership were limited, mainly due to lack of resources/budget.

** Design Centre Paraná had full support from the government at the beginning, is still operating but is no longer supported solely by public funding.

Figure 28: Brazilian design policy timeline – 20th century

CENTURY 21st

EMPHASIS

Design support programmes
Design policy
Rise of design centres

CATALYSTS

Access to credit
Government social programmes
Rise of building market
Economic slowdown (since 2010)

- EVENTS & AWARDS
- DESIGN BODIES
  CENTRES
  LABS
  GOVERNMENT AGENCIES
  ASSOCIATIONS
- POLICIES, PROGRAMMES & PROJECTS
- PUBLICATIONS & TOOLS
- EDUCATION
- LEGISLATION

- 2000 Marca Brasil Programme (national identity)
  Criação Paraná Programme (design support programme)
- 2001 Via Design SEBRAE Programme (design support initiative)
  about 100 design centres were opened across Brazil but financial support from the programme lasted until 2005
- 2002 Association for Product Design (ADP)
- 2003 Design & Excellence Brazil programme
  dedicated to supporting Brazilian products in international competitions (2003-2010)
- 2006 The first Brazilian Design Biennial in São Paulo
- 2006 Brasil Design project
  Integrated Sector-Specific Project Promoting Brazilian Design Service Exports (the Brazilian Trade and Investment Promotion Agency [Apex-Brasil] and the Brazilian Association of Design Companies [Abedesign])
- 2007 The Brazilian Design Programme (PBD) 2007-2012
  Strategic Plan (a policy that does not address actions among key stakeholders)
- 2013 Design Export Programme (Apex-Brasil and Centro Brasil Design [CBD]) aims at supporting diverse size companies in the development of innovative products and packaging focused on exports
- 2013 Design Embala (Apex-Brasil and the Brazilian Association of Packaging (Associação Brazileira de Embalagens [ABRE]) aims at supporting packaging development for products' exports
- 2013 Interagência programme - aims at supporting Brazilian companies go international and fosters exports of design services through partnerships with companies in Colombia and Peru

Figure 29: Brazilian design policy timeline – 21st century

The discontinuity of design policy initiatives and the lack of budget to move forward are some of the constraints faced by design programmes and policies, as noticed by Raulik-Murphy (2010) and by Nunes (2013). Design centres and industrial design laboratories are opened but not thrive or survive, being vulnerable to policy-makers' mindset, political, and economic climate. Programmes have been historically interrupted or ended due to the lack of funding that hinders the development and consolidation of design capabilities within organisations, that are build by-product of practice requiring long-run strategies to promote substantial changes instead of one-shot initiatives which are usually held. And a policy, such as the Brazilian Design Programme (PBD), does not contemplate the practical implementation of its whole scope. Design initiatives are carried out isolated in a fragmented local and national system characterized by the lack of connections and collaboration between key stakeholders.

The economic model adopted, as well as the late and forced industrialization process since 1964, when the military junta took power, led to the Brazilian identity crisis (Borges, 2009, 2011; Moraes Junior, 2002). Multinational enterprises, mainly from the United States, Europe, and Japan, arrived in Brazil, influencing habits, culture and society. This process is known as modern colonization (Moraes Junior, 2002). These educational, political and industrial contexts contributed to the Brazilian rupture with its cultural roots (Borges, 2009, 2011).

After the end of the dictatorship period in the 1990's, the market openness to international competitors brought consequences to the Brazilian businesses:

> "Foreign products proved fatal for many companies accustomed to merely copying, since there was always a time-lapse between the original and the copy. At first a number of these companies went under, but in time the survivors grew stronger by absorbing design as a component in their manufacturing strategy." (Borges, 2009, p. 58)

In 1995, the Brazilian Design Programme was the first noteworthy government initiative in the field of design policies promoted by the Ministry of Industry and Commerce (Ministério da Indústria, Comércio Exterior e Serviços [MDIC]), recognising the need for a 'Brazil Brand' and to invest in distinctive design characteristics for Brazilian products. Since then, it is noticed the emergence of Brazilian designers in the international scenario, working for renowned brands, such as Motorola, Nike, Bentley, Volkswagen, GM, Disney; doing signed design for foreign companies (e.g. Sergio Rodrigues, Campana Brothers); and having excellent performance in international design awards (e.g. iF- Design Awards and Red Dot Design Award) (Borges, 2009; CBD, Apex-Brasil, MDIC, 2014; Kraichete, 2015; primary data collection). In addition, Brazilian brands start emphasising original features and multinationals with branches in Brazil settled design departments in Brazil, having Brazilian designers also in charge of products development to North America, Europe, China and India (Borges, 2009).

Despite the aforementioned aspects and the diversified industrial sector, Brazilian sectors, such as furniture and automotive are still inward-focused, being concerned with local content and domestic market, and the industry is heavily protected from foreign competition (Araújo, 2016; Arnold, 2016; Bradesco, 2017; Galinari, Teixeira Junior, & Morgado, 2013; Moraes Junior, 2002; Organisation for Economic Co-operation and Development [OECD], 2014). Moreover, productivity growth in Brazil is associated with low value-added sectors, such as agriculture and mining, whereas manufacturing and services correspond to 20% of the Brazilian productivity growth, concentrating over 80% of value added and employment (OECD, 2013a). The potential of manufacturing and services to contribute to the productivity growth is underexplored despite the value added and employment rates related to these sectors.

Economic reviews (Araújo, 2016; Arnold, 2016) have suggested the need to open the market to international competitors in order to strengthen the national industries. However, this isolated initiative might lead many firms to go under, especially MSMEs, because of the lack of resources and skills to lead innovation, increasing the unemployment rates. Thus, combined initiatives that strengthen education, innovation, design, and management skills, or, a learning process to integrate the Brazilian trade into the global one and into exports, providing appropriate support and competencies to face this 'openness' process, are required for current and future generations.

The Brazilian Design Innovation Ecosystem

Figure 30 uses a framework adapted from Whicher and Walters (2014)[41] to bring a picture of the Brazilian design innovation ecosystem based on

- The Diagnostic Review of Design in Brazil (Centro Brasil Design [CBD], Agência Brasileira de Promoção de Exportações e Investimentos [Apex-Brasil], Ministério da Indústria, Comércio Exterior e Serviços [MDIC], 2014) – this study is an initial effort to measure the Brazilian design capability using as the main reference the Design Staircase Model (Kootstra, 2009) and the International Design Scoreboard (Moultrie and Livesey, 2009).The difficulties related to the lack of available data are clearly evidenced, not enabling to compare Brazil to other European contexts;
- Caloête and Westin (2014) – this publication from the Brazilian Micro and Small Business Support Service (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [SEBRAE]) lists the Brazilian institutions, programmes, courses, university laboratories, events, and fairs;
- Borges (2009) and Kraichete (2015) – this research has been carried out in partnership with the Dutch Culture Centre for International Cooperation and started to map the Brazilian design scenario, its actors, and initiatives related to cultural, promotion and funding assets;
- The National Institute for Educational Studies and Research "Anísio Teixeira" (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira ([INEP], 2017) – part of the official Brazilian higher education statistics;
- And, information sourced at institutional websites of actors that play a relevant role in design and innovation programmes across Brazil, such as: the Brazilian Micro and Small Business Support Service (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [SEBRAE]) (SEBRAE, n.d.b), the Brazilian National Confederation of Industry (Confederação Nacional das Indústrias [CNI]) and the National Service of Industrial Training (Serviço Nacional de Aprendizagem Industrial [SENAI]) (CNI, n.d.a, n.d.b).

This scheme does not include all initiatives and entities that compose the Brazilian Design Innovation Ecosystem but provides examples which have national relevance and sources where to find additional available data.

[41] This framework is the same adopted in the European context in the Design Policy Monitor (e.g. Whicher, Swiatek & Cawood, 2015).

Figure 30: The Brazilian Design Innovation Ecosystem

Brazil has moved forward regarding its innovation policies and regimentation that favour innovation since the 2000s, diversifying the mechanisms for small business support which is noticed, for instance, with the Industrial, Technological and Trade Policy (Política Industrial, Tecnológica e de Comércio Exterior [PITCE]) in 2004 (Torres Freire, Massami Maruyama & Polli, 2017).

However, Brazil still needs to advance concerning its competitiveness, innovation capabilities, and productivity. The country ranks 80th in the Global Competitiveness Index 2017–2018 Rankings (Schwab, Sala-i-Martín, & Samans, 2017), presenting a variety of problems from infrastructure to bureaucratic processes, for instance. The Brazilian design policies are fragmented and short-term focused (Raulik-Murphy, Cawood, Larsen, & Lewis, 2009a). Design and innovation policies publications regarding the Brazilian context have emphasised the need (a) for long-run innovation strategies (Mazzucato & Penna, 2015; Raulik-Murphy, Cawood, Larsen, & Lewis, 2009a), (b) for a combination of diversified design policy initiatives (Raulik-Murphy, 2010) and (c) for a connection of innovation systems that are quite fragmented across the country (Mazzucato & Penna, 2015; Raulik-Murphy, Cawood, Larsen, & Lewis, 2009a) that is heterogeneous in terms of culture, education, innovation, and design. The geography of design referred to design events (Kraichete, 2015), design jobs and firms (CBD, Apex-Brasil, MDIC, 2014) evidence these contrasting contexts across the country.

The concentration of design firms and jobs is mainly identified in the southeast and southern regions of Brazil (CBD, Apex-Brasil, MDIC, 2014). São Paulo, Rio de Janeiro, and Bento Gonçalves stand out regarding promotion initiatives. São Paulo and Rio held most design events. Bento Gonçalves held the largest furniture fair in Latin America with the Salão Design (Design Hall) Award. The first Brazilian Design Centre (Centro Brasil Design [CBD]) was founded in 1999 in Curitiba, where a concern with design has been evidenced also through design management studies focused on Paraná Federation companies (Murphy & Raulik Murphy, 2015).

The design and innovation policy-making processes follow essentially a top-down approach where political influence plays a definitive role in strategies, goals, and investment decisions. By contrast, experts have emphasised the importance of participatory, collaborative, and bottom-up process for policy-making (Chisholm, Cruickshank, Evans, & Cooper, 2013; Julier, 2017; Maffei, Mortati & Villari, 2014c; Whicher & Walters, 2014). Participatory policy decision-making process is also considered critical by Thenint (2008): "Because SMEs and design companies are important stakeholders, policies should facilitate and not hold back their way of innovation. Stakeholders ought to be the final decision-makers when defining, prioritising this kind of policy objectives" (p. 12).

Chisholm, Cruickshank, Evans and Cooper (2013) point out that "Participatory policy development approaches present challenges to policy-makers" (p. 450). Policy-makers are used to a traditional top-down policy-making approach which uses citizens' inputs in a cursory manner. However, the "… societal shift towards closer engagement with citizens in policy development, the challenges of a devolved and democratised decision-making process have resulted in tensions that traditional policy approaches have been unable to address" (Chisholm et al., 2013, p. 450).

This shift is also recognised by Whicher (2015), who argues that people are getting frustrated about policy and government, hence, the public sector needs a new approach to policy-making, and design approach can be of benefit. Whicher (2015) recommends the use of the design tools by policy-makers as the most effective way to make them understand the benefits of using design methods in policy-making.

According to Chisholm et al. (2013, p. 450),

designers can play the intermediary role between policy-makers and citizens (or beneficiaries), assisting policy-makers in empowering citizens' voice. Designers can do that as they do consider users as being in the core of design processes, providing appropriate approaches and methods to face such a challenge. This change requires relationship building in order to construct confidence between key stakeholders (Chisholm et al., 2013).

This need is clearly evidenced in the Brazilian design initiatives in which the lack of collaboration among key stakeholders, such as design support agencies, government, and the private sector, has hampered design innovation and knowledge transformation and acquisition. Extending on innovation research which considers collaboration as a potential way of knowledge acquisition and transformation through networks, particularly in MSEs, Nunes (2013) uses a design initiative, a pilot project - MODU.Lares, focused on MSEs in the local furniture industry - aiming at stimulating collaboration among main actors of the Uberlândia-MG (Brazil) local system in order to facilitate the incorporation of environmental criteria into design, management, and manufacturing of those small businesses. Difficulties in the collaboration between diverse institutional actors and among entrepreneurs led to the identification of the Brazilian political system shortfall:

> "…one of the reasons for such limitations [on collaboration and active participation in the pilot project] is related to the political configuration system of government bodies in Brazil, also recognizable in the context of Uberlândia, generally bureaucratic, slow and focused on very narrow and specific interests." (Nunes, 2013, p. 427)

Furthermore, Nunes's (2013) findings also indicate the lack of human-centred perspective and meritocracy among policy-makers who are not interested in improvements needed for citizens and society or targeted beneficiaries (diverse groups of taxpayers), presenting a risk-aversion attitude by fearing for spilling over further benefits in other industries (which should be desirable by government representatives in a public good perspective), or for being considered responsible for a procedure that is up to private manufacturing companies according to law. Nunes's findings also suggest the lack of design awareness and understanding among decision-makers in Brazil in diverse kinds of organisations, from public government departments to private companies.

Discrepancies between industry reality and dynamism, and the pace and capabilities of non-profit private entities in Brazil (e.g. SENAI, SEBRAE) hamper the contribution of non-profit private entities to Brazilian industries, once industries need hard and soft skills, as well as timing, that these entities have demonstrated not prepared to meet (see for instance Nunes, 2013; Piore & Cardoso, 2017).

The Diagnostic Review of Design in Brazil (CBD, Apex-Brasil, MDIC, 2014) is an initial attempt, considering that the sizes of companies that answered the survey do not represent the Brazilian reality (where 99 per cent of businesses are micro and small), as well as its industry sectors. Moreover, other limitations were pointed out as follows:

> "… the absolute design capability indicators in Brazil are often higher in comparison with other countries. However, this can be misleading because when the numbers are placed within the national context according to the size of the population, Brazil's design resources are classified at the lowest end of the table for all indicators. It should also be considered that there is a lack of data on the indicators for public investment in design and the contribution of the design sector towards GDP." (CBD, Apex-Brasil, MDIC, 2014, p. 49)

The lack of design management studies and data on design across Latin America complicates a comparison with foreign regions (CBD, Apex-Brasil, MDIC, 2014), as well as an analysis of the state of the art of design in the country.

Design support in Brazil

The design support programmes in Brazil are currently industry-specific and local (regional), generally not presenting a systemic approach at the national level. The lack of linkages and collaboration between the main actors of the Brazilian design innovation ecosystem has been considered a barrier to advancing design through programmes and initiatives which are usually one-shot, focusing on short-term outcomes related to market failures in small businesses (see for instance Nunes, 2013; Raulik-Murphy, 2010).

The first design support initiative was the programme 06 (1972-73) from the Ministry of Industry and Commerce. Large design projects were developed across Brazil as a way to foster design teams in some research centres, such as CETEC in Belo Horizonte and INT in Rio de Janeiro (Barroso Neto, 1998 cited in Patrocínio, 2013).

After that, design initiatives were developed by the Brazilian government agencies, such as CNPq, FINEP, STI / MIC and Cacex / BB. The design support was offered through one-shot initiatives after the mid-1970s and, from 1982 on, a design support programme was established (Barroso Neto, 1998 cited in Patrocínio, 2013).

Another important actor in the design support scenario was the Brazilian Laboratory of Industrial Design (Laboratório Brasileiro de Desenho Industrial [LBDI]) founded in the period of the military junta. The LBDI developed design support activities, including design projects, workshops, research, and conferences. Its activities ran from 1984 to 1997 in the context of an inward-focused market (Barroso Neto, 1998 cited in Patrocínio, 2013). Barroso Neto (cited in Patrocínio, 2013) relates the closure of LBDI to neoliberalisation processes during the early 1990s, which led to the privatisation of research centres. Bonsiepe took part in the early planning that included the LBDI into industrial and S&T policies and coordinated the first phase of LBDI (Patrocínio, 2013).

Other design support initiatives are highlighted within the national context: the Criação Paraná Programme launched in 2000, and the Via Design SEBRAE Programme that ran from 2001 and provided support for about 100 design centres until 2005 (Raulik-Murphy, 2010). Raulik-Murphy (2010) explains these two programmes as follows.

The Criação Paraná Project was based on the experience of Glasgow Collection programme that ran from 1997 to 1999 in Scotland (the UK). It provided tailored advice for manufacturing firms from the outset of the design process to the prototype phase. Two iterations took place, one iteration in 2002, and another in 2005. They were closed with one exhibition of more than 40 products. The third iteration did not happen due to the lack of funding (Raulik-Murphy, 2010).

The Via Design was a design support programme launched in 2001 by SEBRAE. This programme

> "had three streams: assisting SMEs in the use of design, promoting design among SEBRAE, and strengthening the Brazilian infrastructure of design services for SMEs. The third stream was responsible for the establishment of about 100 design centres and/or units around the country. However, financial support from Via Design for these centres lasted only until 2005. After that, the centres had to find their own means for sustaining their operations and about 30% of them closed their doors." (Raulik-Murphy, 2010, p. 140)

These three experiences (LBDI, Criação Paraná and Via Design) showed the setbacks faced by design support programmes regarding discontinuity, lack of political, and economic support, hence, shortage of budget to move forward.

Torres Freire et al. (2017) identify 25 main programmes regarding small businesses in Brazil

from 1998 to 2017. The authors are interested in high-growth firms (HGFs)[42], particularly start-ups[43]. Brazil has the largest number of start-ups in Latin America: São Paulo holds 61%, Rio de Janeiro 12%, and Belo Horizonte 10% (OECD, 2016b). However, "investment in research and development (R&D) grew from 0.63% of GDP in 2009 to 0.74% in 2014, a small increase that leaves the region's countries trailing far behind the OECD countries, which invest around 2.3% of GDP in R&D (in 2014)" (OECD, 2016b, p. 2). In spite of the increased use of information and communication technologies (ICTs), the gap between the OECD countries and the Latin America ones is still large (ECLAC, 2015; European Commission, 2015a; OECD, 2014; OECD, 2016a). The need for an appropriate environment from infrastructure to policies is emphasised to foster start-ups growth (OECD, 2016b).

Torres Freire et al. (2017) identify programmes dedicated to small business beyond start-ups. They estimate that about 5 billion BRL have been invested in those programmes using public funding from 1998 to 2017. The authors also provide criticism to the benchmarking of programmes that are placed on very diverse contexts compared to Silicon Valley, once the Brazilian environment does not correspond to those social, cultural, economic, and institutional conditions. The importance of going beyond financial supportive approaches to programmes towards initiatives that foster an environment which promotes various stakeholders (e.g. entrepreneurs and investors encounters) connection and collaboration is highlighted (Torres Freire et al., 2017). The authors emphasise some shortfalls that should be overcome in the Brazilian small business support programmes:

> "… despite new initiatives and growing progress on this issue, Brazil still needs to move forward in this process. Factors such as resource instability, discontinuation of programmes, and the lack of an evaluation culture inhibit the consolidation of a state policy for innovation that is effective and efficient." (Torres Freire et al., 2017, p. 73)

Similarities between design support programmes and start-up support programmes' failures were recognised: it is difficult to identify investments concerning the specific target (in their case start-up support programmes), there is not a clear policy that addresses the set

[42] According to the Eurostat–OECD Manual on Business Demography Statistics high-growth enterprises are "All enterprises with average annualised growth greater than 20% per annum, over a three-year period should be considered as high-growth enterprises. Growth can be measured by the number of employees or by turnover." (2007, p. 61)

[43] According to the OECD (2013b), there is not a consensual definition of start-ups. The term originally refers to Silicon Valley youthful, creative, high-tech environment and their information and communication technologies (ICTs) diffusion, as well as the concentration of human and financial capital, universities and companies in the south of the San Francisco Bay (USA) that generate innovative firms. These types of firms started to arise in other contexts with different approaches, but were often related to some basic conditions, such as availability of finance for firm creation and expansion, services for business development, and access to scientific and technological base. Start-ups can be understood as innovation-intensive or high-impact new enterprises, bringing new products and services to the market based on scientific discoveries or new applications of existing knowledge. They bolster competition for innovation and promote a dynamic business environment. Brazil focuses on technological start-ups.

of initiatives, the innovation ecosystem is fragmented and is composed of a variety of public, private and non-profit organisations where the actions are framed generally disconnected from one another, lacking a national strategy that helps drive a major reasoning and envision a desirable future for the country competitiveness. Any kind of comparison, monitoring, and evaluation of programmes is hampered since there is not a picture of 'before' (ex-ante) and 'after' (ex-post) the programme connected to national or regional benefits or goals. Moreover, the lack of a long run strategy and discontinuation of programmes are also identified in design support programmes. The lack of data about start-ups in Latin America is also emphasised in the OECD (2016) report.

Design is not considered within their review (Torres Freire, Massami Maruyama & Polli, 2017) as a tool or driver of innovation, not being even quoted, which evidences the lack of design awareness among institutional actors[44] that are still binding innovation around the axes of technology and research development not considering human-centred approaches. The way design can build bridges between science, technology, and industry towards new business models, new market shares, or humanisation of technologies or even specifically contributing to service, product, system, or platforms development is not exploited nor considered in any depth or level.

As well design is not exploited within industrial and innovation policies in Brazil (see, for instance, Patrocínio, 2013; Mazzucato & Pena, 2015; Torres Freire, Massami Maruyama & Polli, 2017). There are some programmes dedicated to small businesses support as identified by Torres Freire, Massami Maruyama and Polli (2017), but the design relation to those is not evidenced. Their innovation perspective is limited to the technological development approach. In short, design and its relations to innovation are still not understood in Brazilian institutions. Its strategic value is not considered in practice at business, at institutional, and at national levels.

The main well-known established design support initiatives in Brazil are held by SEBRAE and SENAI, which are still providing "a large part of the investments in design in the country" as observed by Raulik-Murphy (2010, p. 142). These organisations are spread across Brazil with hundreds of units in charge of Brazilian Federations. They are non-profit private entities which are funded by public money, more specifically, by a government tax paid by registered firms in diverse industries. This money goes directly to CNI (National Confederation of Industries), which redistributes it among its regional units (regional SENAIs), and to the national SEBRAE, which redistributes it among its regional units (regional SEBRAEs) or the S system.

SEBRAE offers design support within an innovation and technology branch. The programme is known as SEBRAETEC, and provides support in seven fields that were presented as follows: Innovation, Design, Quality, Productivity, Intellectual Property, Sustainability and Digital Services (SEBRAE, 2013a).

Although design is defined as "Intellectual, technical and creative design process, which contemplates project planning and develop-

[44] The authors worked at public sector bodies (or bodies that are funded with public money) at the time of this publication. Their background varied from sociology, industrial engineering to science, and technology policies, playing roles related to innovation initiatives and promotion.

ment, focused on the user, with an integrated approach of product, service, communication and / or environment for the company" (SEBRAE, 2013b) at SEBRAETEC website, showing an effort to transmit a system vision, in practice, projects are punctual and have an ex-post and top-down approach.

Businesses that join the design support programmes are not audited before the project proposals' development and, usually do not participate in project proposals development. Then, design is exploited within this programme with a narrow outlook that overlooks its systemic potential and strategic value aligned with businesses potentialities.

Nunes (2013) realises these aspects observing the lack of a collaborative and participatory approach to design initiatives in order to consider the real needs of small businesses:

> "... it is necessary to find an intermediate solution for projects proposed by support institutions, in particular SEBRAE, to facilitate the integration of smaller groups of MSEs (e.g., enable groups of 12 MSEs, instead of the required number of 25) in order to minimize abandonment along the process and to strengthen engagement. In any case, a fundamental issue is to be attentive to the real needs of groups related to the institutions (whether individuals or companies) and to search for collaborative partnerships that operate to solve problems together." (Nunes, 2013, p. 444)

Design actions are presented and implemented in a fragmented manner, being represented, for instance, by brand, product design, and packaging interventions. The subsectors within design in the programme are: interiors design, communication design, product design, and service design (SEBRAE, 2013b). The value of design methods' use (Julier, 2017) is overlooked since there is a clear focus on the result rather than on the process of design.

The selection of designers who can provide design services is regulated by public procurement, which contains the requirements to be fulfilled in order to provide services through the programme. Registered design businesses are alternated to provide services that were in the on-demand typology. When the project is by-cluster, generally, the services are limited to some institutional bodies' services, such as universities, public research centres, or non-profit third sector organisations (NGOs).

The emphasis of SEBRAE's annual report (SEBRAE/MG, 2016) is on the number of new businesses opened; however, there is not a clear evidence that connects the projects run to this number. Furthermore, the need for design innovation is not just related to new businesses generated but to the existing businesses' capacity to be sustainable, to keep up with their businesses and to be able to catch up with best practices businesses throughout time.

Phrases like "The strategic priorities were also validated by the Executive Board" (SEBRAE/MG, 2016, p. 45), in which "validated by the Executive Board" works as the main rationale to justify strategies prioritised that are quite general, delineating general principles that should be obviously led by SEBRAE considering its institutional role and funding sources. The 'how' they are going to turn these strategic priorities into benefits is addressed through a strategic map with corresponding indicators that are the same used since 2013. Although some indicators used have regional and national relevance, how SEBRAE's projects specifically contribute to them is not clearly evidenced since other micro and macro factors can influence the proposed indicators besides SEBRAE's actions. Furthermore, indicators that could set specific relationships between SEBRAE's projects and business outcomes and impacts, such as the ones related to the economic impact of SMEs' new investment, are still not defined.

The report (SEBRAE/MG, 2016) is just one example of the adopted SEBRAE's approach which is convergent with New Public Management (NPM) approach regarding the constant measurement and audit of processes and outcomes

that drive the services' arrangements in order to satisfy measurement criteria more than being designed to best serve beneficiaries' companies. The situation seems worse considering that design is not fully grasped as evidenced by the structure and processes of the organisation.

The absence of follow-ups also does not make easier to evidence design benefits to these businesses and regions, especially in the case of design, in which better financial benefits are usually noticed in long-term strategies (about 8-10 years) in design-centred firms (Rae, 2013, 2014), so it would be reasonable to provide structured follow-ups in firms that have little or no experience, considering the design knowledge formalisation as by-product of practice (see D'Ippolito et al., 2014), which means that one-shot projects tend not to provide a sustainable design innovation strategy to these small businesses. In addition, the budget destined to design is not clear, and nor is the criteria to dedicate the budget to some regions instead of others.

The SEBRAE by-year funding could better serve to provide some continuity; however, the main programmes present a short-run strategy in a reactive one-shot approach.

Three models or typologies of design support programmes can be identified in these non-profit private entities, which are the main developers of design support in Brazil, as follows:

SEBRAE has largely applied on-demand (Figure 31) and by-cluster (Figure 32) models, which are illustrated below:

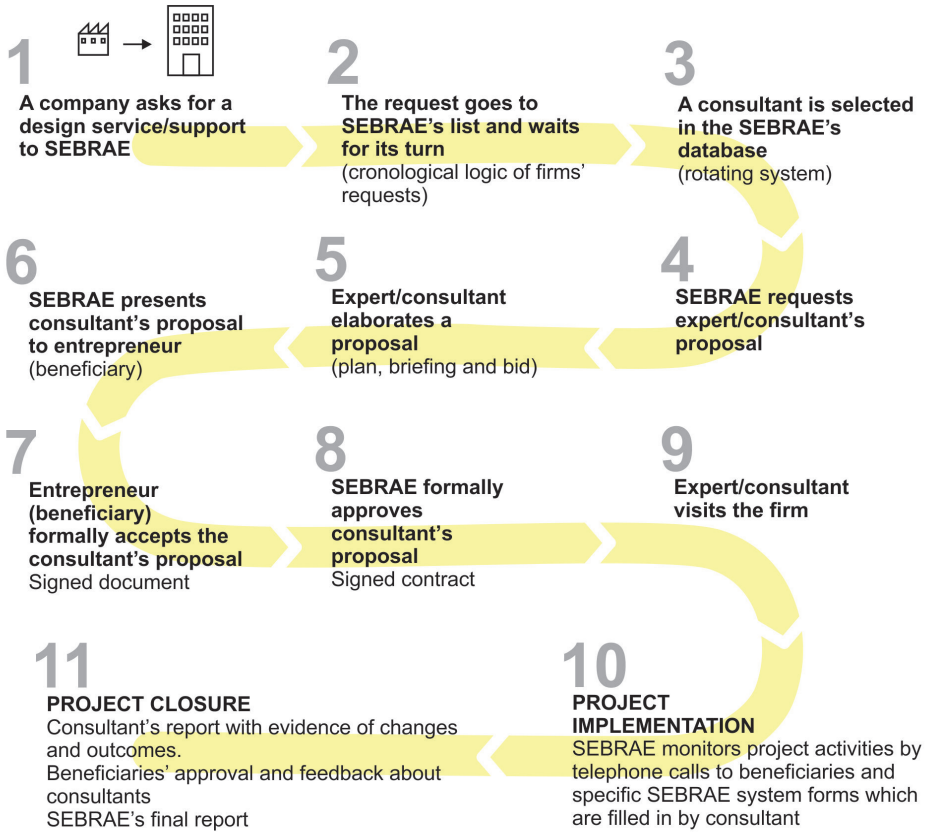


Figure 31: Design support programme's on-demand model

The on-demand programme has positive aspects regarding the flexibility of serving needs that are recognised by a company. The drawbacks are generally related to the bureaucracy and timing.

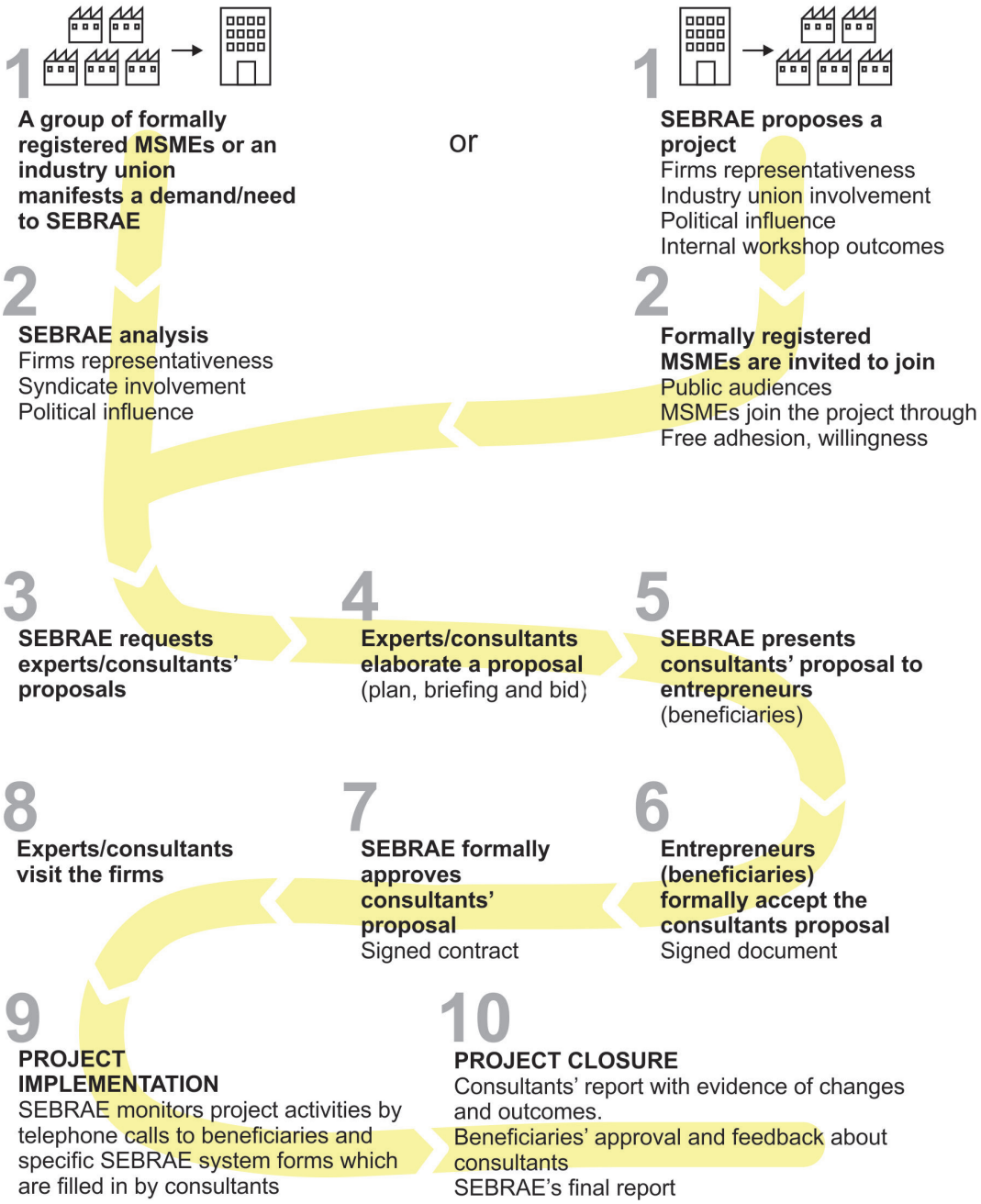


Figure 32: Design support programme's by-cluster model

The by-cluster model presents two diverse ways to unleash the design support: (1) the industry union requests a design initiative. And, (2) the project is proposed by the non-profit private entity. The decision-making process' criteria for investing in some regions rather than others is not clear. This type of support requires that at least 25 MSMEs join the project.

In by-cluster initiatives, design support programmes are usually combined with training and workshops when working with firms in an industry cluster, then they include also some activities that can be considered as design promotion activities.

SENAI acts as the counterpart in some SEBRAE's support initiatives but also has its own innovation call held by CNI (SESI/SENAI Innovation call) with national coverage (Figure 33).

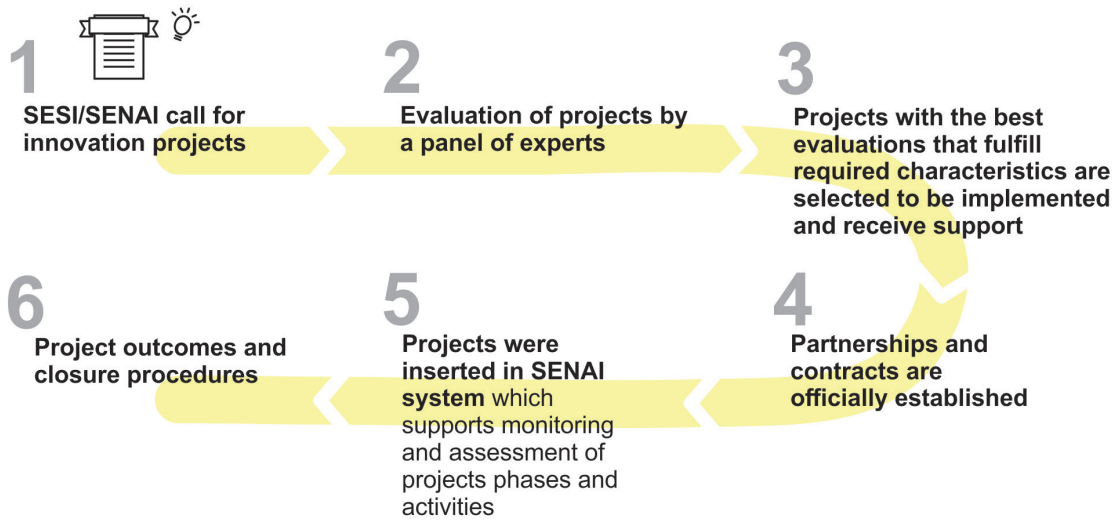


Figure 33: Innovation call model - projects are selected by a panel of experts

Considering prior research findings that "... there are no significant patterns that differentiate the design programmes in advanced economies and developing countries" (Raulik-Murphy, 2010, p. 204), the Brazilian design support programmes' main models can be analysed in the light of best practices. Some weaknesses identified are:

- Programmes are standard, not being properly crafted regarding prototyping phase, participatory methodologies, business design audit, company design maturity, and senior management commitment. Some schemes work as a pilot project but most of them are immediately taken up scale (having to address at least 25 SMEs to be run), and no programme presents the prototyping phase. This is generally spurred by the need to reach indicators' goals set in which the number of businesses assisted is one of the main criteria regardless of how the project is carried out and what happens after the project is over.
- Though top management has to sign a document at the outset of the project, their commitment and participation is not considered throughout the project. Moreover, businesses that join a project are not audited before, which means that diverse

design maturity businesses are mixed in a project that can be more appropriate to a defined target despite most of them usually having little or no design experience. Thus, addressing the "mix of political, economic and stakeholder circumstances" (Whicher et al., 2013, p. 3) is hampered through the current approach used to crafting design support programmes.

- Non-profit private entities employees (who play a policy-maker role in design support programmes) are usually concerned with providing responses to their system, metrics, and bosses rather than attending real business demands, not being, generally, embedded in the business or design world, which hinders the reflection on crafting programmes to solve businesses' problems or to promote new business opportunities. There is a focus on 'making paper' to fill in the established system requirements rather than visiting businesses and cultivating existing design and business networks that can contribute to identifying potential target beneficiaries according to their programmes. Hence, there is a huge gap between policy-makers', designers', and beneficiaries' visions and experiences. This aspect is crucial, as emphasised by Heskett (1999, 2016):

  > "policies for promoting design and for design education are the most powerful tools available to governments, but these need to emphasize the new demands being made on business and design practice. Businesses that do not adapt to change disappear." (Heskett, 1999, 2006, p. 232)

- Evaluations are standard regardless of the projects specificity, target beneficiaries, and design consultancies. Evaluations are focused on the client's feedback, such as the 'ok' or approval of a design project outcome by the company's representative, and checklists derived from the programme standard or from the initial plan of the action in which the meaning 'phase completed as planned' works as the best answer. To adapt the plan according to perceived changes and realities during the project is seen as 'not doing well'. Companies' participation is not assessed.

- There are no follow-ups. Measures and outcomes that can be related to economic benefits or growth or qualitative aspects that can form compelling case studies and stories are not addressed through an ex-ante and ex-post data collection. Impacts (long-run) are also not monitored. Hence, what happens after the programme or project ends is not used to build a design support programme legacy or relationships, turning beneficiaries into advocates for other peers and policy-makers.

On the other hand, the annual resources assured by public funding and the autonomy regarding government policies, as well as the robust structure composed of units across the country can be seen as strengths. As highlighted by Raulik-Murphy (2010, p. 209):

> "In comparison to policies, design programmes demand less financial and bureaucratic commitment and are more easily implemented and monitored. Moreover, they do not depend strictly on government support, as seen in the case studies of India and Brazil. Given this substantial difference in practicability, design programmes have indeed been implemented more often across the globe, in comparison to design policies." (Raulik-Murphy, 2010, p. 209)

Er (2002) also notices this difference between design programmes and design policies implementation. He states that "a comprehensive design policy almost always requires the coordinating power, or at least an open support of governments to be implemented" (p. 163), while design programmes can rely on other kinds of organisations, such as non-governmental organisations or professional design associations.

PART II

IN SEARCH OF EMPIRICAL EVIDENCE

This part of the dissertation looks at the empirical cases analysed. The first group of cases (Chapter 6) approaches the engagement of business at the micro and project level and its influence on design capabilities building. The second group of cases (Chapter 7) is composed of 2 polar types cases. This second analysis is broader than the first one, considering the key stakeholders' perspective, and three levels: from individuals and organisations features to the ecosystem characteristics which hamper or foster design in MSMEs throughout design support initiatives.

CHAPTER 6

The choice of design

From businesses' conditions to businesses' attitudes[45]

This chapter addresses a psychological approach to creativity use as a decision in order to understand design management capabilities absorption within small businesses throughout three design support programmes 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 capabilities throughout these projects? Literature review and participant observation were employed from 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

[45] This chapter was built upon the paper 'The choice of design: From businesses' conditions to businesses' attitudes' (Fonseca Braga, 2017). It was originally presented at 12th EAD Conference: Design for Next at the Sapienza University of Rome, Italy, 12-14 April 2017. An initial version of the paper was published in The Design Journal, 20:sup 1, S635-S646. This is a reviewed version of the paper, improved with the contributions from the Conference, and further literature review.

Introduction

Creativity is the main basis of the design process. Although design management (Gorb & Dumas, 1987; Pilditch, 1990) and business (Peters, 2001) research has pointed out the importance of the companies' cooperation, attitudes and leadership towards design, an in-depth analysis, especially in the case of MSMEs, has not been drawn. 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 support programmes 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.

Design attitude was related (1) to an organisational design perspective to design management, examining how the formal design position in the firm leverages design autonomy and strategic importance (Dumas & Whitfield, 1990), (2) to designers' approach and mindset to problem solving (Boland & Collopy, 2004), and (3) to the professional designers' attitudes in design-led companies that promote a professional culture or a work-based attitude that is spread within organisations (Michlewski, 2008). However, attention has not been devoted to the case of MSMEs with little or no design experience where this potential is incipient, and the owner's influence is definitive to the way design is used, as well as to its intensity (Acklin, 2013, p. 157; Bruce, Cooper, & Vazquez, 1999).

This chapter 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 or design support initiatives.

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 Fonseca 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 in 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:

- Design "is creativity deployed to a specific end" (Cox, 2005, p.2);
- Creativity is not an inborn trait but people can decide to use or not to use creativity resources (Sternberg, 2006, 2012);
- Deploying creative ideas is harder than 'following the crowd' (Sternberg, 2006, 2012);
- 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);

- 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, 2015a) 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.

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 of the analysis provided by Sternberg is 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 in terms of 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 in 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. Thus, creativity cannot be understood without 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 10.

Table 10: 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.
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	A 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 the environment), as well as interactions between resources enhancing creativity (cited in Sternberg, 2012).

Key elements to understand the integration of design into MSMEs

Activities of integration of design into businesses through a design policy[46] 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 34).

The framework of reference taken by Acklin (2013) adopts a design thinking approach to design management capabilities. This approach 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).

[46] These activities are considered within the category of design support initiatives.

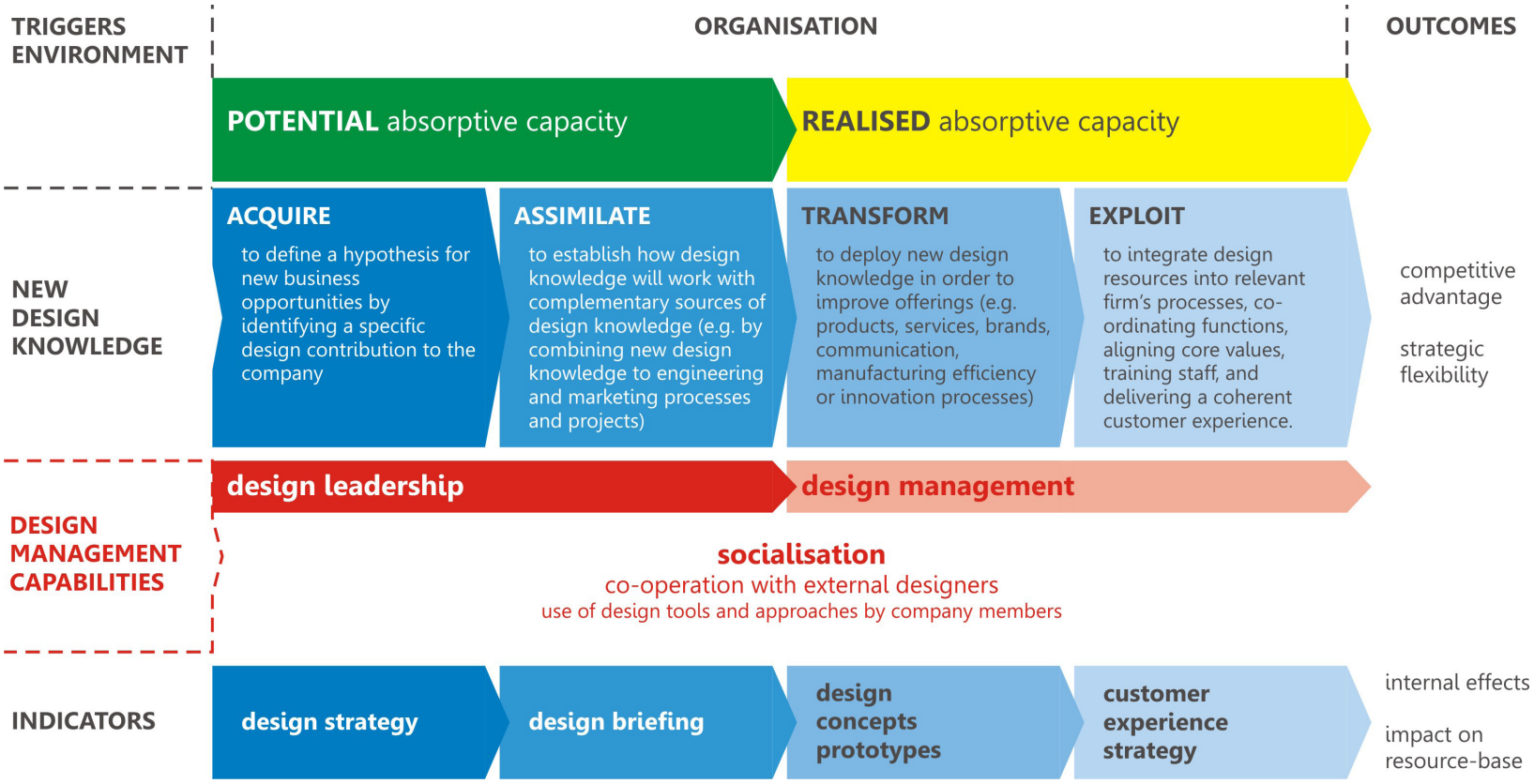


Figure 34: Revised Design Management Absorption Model (Acklin, 2013)

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 at different times, from 2006 to 2014 in Brazil (see Table 11). 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).

The MSMEs which were beneficiaries of these design policies programmes 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).

Table 11: Design support programmes and their projects of integration of design into MSMEs considered

	characteristics		proposal and goals	projects' architecture
Programme 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		
Programme 2	Number of MSMEs benefited	Direct: 1 and indirect[47]	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		
Programme 3	Number of MSMEs benefited	3	P1[48]: 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 identified	On-demand projects supported by non-profit private entities' initiatives and funds. The company requests support for a specific design need identified within the firm. The beneficiaries cover at least 20% of the costs in economic terms.
	Staff	P1: 2 designers P2: 1 designer P3: 3 designers		
	Time	2014 from 3 to 8 months		

[47] MSMEs in the regional and national furniture industry, associations, universities, research centres, laboratories.

[48] P1 means project 1. P2 means project 2. P3 means project 3.

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 programme and was not considered in their 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 Programme 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, briefing, and selecting concepts to be prototyped. This fact led to design strategy, briefing, 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 question 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 Programme 2, the lack of (1) basic knowledge applied to the production process, (2) design experience, and (3) a prior defined business strategy by the company[49] 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 Programme 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 ef-

[49] (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)

fort by design, as they were related to (P1) technical adequacy to fit into national regulations, (P2) design projects integration into production 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 35):

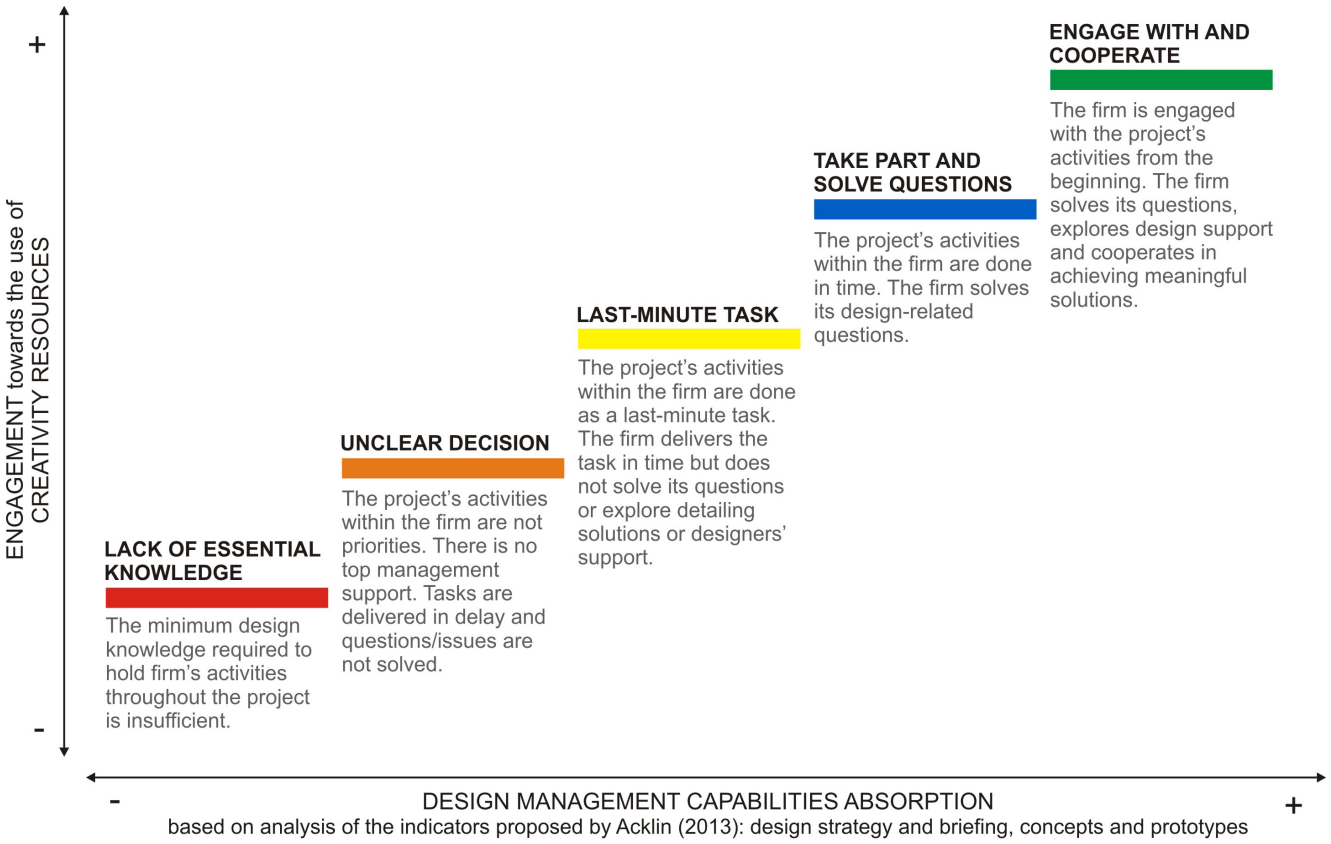


Figure 35: Map of perceived business conditions and attitudes towards the use (or not) of the creativity resources (based on the framework proposed by Sternberg, 2006, 2012) by engagement and their impact on design management capabilities absorption intensity

Businesses' conditions or prior design knowledge or essential knowledge needed noticed in the cases studied can be classified as: operational design knowledge regarding the ability to read a project specification, to do a jig, to prototype, and to consider users' needs; and business-specific knowledge concerning available production process, technologies, materials, norms/standards, market position, strategy, and limits of investment. Operational knowledge impacts mainly on briefing and prototyping; business-specific knowledge affects mainly design strategy and briefing.

The operational knowledge is similar to design execution capability (Maffei et al., 2012, p. 48), which "Involves the presence of human resources with technical skills, design technologies and infrastructures [...] It is related to the skills visualising/prototyping and applying new technologies.".

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' rather 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. production 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 the 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, which 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 and 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 Fonseca Braga, 2016). Therefore, designers can play an important role in the 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.

Limitations

This chapter looks at the differences related to the use of creativity resources throughout three design support programmes 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.

CHAPTER 7

Enlarging the landscape

barriers and drivers to introducing design innovation into MSMEs at three levels

The second group of empirical cases analysed aimed at broadening the framework of barriers and drivers which influence the integration of design into MSMEs through design support initiatives from the actors level to the ecosystem level. In so doing, the following questions were set: What are the barriers to introducing design innovation into micro, small and medium-sized enterprises (MSMEs) in mature industries through design support? What are the drivers? What are their meanings? This chapter aims at answering these issues.

The research strategy was based on the analysis of two exploratory cases of design support in Brazil, taking the key stakeholders' perspectives into account. The approach is qualitative and inductive; we analyse empirical evidence using a literature review on barriers and drivers to design innovation. New constraints and drivers in the inquired contexts and the ones which were found in prior research are identified, interpreted, analysed and framed at three levels: individual (actors), organisational (micro), and ecosystem.

This chapter has the purpose to overcome some limitations faced in the in the first cases analysis, such as the lack of the key stakeholders' point of view and confrontation with other designers and consultants' experiences when implementing design support projects. The two projects, which the researcher did not join, were selected in collaboration with a Brazilian non-profit private entity. In addition, the limitations of the map of perceived businesses conditions and attitudes, the outcome of the prior cases analysis (Chapter 6), and the Acklin's indicators use were investigated in depth.

Keywords: Design innovation; MSMEs; barriers; drivers; design support

Methodology[50]

This research uses an inductive reasoning, starting from empirical cases to identify the integration of design's problematic in the context of design support[51] programmes when beneficiaries are generally MSMEs and have little or no design experience.

Two research strategies were combined: case study (Eisenhardt, 1989; Stake, 2000; Yin, 1994) and grounded theory (Glaser and Strauss, 1967). The case study is indicated when a contemporary phenomenon is inquired in a real context where the boundaries between the context and the phenomenon are not clearly defined (Yin, 1994). It allows diverse research phases interaction throughout the research process, which enables a better update of the research design according to the discoveries about the phenomenon and the needs found out throughout the research process (Eisenhardt, 1989). The grounded theory approach enables to evidence the meanings from empirical data (Glaser and Strauss, 1967).

The methods' triangulation was used, including semi-structured interviews (addressed to key stakeholders' representatives who take part in the design policy-making processes and implementation, such as policy-makers, designers and other consultants, and beneficiaries), in-depth interviews (to get insights on specific topics emerged from the semi-structured interviews), and desk research (data collection and analysis from brochures, projects' documents, websites of projects, institutions and companies).

The design support cases inquired were selected in collaboration with a non-profit private entity which aims at promoting the sustainable and competitive development of the Brazilian small businesses. The selection of the institution took into account the role and purpose of the non-profit entity that supports design introduction in MSMEs, as well as its relevance in the design support practices in Brazil. The projects were chosen considering polar types (Eisenhardt, 1989; Glaser and Strauss, 1967).

Polar types (Eisenhardt, 1989; Glaser and Strauss, 1967) were considered in order to favour theory extension and to contribute to filling in theoretical gaps. One project in a design-intensive industry[52] and another in a non-design

[50] This topic contains text fragments from the paper 'Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support' (Fonseca Braga & Zurlo, 2018). It was originally presented at DRS2018 Conference: Catalyst, held at University of Limerick, Ireland, 25-28 June 2018. An initial version of the paper was included in the Proceedings of the event. This is one part of the reviewed version of the paper with more detailed information on the adopted methodology, and the further development and illustration of the model of the interpretative framework for barriers and drivers to introducing design innovation at three levels, which was developed after the first version publication.

[51] "Design support programmes are a policy instrument for improving the use of design and can comprise of one-to-one mentoring ranging from light-touch to more specialised interventions, as well as subsidies, tax credits and export schemes." (Whicher, Swiatek, Cawood, p. 14, 2015) In the Brazilian case, design support is defined, developed and managed mainly by non-profit private entities. These entities are funded through a Brazilian Government's tax paid by formal companies (private firms).

[52] Industries in which design plays an essential role to develop outstanding products and services, considering the definition used by Verganti (2003, p. 35) who includes furniture, lighting, kitchenware, and small appliance as examples of this typology of industry.

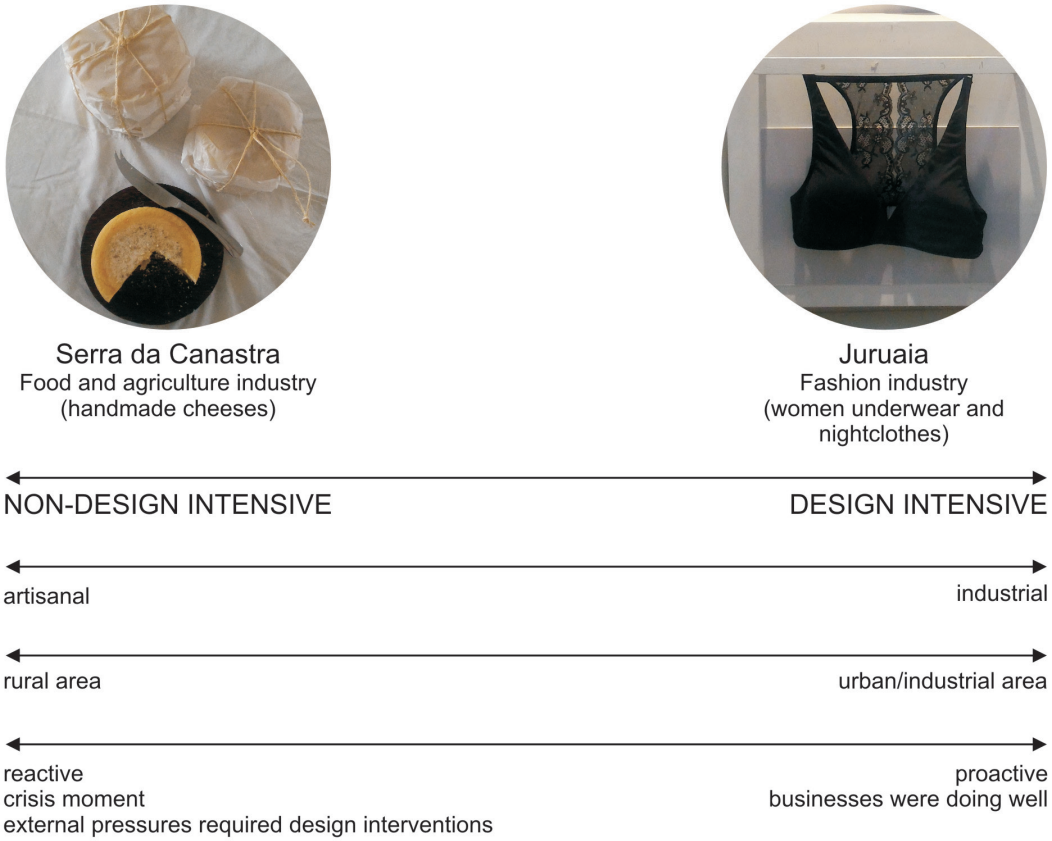


Figure 36: Polar types cases

intensive industry were selected. Other opposite characteristics were considered (see Figure 36).

Two in-person meetings with policy-makers (managers at the non-profit entity) were done in order to select the projects to be studied. The selection of the projects followed the criteria below:

- Successful projects according to the policy-makers who were in charge of them.
- To look at the integration of design into MSMEs through design support programmes or projects considering polar types. Then, a project that focused on an industry that is design-intensive (Verganti, 2003; this terminology is described in the glossary) and another, where the industry is not design-intensive, were selected. Gemser and Leenders (2001) emphasise the importance of design strategy in firms in industries that are design-oriented and in industries that are not design-oriented, noticing that major differences in design benefits were found out in industries that are not design-oriented. Thus, it is possible to recognise different design potentials according to the industry the firm serves but the relevance of the design strategy is critical in both cases (see for instance Cooper et al., 2016; Gemser & Leenders, 2001; Roy & Riedel, 1997).
- Recent projects (from 2010) which were implemented and ended in practice.
- The access to representatives of key stakeholders (policy-makers, consultants,

designers, and beneficiaries) that joined the design support programme's projects.

Two projects in Minas Gerais were selected following the aforementioned criteria:

- P1: Cheese from Canastra – from the food and agriculture industry (non-design intensive industry),
- P2: Lingerie cluster in Juruaia – from the fashion industry, specifically composed of manufacturers of panties and bras (design-intensive).

Figure 37 shows the locations were the selected projects were held, and Table 12 shows the projects' characteristics.

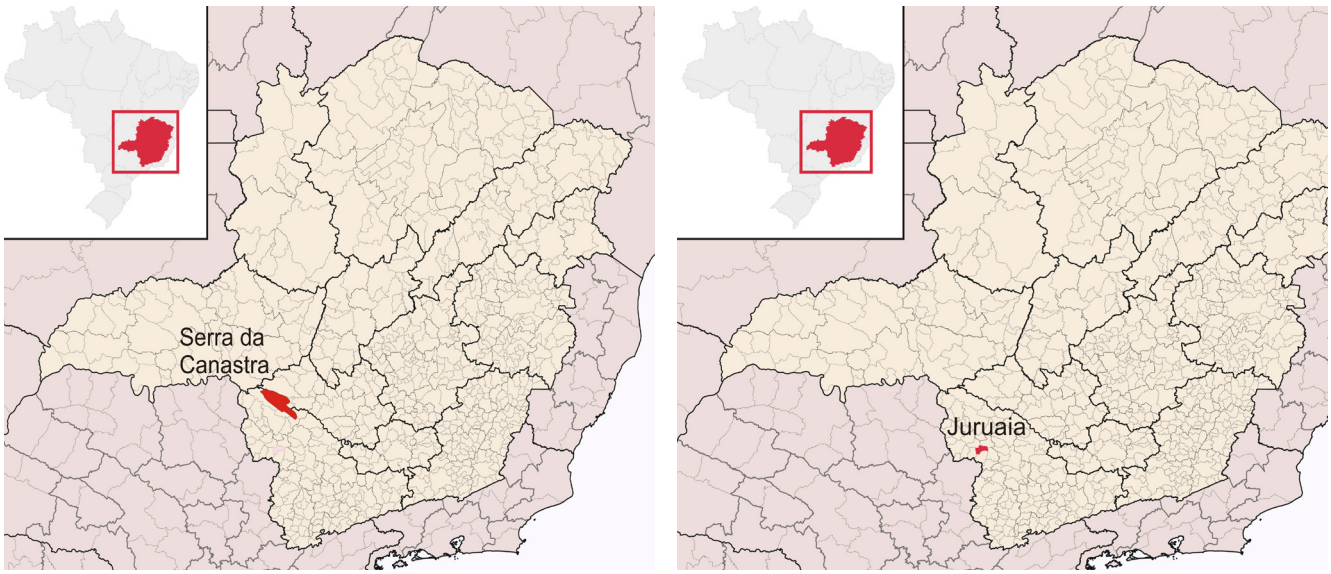


Figure 37: Serra da Canastra and Juruaia

The methods used in this second group of cases were:

- Semi-structured and in-depth[53] interviews addressed to the representatives of key stakeholders.
- Desk research was used to analyse materials of the projects provided by the non-profit private entity (such as presentations and results of projects), websites, brochures and project videos posted on the web.
- Questionnaires aimed at validating and inquiring in-depth one specific outcome of the first cases analysis (the map of perceived businesses conditions and attitudes) were addressed to designers and consultants.
- Literature review focused on drivers and barriers to the integration of design into MSMEs.

[53] when it was needed to clarify some important issue that emerged during the semi-structured interview

Table 12: Projects' characteristics

Project and context	Description	Activities	Purposes and Funding
P1 Canastra region 800 cheese producers 40 certified (Marzano, 2015) Cheese from Canastra 200 y. tradition Made of raw milk 2008 - Production practices were considered as part of the Brazilian cultural and immaterial heritage by the Instituto do Patrimônio Histórico e Artístico Nacional (IPHAN) 2015 - 2nd ranking Mondial du Fromage et des Produits Laitières (Tours, France)	Industry: food and agriculture Location: Serra da Canastra (Minas Gerais Federation, Brazil) MSMEs (beneficiaries): This design support initiative counted on 30 to 45 beneficiaries from 2013 to 2016. This inquiry focused on 19 beneficiaries of design interventions that included a major range of activities proposed. Projects studied were carried out from 2013 to 2016	Cultural heritage identification and registration (verbal language, community behaviour, territory features, institutional videos) Brand, tags and package design (for a consortium of 6 businesses that shared the same brand, and for other individual businesses). Research of best practices in loco.	To develop the territorial brand, as well as individual producers brands. To support making products suitable for quality and compulsory certifications regulations, promoting a better communication of product origin and values. The non-profit entity funds from 60% to 80% of the design interventions and the beneficiaries pay (refund the institution) from 40% to 20% of the total economic value.
P2 3rd Brazilian Lingerie Cluster 160 manufacturers Focus on wholesale B2B (Guedes, 2014)	Industry: fashion Location: Juruaia (Minas Gerais Federation, Brazil) MSMEs (beneficiaries): This project started with 25 beneficiaries but 15 left the project before its conclusion because of their own (from the entrepreneurs) investment required to open their store. Projects studied were carried out from 2010 to 2014	Technical drawing lingerie modeling workshop. Research of best practices in loco. Mentoring, coaching. Development of brand identities, tags, packages design, and other communication materials. Store design for the consortium of firms (same store and brand shared by a group of entrepreneurs). Lingerie collection design	To enlarge the beneficiaries market share introducing the products into the B2C market through a new retail store, to improve the quality and update the industry trends. The non-profit entity funds from 70% to 80% of the design interventions and the beneficiaries pay (refund the institution) from 30% to 20% of the total economic value.

All interviews were done in the first language of the interviewee. They were recorded and transcribed. Fragments of the interviewees' speech referring to barriers and drivers, clearly connected to the research issues, were translated. Statements that appeared to have personal nature were excluded. A report including the subjects of interest for this research was elaborated and sent to the interviewees in order to validate the information.

Eight representatives of key stakeholders were interviewed (policy-makers, designers and other consultants, and beneficiaries). The interviews were carried out between October 2016 and March 2018. The duration ranged from forty minutes to one hour and thirty minutes.

Table 13 shows the interviews carried out between October 2016 and March 2018.

Table 13: Interviews and interviewees

Interviewee	**Project**	**Position (at the time of the interview)**	**Background**		**Duration**
Policy-maker A	P1	Project coordinator	Agribusiness Management, Economics	Video call	40min
Policy-maker B	P1	Project manager	Project Management, Tourism	Video call	1h10min
Policy-maker C	P2	Project manager	Management, Agriculture	Video call	1h30min
Consultant A	P1 P2	Consultant	Product Design	E-mail and Video call	55min
Consultant B	P1	Consultant	Graphic Design	E-mail (twice)	
Consultant C	P1	Consultant	Business Management	E-mail (twice)	
Beneficiary A	P1	Beneficiary (Cheese Association Representative, Cheese producer)	Project Management, Public Management	Video call	1h20min
Beneficiary B	P2	Beneficiary	Entrepreneur	Video call	40 min

The analysis of the interviews proceeded in convergence with grounded theory reasoning principle of elicitation, first attributing codes to the texts fragments selected from interviews, summarizing them in short phrases or themes. Second, these themes were clustered according to the similarity between them through cross-reference. Finally, they were confronted with the existing literature enabling to distinguish between the new barriers and drivers, and the ones that were already identified in prior research (Tables 14, 15, 16, 17, 18, 19).

Three levels of analysis of drivers and barriers were set out as follows:

- The actors level: policy-makers, designers and consultants, and beneficiaries as individuals;

- The organisational level: the micro level regarding organisational structure, culture, and design process in the firm;
- The ecosystem level: the industry, economic, political, and educational environment, as well as the geography.

These three levels of analysis contribute to addressing design support programmes complexity, considering the context in which the programmes took place and diverse influences that can affect programmes; in other words, the context in which the design support initiative is embedded.

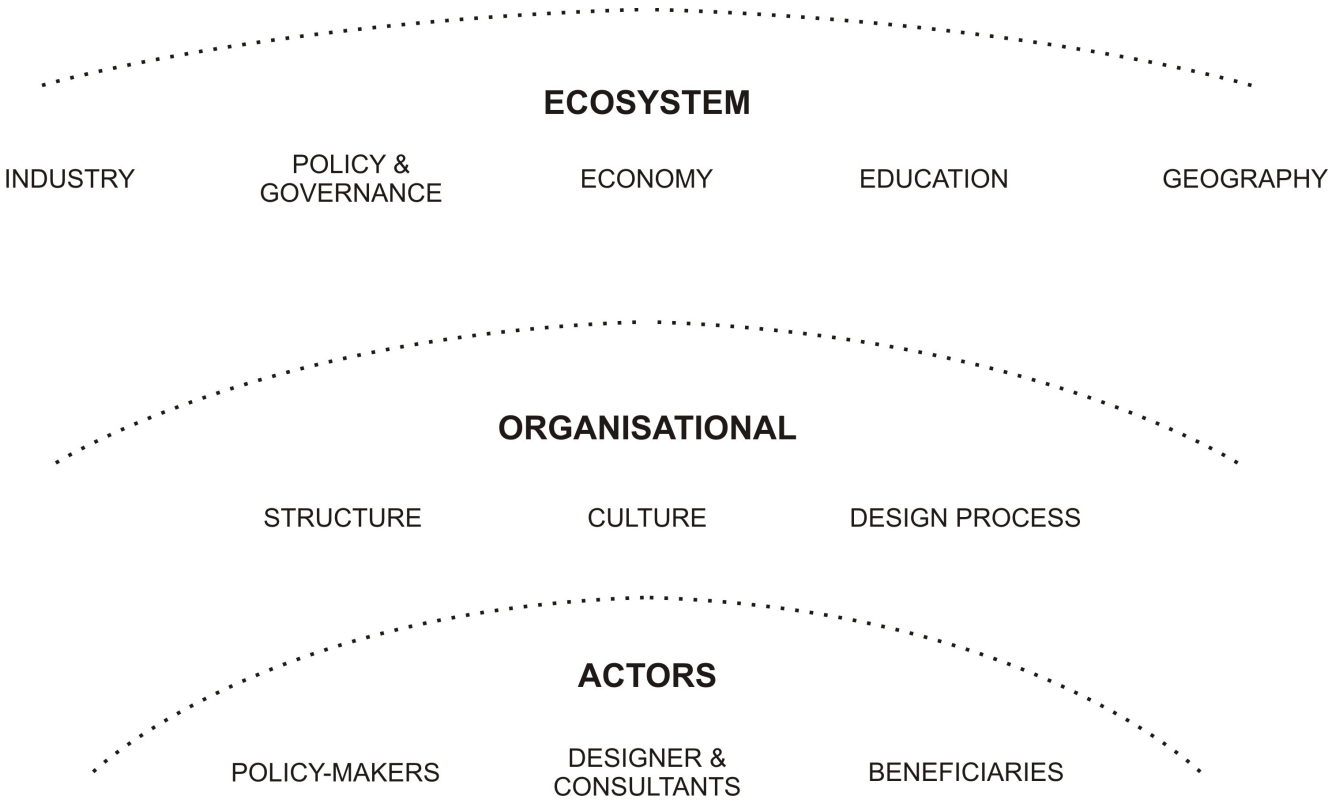


Figure 38: An interpretative framework for barriers and drivers to design innovation at three levels

The introduction or integration of design innovation into MSMEs is also studied in the literature with other terminologies, such as: to absorb design management capabilities, to learn to use design, to adopt design, to innovate by design, and to bring design into business strategy. The main fields that deal with the issue identified in this research were: Design management, Strategic design, Product innovation, Design capabilities, Knowledge management, Design thinking, Creativity, Innovation, and Organisational studies. The barriers to design innovation found in the literature came from these fields at the actors and at the organisational level. At the ecosystem level, they were additionally recognised in the Industrial policy, Innovation policy, Design policy, Economics, and Finance field.

Barriers to introducing design innovation into MSMEs[54]

Appendix A of this thesis evidences the development of the elicitation process, demonstrating the selection of interviewees' speech fragments, their translation, their synthesis or attribution of codes and, finally, the literature check or confrontation. The barriers that were not found in prior research concerning design innovation in MSMEs were considered new. Some interviewees' speeches provided insights for more than one barrier and level according to the interpretation and analysis held. The synthesis of the results is reported in this section.

Tables 14, 15 and 16 show the barriers to design innovation found in the literature review, and others spontaneously[55] cited by the respondents during the interviews. These barriers were framed at three levels: actors (Table 14), organisational (Table 15), and ecosystem (Table 16). Most barriers quoted were identified in prior research, while others, that were highlighted, were not quoted before related to design innovation in MSMEs.

[54] The first version of this topic was published as 'Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support' (Fonseca Braga & Zurlo, 2018). It was originally presented at DRS2018 Conference: Catalyst, held at University of Limerick, Ireland, 25-28 June 2018. An initial version of the paper was included in the Proceedings of the event. This is one part of the reviewed version of the paper, improved with the contributions from the Conference, and further literature review, particularly addressing the ecosystem level.

[55] The interviewees did not have access to the barriers found in literature either before nor during the interview.

Table 14: Barriers to design innovation at the actors level

LEVEL		BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	Reluctance to delegate authority or decision-making to others	Dyer and Handler (1994) cited in Massa and Testa (2008)
		■ Over-involvement in operational-level decisions and activities	Bruce, Cooper and Vazquez (1999) Nunes (2014) Raulik-Murphy and Cawood (2009b)
		■ Not knowing where to turn for specialised help	Arquilla, Maffei, Mortati and Villari (2015) Cox (2005) European Commission (2009)
		▲■ Difficulty in trusting due to regional culture, tradition*	None
		Lack of long-term strategy vision	Cawood (1997)
		▲▲●■ 'Follow the crowd' attitude (join actions because others are joining)	Sternberg (2006, 2012)
		■ Risk aversion	Cox (2005) Sternberg (2006, 2012)
		■ Conventional thinking	Sternberg (2006, 2012)
		▲● Lack of design awareness	Bitard and Basset (2008) Choi (2009) Cox (2005) European Commission (2009) Filson and Lewis (2000) Millward and Lewis (2005)
		●■ Passive attitude towards design with lack of cooperation/engagement with designers	Fonseca Braga (2017b) Nunes (2013)
		● Delay in delivering needed activities - not related to the availability of economic resources	None
		●■ Lack of experience	Arquilla et al. (2015) Bruce et al. (1999) Cox (2005) Schneider, Gibet, Colomb, Orazem, Loesch, Kasparyan and Salminen (2015)
		●●■ Little understanding of product development/design	Arquilla et al. (2015) Bitard and Basset (2008) Filson and Lewis (2000) Millward and Lewis (2005)
		Not knowing product development and manufacturing costs	Filson and Lewis (2000)
	DESIGNERS & CONSULTANTS	▲ Lack of ability to communicate design knowledge to company members	Brown (2009)
		▲ Lack of experience, practice-based know-how	D'Ippolito (2014)
		■ Lack of experience, know-how in the specific design field, market	None
		Lack business knowledge and other skills necessary to be better integrated into the business and innovation community	European Commission (2009)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

Table 14: Barriers to design innovation at the actors level

POLICY-MAKERS	● Lack of background in design management	Cox (2005) Maffei, Bianchini and Mortati (2014b)
	● Lack of design awareness and familiarity with design	Amir (2002) Bitard and Basset (2008) Maffei, Bianchini and Mortati (2014b) Margolin (2007) McNabola et al. (2013) Raulik-Murphy (2010) Thenint (2008)
	Passive attitude towards design initiatives and collaboration	Nunes (2013) Thenint (2008)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

*Although there are studies emphasising the role of trust in some innovation ecosystems, research pointing out the lack of trust (motivated by regional culture) as an obstacle to design innovation was not found.

The difficulty in trusting and the delay in delivering required activities that would be carried out by the company in order to accomplish a design process phase were pointed out by respondents and identified as new barriers.

The difficulty in trusting means that projects beneficiaries show reluctance to engage with consultants or to contribute to them mainly at first attempts of the project when they have never met each other before. Interviewees reasoned this attitude due to the culture and tradition found in Minas Gerais Federation. This is evidenced by the following speeches:

> "*… talking specifically about the cheese regions… the mineiro (people from Minas Gerais Federation) is distrustful by nature; imagine a mineiro almost 10 km from another mineiro, he becomes paranoid. Then, it started to create several difficulties…*" Beneficiary A

> "*… because the small family producer is a very traditional man; in the beginning, he feels some difficulty in seeing the advantages to investing in something related to design. Then, there is an initial barrier that is really cultural […] it is hard to get the information*" Policy-maker A

Minas Gerais Federation's history is characterised by the gold and minerals exploitation by foreign people (from São Paulo and Bahia Federation) throughout the 17th and 18th centuries. This situation led locals to develop a distrust of foreigners or of people they were not familiar with since outsiders were seen as nomads who were there mainly to get advantages, not being concerned with future relationships with the local community. This attitude is still related to the 'mineiro' behaviour, and seems alive in more isolated communities in the countryside.

The delay in deliveries impacts design implementation and results (e.g. when tests cannot be carried out, problems are identified later, impacting time to market, and adding design activities to correct them). The lack of a designer's experience in the specific market field was pointed out by a beneficiary as an obstacle to successful product design.

Most barriers at the actors level were recognised by interviewees that collaborate with each other, having face-to-face contact throughout projects. They have been addressed in several fields, such as innovation, creativity, organisational studies, and design policy. The lack of design awareness has been recognised as a critical barrier (Choi, 2009; Raulik-Murphy,

2010), especially regarding government and policy-makers that play a definitive role in policies development, funding and, hence, implementation (see for instance Amir, 2002; Margolin, 2007; Nunes, 2013; Raulik-Murphy, 2010; Thenint, 2008).

One interviewee commented on the policy-makers' attitude to design training as a service that can be done for free regarding the non-profit private entity's design support process and system. This evidences that policy-makers do not recognise design benefits and see the designers' job of transferring expertise as an easy activity that does not deserve payment, is not time demanding or is easily accessed or developed anyway. Another issue is that policy-makers can consider that they already know everything about design without 'making' design or having a background in design, which narrows the use of design within programmes and projects that are generally crafted by them.

The lack of a full understanding of design was also evidenced in policy-maker C's observation. Design is naturally seen within the technology branch, has a fragmented rather than a systemic approach, and its value is in the results rather than in its methods and processes:

> "*The non-profit-private entity has a project focused on technology… we use a lot this tool because it is a resource that is cheap for the entrepreneur, he invests 20% of the project value. […] So this [voucher scheme] eased very much the introduction of design's topic, not just design, but other tools we use, product development, modelling. Everything was done with this technology tool because its focus is to transform companies' products, to bring innovation to the businesses. Then, to create new products, to improve what exists, all these aspects are focused on development, technology, and product innovation*." Policy-maker C

The concern of the policy-maker was to be suited to the institutional structure rather than harnessing design as much as possible to improve businesses capabilities. Design understanding is constrained to fit in the technology branch and limited to tangible outcomes, such as product design, that are seen as the appropriate response to innovation processes. Moreover, product development and other assets that compose product design activities are seen as fragmented and separated activities, which do not evidence what is the actual meaning that the policy-maker attributes to design.

This reinforces the top-down approach carried out by non-profit private entities in charge of design support, as well as its similarity to NPM approach criticisms (see Julier, 2017). People working at these organisations are enculturated to follow the rules, to achieve the goals, to measure their outcomes fitting in the system without questioning or understanding the value, the rationales, and relations that these design actions can offer or not. Then, design becomes one more fashion word in this kind of design support initiative.

This boundary is comprehensive considering the background of most policy-makers that does not include some design content or experience in practice.

Table 15: Barriers to design innovation at the organisational level

LEVEL		BARRIER	PRIOR RESEARCH
ORGANISATIONAL	STRUCTURE	▲▲▲ Limited resources	Acklin (2013) Larsen and Lewis (2007)
		●●■ Limited in-house capabilities for conducting innovation processes	Acklin (2013) Bruce, Cooper and Vazquez (1999) Cox (2005) Filson and Lewis (2000)
		●●■ Underdeveloped education and training	Larsen and Lewis (2007)
		Lack of management skills	Altenburg and Meyer-Stamer (1999) Larsen and Lewis (2007) Nunes (2013)
		Lack of design management skills	European Commission (2013)
		Lack of manufacturing skills	Larsen and Lewis (2007) Nunes (2013)
	CULTURE	Use of design support to address immediate needs during a crisis	Cawood (1997) Deserti and Rizzo (2014) Schneider (2006)
		Cost-driven approach	Millward and Lewis (2005)
		● Lack of top management support	Cawood (1997) Filson and Lewis (2000) Larsen and Lewis (2007) Schneider et al. (2015)
		Lack of long-term strategy vision	Cawood (1997) Filson and Lewis (2000)
		Weak external contacts	Nunes (2013) Srinivasan, Lilian, and Rangaswamy (2002) cited in Massa and Testa (2008)
		Influence of a dominant owner/manager	Bruce et al. (1999) Millward and Lewis (2005)
		▲ Lack of trust to build up partnerships	Larsen and Lewis (2007) Schneider (2006)
	DESIGN PROCESS	No clear new product development/design strategy	Filson and Lewis (2000)
		Domestic market orientation	Er (1997, 2002) Larsen and Lewis (2007)
		Lack of competitors and suppliers knowledge	Larsen and Lewis (2007)
		Lack of market launch plan and resource with stage gates	Larsen and Lewis (2007)
		Lack of early superior/differentiated product definition	Larsen and Lewis (2007)
		■ Lack of customer/users orientation	Larsen and Lewis (2007)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

Few organisational barriers were cited by participants during the interview. Policy-makers identify the lack of economic resources and the lack of trust among entrepreneurs. This second one hinders collaboration among them. Designers and beneficiary recognise the need to have in-house capabilities, education, and training. The lack of top management (generally the owner in MSMEs) support to collaborate towards design support projects is pointed out by a designer. In addition, the lack of users orientation was identified in the speech of a beneficiary.

The barriers quoted by respondents can be understood as the ones that they perceive as having a clear impact on design introduction through design support initiatives.

Even though the other barriers might influence the introduction of design into MSMEs, they were not spontaneously remembered. A possible reason for this can be the usual approach to crafting projects that do not include a prior design audit or a strategic assessment before defining design support strategies and projects goals. Hence, generally, designers and consultants have the role of developing and implementing specific new products and communication elements that were previously established in the design support programme or project by policy-makers.

Table 16: Barriers to design innovation at the ecosystem level

LEVEL		BARRIER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	Nature of international competitive advantage based on low cost and natural resources	Raulik-Murphy (2010) Schwab et al. (2017)
		▲ Lack of cooperation between businesses	Nunes (2013)
		Informality	OECD (2005)
		■ Illegality – shadow economy products/firms push product prices down, discouraging companies to use design	None
		Difficulty in finding appropriate support with respect to design	Arquilla et al. (2015) Cox (2005)
		Technology obtained exclusively from licensing and imitating	Raulik-Murphy (2010) Schwab et al. (2017)
		Imitation strategy context	Altenburg and Meyer-Stamer (1999)
		Inward-focused (dedicated to domestic market and local content)	Araújo (2016) Arnold (2016)
		Few design firms considering the size of the national population	CBD, Apex-Brasil, MDIC (2014)
	POLICY & GOVERNANCE	Instability (macro, political system)	OECD (2005) Raulik-Murphy (2010) Schwab et al. (2017)
		Government procurement based on price	Raulik-Murphy (2010) Schwab et al. (2017)
		Lack of autonomy of national design centres	Choi (2009) Choi et al. (2010)
		● No clear strategy to attend to a businesses/design cluster demand/need - HOW	Maffei, Bianchini and Mortati (2014b)
		●■ One-shot projects without follow-ups or long run strategies	Mazzucato and Penna (2015) Nunes (2013) Raulik-Murphy, Cawood, Larsen and Lewis (2009a) Patrocínio (2013)
		■ Top-down policies	None
		Lack of collaboration among key stakeholders (including public and private sectors)	Nunes (2013)
		■ Lack of a viability analysis of design strategy	Brown (2008) IDEO (2011, 2014) IDEO.org (n.d., 2015)
		● Inefficient monitoring, insufficient assessment, complicated and immature evaluation process	Choi (2009)
		Insufficient funding to design programmes	Choi (2009) Raulik-Murphy (2010)
		Bureaucracies related to intellectual property procedures	Larsen and Lewis (2007) Massa and Testa (2008)
		▲●■ Bureaucracies related to local authorities/regulatory issues	Acklin (2013) Cox (2005)
		▲▲ Bureaucracy limitations to select/contract consultants	None
		● Bureaucracy – slow decision-making, investments focused on standards and regulations rather than actual solutions, lengthy paperwork to access government funds, hurdles for partnership agreements (mainly referred to the time required to fulfill government standard procedures)	Nunes (2013) Raulik-Murphy (2010)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

Table 16: Barriers to design innovation at the ecosystem level

LEVEL		BARRIER	PRIOR RESEARCH
ECOSYSTEM	ECONOMY	Lack of credit availability	Bell (2015) Larsen and Lewis (2007)
		Low exposure to foreign competition	Araújo (2016) Arnold (2016) Er (1997, 2002)
		Industry heavily protected from international competition	Araújo (2016) Arnold (2016) Er (1997, 2002)
		Unemployment	Altenburg and Meyer-Stamer (1999)
		Few jobs in the design sector	CBD, Apex-Brasil, MDIC (2014)
		Unsophisticated customer demand, choice based on the lowest price	Raulik-Murphy (2010) Schwab et al. (2017)
	EDUCATION	Lack of skills, education to move towards innovation	Altenburg and Meyer-Stamer (1999) OECD (2014)
		● Under-skilled design agencies and designers	Choi (2009)
		Few design graduates considering the national population size	CBD, Apex-Brasil, MDIC (2014)
		■ Lack of end-users' education to recognise design value (design awareness)	Swann (2010)
		Management and business aspects often insufficiently integrated into design education, and design aspects into business education, engineering, and architecture	European Commission (2009)
	GEOGRAPHY	■ Distribution of design services	CBD, Apex-Brasil, MDIC (2014) Choi (2009) Design Council (2015)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

The illegality was the new barrier recognised in the industry. The illegality in the market (shadow economy[56] products) is recognised in less advanced economies context. In this case, it represents the fact that some producers sell their products without quality requirements and compulsory certifications in the market as if they were made in a region where they were not, communicating this misleading information to customers through package and brand. These products are generally cheaper than original and quality-certified products, thereby affecting the competition in the retail market as the customer is not able to distinguish them.

Informality[57] (OECD, 2005) is also a recognised barrier to innovation in less advanced economies. The difference between illegality and informality is that illegality represents shadow economy products which can take place within a registered business (within the official structures of national government legal systems), and informal economies involve non-registered businesses beyond informal practices.

The factor considered by the interviewee to address illegality as a barrier was diverse from informality in the Oslo Manual (OECD, 2005). The Oslo Manual's informality (OECD, 2005) concerns the informal practices impacts on building capabilities towards innovation. The interviewee considered the effects of 'imitation' and 'fake information' that make the market orientation price-based in contrast with a quality-based market, not evidencing a concern with building capabilities through a systematic approach to innovation but with low products prices. The beneficiary reasoning regards immediate results more than impacts or long-term benefits. Moreover, illegality has not been clearly addressed in design studies.

On the other hand, informal economies can be interpreted as a catalyst in defined contexts, such as China, where innovation arises from copying and adapting mainstream products in a more fluid approach to intellectual property (Julier, 2017). Innovation activities are undertaken mostly in the informal, non-registered part of the economy (Julier, 2017). Informality, in this sense, can provide conditions for an agile and lean pace of innovation processes in that context.

The lack of cooperation is when beneficiaries see the other beneficiaries as competitors that can 'steal their ideas or know-how' more than allies to achieve a goal. In the case of the studied design support initiatives, the cooperation is not characterized by interdependence and mutual influence[58] among firms in the same industry, since the access to external resources, such as a design consultancy, is assured when the businesses formally join the project, which means that one company will access the competencies proposed in the project regardless

[56] Illegal activities that can take place within the formal economy, such as cash-in-hand transactions not declared to tax authorities (Julier, 2017, p.123).

[57] Structures outside the official national governmental legal system involving non-registered businesses who do not pay taxes (Julier, 2017, p. 123).

[58] i.e. Cantù (2013) explains that these two factors are present in different types of network, including interpersonal ones.

of other companies' attitudes, conditions, and commitment. This cannot be seen as a network because the motivation to join other businesses is mainly based on sharing the investment costs and on the voucher scheme to exploit a resource, not requiring trust (among businesses), commitment or skills from beneficiaries.

Thus, the kind of collaboration identified means 'to help one another' or to learn in a collective process without prior relationships fostered by a bottom-up approach to business needs and to strategies formulation (to exploit resources). In this sense, the way design support projects are generally designed (top-down process), as well as how businesses join projects, do not favour cooperation or collaboration.

The top-down policies barrier means that, when beneficiaries do not participate in the earlier development of the design support initiative, strategies can be inappropriate to current businesses know-how, interests, and goals. Although the proposed design strategy seems compelling at a first glance, problems arise after implementation and project conclusion. After projects closure, companies solve emerging problems using their own experience and know-how, gradually abandoning design strategies proposed and implemented in the absence of (1) further follow-ups, and (2) medium- and long-term design strategy sustainability and viability. Therefore, a post-evaluation process of the initiative to share the learnings of the diverse actors is required in order to learn from the previous experience and to better craft future projects, building the programme legacy.

The extensive regulations to contract consultants make the process slower compared to hiring the designer or consultant in the market situation. This is also related to the top-down approach to policy-making. The consultant has to fit in several requirements that are not related to their design background, reputation or competence to attain the projects' goals. Another issue is that some of these regulations' requirements counteract the idea of the design policy role (including design support) to balance or stimulate design supply and demand, making the conditions of private studios not suitable to hire them regardless of their competencies and reputation. Even though bureaucracy has been recognised as a constraint (Raulik-Murphy, 2010), the bureaucracy regarding standards and regulations specifically to hire consultants and designers to implement design projects in businesses through design support programmes in Brazil has not been addressed, and is considered crucial concerning the importance of designers' experience, practice-based know-how, and good reputation to achieve competitiveness advantage (see for instance Gemser & Leenders, 2001; D'Ippolito, 2014; Schneider et al., 2015; Whicher et al., 2013).

Most ecosystem barriers were not cited by respondents. Some possible reasons might be that people get used to the national conditions by just adapting to them and seeing things within the national boundaries context. Another can be the top-down policy approach that discourages taking actions and trying to change a system that lacks meritocracy. The lack of education and skills towards innovation can also lead to hiding the weaknesses at the ecosystem level (how can one recognise something in which one has no background or experience?). An additional evidence is the time required to formally address laws that regulate the designer profession in Brazil, an attempt that comes from 1980 (CBD, Apex-Brasil, MDIC, 2014) and is still being carried out with limited content being discussed regarding the global expansion and importance of design at organisational and national level.

Drivers to introducing design innovation into MSMEs

Appendix B of this thesis evidences the development of the elicitation process, illustrating the selection of interviewees' speech fragments, their translation, synthesis or attribution of codes, and, finally the literature confrontation. The drivers that were not found in prior research regarding design innovation in MSMEs were considered new. Some interviewees' speeches provided insights for more than one driver and level according to the interpretation and analysis held. The synthesis of the results is reported in this section.

Table 17: Drivers to design innovation at the actors' level

LEVEL		DRIVER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	Persistence	Poirier, Schwartz, Eddy, Berman, Chacour, Wynne, Cavanaugh, Martin, Byrne, and Sanberg (2017) Sternberg (2006, 2012)
		Dissatisfaction with what exists	Poirier et al. (2017)
		Curiosity	Poirier et al. (2017)
		Risk-taking	Poirier et al. (2017) Sternberg (2006, 2012)
		High level of trust between entrepreneur and designer	Mortati and Cruickshank (2011) Schneider (2006)
		Being a visionary (ability to recognise worth future directions)	Poirier et al. (2017) Sternberg (2006, 2012)
		Open-mindedness (receptive to new information and ideas)	Poirier et al. (2017)
		▲●■■ Design awareness	Arquilla, Maffei, Mortati and Villari (2015) Bitard and Basset (2008) Cox (2005) Choi (2009) European Commission (2013) Larsen and Lewis (2007) Millward and Lewis (2005)
		Cross-fertilization (a broad knowledge in diverse areas)	Poirier et al. (2017)
		▲■■ Internal motivation/willingness throughout projects	Acklin (2013) Poirier et al. (2017) Sternberg (2006, 2012)
		Timing (to recognise when the environment is ripe for innovation)	Poirier et al. (2017)
		▲ Proactivity	None
	DESIGNERS & CONSULTANTS	▲■ Experience, practice-based know-how, good reputation	Gemser and Leenders (2001) D'Ippolito (2014)
		▲▲●■ Good communication (didactics, use of empathy)	Brown (2009)
		Cross-fertilization (a broad knowledge in diverse areas)	Poirier et al. (2017)
	POLICY-MAKERS	● Having a design management background	Cox (2005) Maffei, Bianchini and Mortati (2014b)
		Design awareness and familiarity with design	Amir (2002) Bitard and Basset (2008) Margolin (2007) McNabola et al. (2013) Raulik-Murphy (2010) Thenint (2008)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

Six drivers were quoted regarding the actors level.

Design awareness, internal motivation/willingness, and proactivity related to beneficiaries.

Entrepreneurs' design awareness was the most cited among diverse stakeholders, and concerns the perception, feeling of, and sensitivity to the need for design and to its benefits. According to the consultant A:

> "*… the great facilitator is the recognition that he needs… this market story and the dissemination of information, as it happens today, bring them the certainty that they need to invest in it […] they know the need for it*". Consultant A

Beneficiary B also states:

> "*… I believe in the importance of design, because design studies behaviour, it has market perception about customers, needs, demands. I invest and I would invest much more… in design, because I think that a great experience for us was that: the importance of having an active professional in the business field*." Beneficiary B

The internal motivation/willingness was the second most perceived driver referring to beneficiaries. It means that beneficiaries show desire, wish, will, willingness, motivation towards design, the will to make changes and a belief in those proposed changes. Examples of speeches that evidence this driver were:

> "*What most facilitates any project is people wanting to make the transformation*" Policy-maker C

> "*I'm just going to get into what I believe because then I know that I'm going to dedicate myself*." Beneficiary B

Proactivity means a proactive attitude towards change, to make things happen, to get things done throughout projects. The following quotation describes this meaning as perceived by Policy-maker C:

> "*… what we propose to them, they do […] there are entrepreneurs who are very enthusiastic, very dynamic, who go ahead, who are active. Nowadays, they make things happen regardless of the supporting entity…*" Policy-maker C

Proactivity differentiates from internal motivation/willingness by the actions that are carried out, getting things well done rather than just demonstrating the will to do something.

Drivers cited with respect to designers and consultants were: the use of good communication (didactics, use of empathy) and experience, practice-based know-how, good reputation.

The most recognised driver among diverse stakeholders was good communication. Good communication concerns the language, words, and treatment used to deal with entrepreneurs. The discourses that evidence this driver were:

> "*… we have to be careful, to use simpler and more suitable words*" (about talking to beneficiaries in an accessible way) Consultant A

> "*… when she [designer] starts telling him… he [beneficiary, producer] starts, according to what she says, saying 'no, this is important, I want [other design intervention] too' […] From this conversation, he [beneficiary, producer] can see other things*" Policy-maker B

> "*… you [consultant] have to guide, to bring the information in an accessible [spoon-fed] way in order to make them [beneficiaries, producers] grasp the information and get things done […] care has to be taken, it is exactly this, this explanation of the information to these families [producers' families] […] it helps open or at least get out of the comfort-zone*" Beneficiary A

> "*There is a consultant [...] she is worshiped because she achieves outcomes [...] she knows how to transfer [teach, transfer knowledge], she has that ability. The professionals that we hire, we truly take the treatment into account… how they [consultants] deal with businessmen. This matters a lot*" Policy-maker C

Experience, practice-based know-how, and good reputation are the aspects that compose the second driver recognised by beneficiaries

and policy-makers regarding designers and consultants, which means selecting professionals according to their competencies built throughout a recognised professional history. This professional is able (1) to provide examples that make the understanding and the implementation of design easier to non-experts, and (2) to promote the openness to learning of entrepreneurs from the earlier phases of the project, inspiring trust even if entrepreneurs and professionals have not worked together before.

Having a design management background or design experience, which means having a technical know-how to manage/coordinate design projects, knowing businesses' nature and dynamics, was the driver regarding policy-makers. Consultant A described this driver:

> "*… this perception, this sensitivity to how to ... act, how to organize things, technically. In the case of P2, for example, that was Policy-maker C, Policy-maker C had a more accurate notion of business… about what the work was, so he/she contributed in a very nice manner to the work*" Consultant A

The drivers that were not cited by the interviewees are also important traits to foster design innovation and indicate the sort of features that should be cultivated. Many entrepreneurs' natural resistance to change (they are generally not used to dealing with design) can lead to not perceiving these traits in the reality of these projects. The barriers concerning the beneficiaries' traits are more recognised among interviewees than the drivers, suggesting that beneficiaries' traits found in practice are more related to resistance to change than openness to it.

Table 18: Drivers to design innovation at the organisational level

LEVEL		DRIVER	PRIOR RESEARCH
ORGANISATIONAL	STRUCTURE	Scarce bureaucracy	Mintzberg (1992) Sivades and Dwyer (2000) cited in Massa and Testa (2008)
		Great operational expertise	Dahl and Moreau (2002) cited in Massa and Testa (2008)
		Design management skills	European Commission (2013)
		Flexible organisational structures (faster response to changes)	Cawood (1997) Mintzberg (1992)
	CULTURE	● Use of design when the business goes well, anticipating and adapting to changes.	Deserti and Rizzo (2014) Schneider (2006)
		Customer/user-oriented	Larsen and Lewis (2007) Massa and Testa (2008)
		Motivating environments/external motivation	Poirier et al. (2017) Sternberg (2006, 2012)
		▲ Commitment of senior management (top management support, higher executive levels' sensitivity to and familiarity with design)	Bitard and Basset (2008) Cawood (1997) Schneider, Gibet, Colomb, Orazem, Loesch, Kasparyan and Salminen (2015)
		Multi-disciplinary people are close to each other	Poirier et al. (2017)
		● Collaboration among individuals from different backgrounds or multi-disciplinary teams	Bitard and Basset (2008) Larsen and Lewis (2007) Piore & Cardoso (2017) Poirier, et al. (2017)
		Great ability to use external networks	Nooteboom (1994); Rothwell and Dodgson (1994) cited in Massa and Testa (2008)
		Great ability to create alliances	Van Dijk et al. (1997) cited in Massa and Testa, (2008)
		●■ Face-to-face communication	Mintzberg (1992)
		Clannish structures	Sivades and Dwyer (2000) cited in Massa and Testa (2008)
	DESIGN PROCESS	▲● Clear product development/design strategy	Filson and Lewis (2000)
		▲ International market-focused orientation	Er (1997, 2002) Larsen and Lewis (2007)
		Competitors and suppliers updated knowledge	Larsen and Lewis (2007)
		▲● Plan and resource market launch using stage gates process	Larsen and Lewis (2007)
		Early superior/differentiated product definition	Larsen and Lewis (2007)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

Organisational drivers remembered by participants were related to culture and design process. The ones regarding organisational culture were:

The use of design when the business goes well, anticipating and adapting to changes. This means that firms join projects not to face a crisis or urgent problem but when business is going well, especially sales.

The commitment of senior management, which is evidenced through the companies' commitment to carry out proposed project activities. The following speech expresses this driver:

> "*These outstanding companies did the proposed homework*" Policy-maker C

Collaboration among individuals from different backgrounds is related to the relevance of experts from diverse fields and their collaboration among the teamwork. This driver was described as follows by a designer:

> "*… it (the project) was truly 'every jack to his trade'… There was ...the professional who understood the most or was more dedicated to market analysis… the fashion designer with the product issues, the architecture with point of sales design… information carried out by people who know… understanding the market, contributing… to the Consultant X, seeing what was going on, and knowing that the team was made up of people who were contributing*" Consultant A

Face-to-face communication means that in-person meetings and face-to-face contact matter. These moments work to check the strategy and briefing information and shed light on the real need of beneficiaries to designers, contributing to consultants understanding of reasoning related to the organisation's 'way of doing'. According to Beneficiary A:

> "*… this (job) cannot be done as a job done from the office, from the cabinet […] the in-person meeting is fundamental… it is not enough to talk sometimes on the phone, WhatsApp etc. You (consultant) have to be there… face-to-face, explaining the reasons for doing things… this shall demand, for sure, more attention to carry out and to translate what was the inspiration, from where it arose, and why some features were used in order to make the producer understand and get the issue of his/her own identity… this contact [in-person] is fundamental… to know why he/she [beneficiary] does things in a certain way. […] it is not because he/she [beneficiary] wants, it is because he/she learnt… from his family trial and error practice…*" Beneficiary A

Three drivers were remembered in relation to the design process: clear product development/design strategy, international market-focused orientation, plan, and resource market launch using stage gates process.

Clear product development/design strategy refers to accurate, clear, and defined design strategy, opportunities and deliveries to be achieved throughout projects. Examples of this driver quoted were:

> "*… the demand was clear… the need to have an identity to get a market share, to strengthen the knowledge of the product… Everything led to the need for a battle for the brand, for the recognition of an identity…*" Consultant A

> "*Everything was quite clear […] they [consultants] got our demand and delivered what was being requested…*" Policy-maker C

International market-focused orientation concerns the importance of getting insights from global/international best practices in diverse phases of the project, from strategy and planning to implementation, including also in loco explorations to improve beneficiaries knowledge of their business field.

Plan and resource market launch using stage gates process was related to defined stages/phases (processes and activities) and decision points with beneficiaries' validation throughout projects. Speeches that detail this driver were:

> "*We meet every fifteen days to discuss the actions [activities] of the group and all projects of development had their time to be carried*

out [to happen]…" Policy-maker C

"*… more organization and to mark certain steps with validation of the representatives of the group [beneficiaries group]…*" Consultant A

Other drivers at the organisational level were not cited by interviewees. Some reasons for this can be: the lack of design audit processes that could identify them; the lack of design and innovation experience among companies and policy-makers, taking also into account that these enterprises have little or no design experience, configuring a fledgling situation; the generally late introduction of designers and consultants into the design support initiative; and the way beneficiaries usually take part in design support projects, not participating in the strategy definition, and the way they were 'selected' (free adhesion) without prior analysis or diagnosis of design.

Table 19: Drivers to design innovation at the ecosystem level

LEVEL		DRIVER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	▲▲● Cooperation between businesses/shared concerns and practices	Nunes (2013) Symbola, Unioncamere (2016) Wenger (2011)
		▲▲▲ Other firms successfully used design in their industry/cluster	None
		▲ Motivating environments/external motivation (rewarding and supportive environment)	Poirier et al., (2017) Sternberg (2006, 2012)
		University/industry research collaboration	Nunes (2013) Raulik-Murphy (2010) Schwab et al. (2017)
		Companies lead research and pioneer their own new products and processes	Raulik-Murphy (2010) Schwab et al. (2017)
		International competitive advantage based on unique products and processes	Raulik-Murphy (2010) Schwab et al. (2017)
	POLICY & GOVERNANCE	Macroeconomic stability	Raulik-Murphy (2010) Er (2002) Schwab et al. (2017)
		Supportive and continuous political system	Raulik-Murphy (2010)
		Government procurement based on technical performance and innovativeness beyond price	Raulik-Murphy (2010) Schwab et al. (2017)
		Low hierarchies, small organisations, no bureaucracy, providing a better chance to create solutions to problems in a participatory process	Raulik-Murphy (2010)
		Collaboration between key stakeholders (including public and private sectors)	Nunes (2013)
		▲● Clear strategies built in collaboration with good reputation experts*	None
		● Validation process with beneficiaries/stage gates with beneficiaries	None
	ECONOMY	▲▲▲ Finance (e.g. credit availability)	Bell (2015) Larsen and Lewis (2007)
		Exposure to international competition	Araújo (2016) Arnold (2016) Er (1997, 2002)
		Sourcing internationally	Araújo (2016)
		Learning by exporting	Er (1997, 2002) Araújo (2016)
		Sophisticated customer demand	Er (1997) Raulik-Murphy (2010) Schwab et al. (2017)
	EDUCATION	■ End-users design awareness	Swann (2010)
		Appropriate educational and technological infrastructure to move towards innovation	Altenburg and Meyer-Stamer (1999) Er (2002) OECD (2014) Heskett (1999, 2016)

■ BENEFICIARIES ● DESIGNERS & CONSULTANTS ▲ POLICY-MAKERS

*Cross-functional (experts from different backgrounds) in order to design the policy (design support programme/project)

The drivers regarding industry which were pointed out by interviewees were:

Cooperation between businesses/shared concerns and practices means to pursue shared aims/goals and activities, and the presence of trust and help among businesses in the same industry.

> "*… the aim was the same to everyone [...] to become more professional in the presentation of the business… it extrapolated the issue of being competitors*" Consultant A

> "*… an important factor is their union because the actions are cheaper and more accessible to them, if we have projects nowadays it is because there is a group of producers […] I think the great differential is this issue of their union […] this partnership… they understood the importance of increasing the product value. […] The aim of a producer is the same as another one, they have shared aims, and because of this they are together*" Policy-maker B

> "*… we started to work focused on the integration emphasising the entrepreneurial group integration… we implemented several courses focused on the kind of cooperation that would make them trust each other […] from there, this group started to create conditions to work, they created a purchase centre company […] they started to stand out, first, because they understood themselves as a team, they helped each other as a team… they know that what they learn together, they learn individually in their business […] They understood that working together with other businesses does not interfere in their individuality; on the contrary, they just got everything they achieved because they were together*" Policy-maker C

Other firms successfully used design in their industry/cluster was the new driver identified, which means that success of design interventions in other businesses in the same industry stimulates the use of design. Different from the marketing idea of followers and pioneers that involve forefront and dominant firms that lead the trends in an industry, the idea evidenced by interviewees is that firms that were in the same 'follower' position than others, having little or no design or innovation experience, started using design and evidenced positive changes or design benefits (mainly related to economic benefits), influencing other entrepreneurs in the same cluster. The interviewees' speeches below describe this:

> "*…he [beneficiary] realises that his positioning, along with the new positioning of the region as a whole, that it is important for him to reposition himself, he sees this advantage. Once one, two, three do, others are automatically sensitized*" Policy-maker A

> "*There's a producer, for example, who did it anyhow. Then, only when he goes to the fair, to the events, he notices the others, the difference of other labels. These [producers who did not join design support programmes before] are already looking for [professional design interventions] …*" Policy-maker B

> "*… in any group there are those people who sit on the fence ... 'I'm going to wait for others take part in it, if it works I will join it' [example of beneficiary reasoning quoted]. That happened too ... Then, this second group that we are organising came from people who were here… they did not believe and left… and then sought [for design support]... again*" Policy-maker C

Motivating environments/external motivation can be characterised by an environment where businesses take part in industry events and fairs, having their products divulged to good reputation experts, who professionally use the product and are recognised nationally, and by the noticeable rise of more demanding consumers.

The other industry drivers, related to more intensive levels of innovation, were not quoted by the interviewees.

Two new drivers were quoted regarding policy: clear strategies built in collaboration with good reputation experts and validation process with beneficiaries/stage gates with beneficiaries. Both were considered new at the ecosystem level related to design policy formulation, spe-

cifically design support. Although they are already recognised at the organisational level, impacting on the project level, they were set at the ecosystem level concerning policy formulation in the cases studied. Thus, they were explained as follows regarding the ecosystem level:

Clear strategies built in collaboration with good reputation experts can be described as the participation of experts in the earlier phases of projects definitions (strategy and teamwork composition) contributing to project clarity and assertiveness. As policy-maker C evidences:

> "*… we search for companies that will help us within this process because the expertise is there. Here, we are just the guides and interlocutors… of businesses (beneficiaries)… Everything was defined in terms of expertise, we search for the best […] the consultant of XXX [recognised leader brand in the global market]… From her we got all the information referred to the professionals that would be nice to work with. This helped a lot… First, because we did not come from the field [do not have that background, know-how] […] the external indications of professionals who worked with us. This matters a lot. It was pretty assertive for us*." Policy-maker C

Although participatory policy-making processes have been emphasised (Chisholm, Cruickshank, Evans, & Cooper, 2013; Julier, 2017; Maffei, Mortati & Villari, 2014c; Whicher & Walters, 2014), there is not a clear indication and detail regarding design support initiatives, outcomes, and impacts for design innovation in MSMEs, nor the use of participatory policy-making process as a driver to design innovation in MSMEs. Hence, in this research, the meanings addressed by stakeholders are defined in detail, providing specific features that were considered by them. Whicher (2015) points out that a bottom-up approach to policy-making is not always appropriate or the best approach, depending on the case. This enables to distinguish the general participatory or collaborative processes idea from the kind of participation of each stakeholder at diverse moments, playing defined roles. Even though cross-functional integration is a recognised positive aspect for managing new product and process development at the organisational level (Clark & Wheelwright, 1993), no research was found referring to this influence in the policy-making process concerning design support initiatives formulation.

Validation process with beneficiaries/stage gates with beneficiaries is explained through a defined process and activities (stage) with participatory decision points (gates). Consultant A describes this process throughout design support initiatives:

> "*… more organization and to mark certain steps with validation of the representatives of the group [beneficiaries group]… you have to define… representatives, leadership… people from the group who were more promising to be a representative of a certain topic*." Consultant A

Finance (e.g. credit availability) was remembered by all policy-makers interviewed as a key driver to introducing design innovation into MSMEs, and it is related to financial and economic resources available to invest in design. According to policy-makers:

> "*The main facilitator is the subsidy itself, which makes it much easier for the small company, the small producer, to access more specialized design services*" Policy-maker A

> "*For those producers who do not have financial resources, for many of them, I think, what is truly important is the issue of financing*" Policy-maker B

> "*… we facilitate a lot for them… What most facilitates is the partnership between the entity and the companies [beneficiaries]… one part of the resources is subsided; this give us conditions to work*" Policy-maker C

Another recognised driver was related to the education of end-users or end-users' design awareness, which refers to end users/consumers understanding and identifying brands, their values, features, and offers. Communication

design helps spread knowledge about products, their processes, and origins.

> "*… to show big cities what these (cheeses) differences are… The Canastra cheese is the cheese made in Canastra, in the seven municipalities of the geographical indication, with the recognised traditional techniques. […] keeping the same quality standards and with unique concepts and identities. This final consumer's perception of each cheese as a different cheese facilitated for each farmer*."
> Beneficiary A

Thirteen drivers found in literature at the ecosystem level were not quoted. They were not noticed or spontaneously quoted by participants, confirming the likely shortage of these drivers in the studied realities and the likely absence of their recognition as drivers to design innovation at the ecosystem level by interviewees.

Acklin's indicators limitations

All interviewees were asked to attribute scores for Acklin's indicators using a Likert scale from 1 (unsatisfactory) to 6 (excellent). All the indicators had their meanings clarified and described in the protocol of interviews. However, policy-makers and beneficiaries, who usually do not have a background in design or in design management in the empirical cases studied, seemed to hear about them for the first time and sometimes got confused about their meanings that were explained several times also using further examples.

Figures 39 and 40 show the Acklin's indicators assessment by policy-makers (Figure 39) and beneficiaries (Figure 40). Policy-makers and beneficiaries generally attribute great scores to the indicators, even if they have noticed major drawbacks in the design process. One policy-maker gave a mid-score to one indicator because he/she directly related a negative fact that played out during the project to this indicator, which was rarely noticed among other non-designer stakeholders.

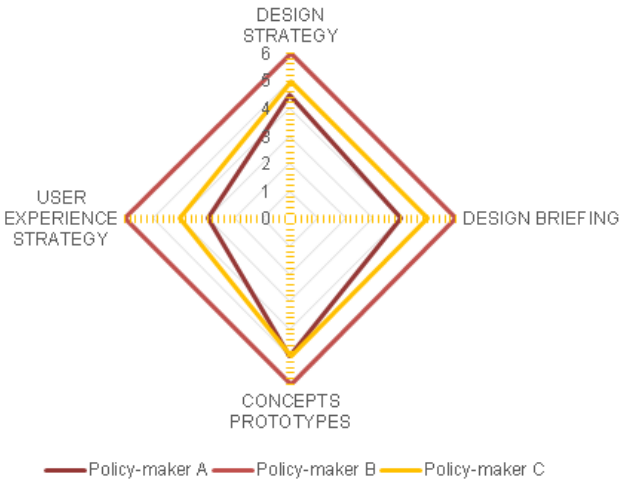


Figure 39: Policy-makers' evaluation of Acklin's indicators

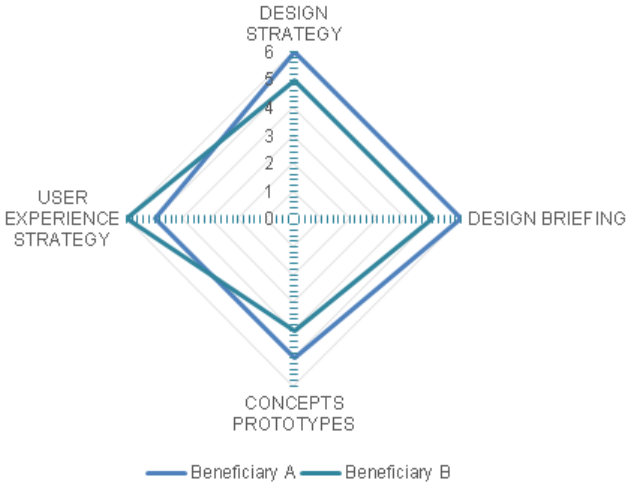


Figure 40: Beneficiaries' evaluation of Acklin's indicators

Thus, as policy-makers and beneficiaries were not familiar with those terms and practices, and the process of interview was not enough to make them grasp the indicators' meanings and their representations in the design process practices, this leads to questioning the validity of their assessments using this method. In other words, their Acklin's indicators' evaluations were inconclusive to understand project deliveries and their effectiveness or not throughout the design process.

On the other hand, talking about Acklin's design indicators led to make design process points as they were perceived by the stakeholders. Hence, policy-makers and beneficiaries pointed out the facts and their importance, and how those relate to the projects happenings indicating negative and positive perceptions.

An experienced designer critically evaluated the project using the indicators (Consultant B), a consultant who has the background in management was less critical (Consultant C), and another senior designer preferred not to evaluate using the indicators but telling the story of the project, pointing out what was seen as a drawback and what was understood as a positive aspect of the process and why, according to their experience (Consultant A). This empirical evidence suggests that Acklin's indicators are better harnessed by experienced designers but one who is a senior designer can also think that other ways, close to storytelling, are more useful to share their learnings.

The chart below (Figure 41) shows these differences of interpretation. Consultants without a background in design or design management usually give better grades/scores to design indicators (Consultant C), while experienced designers tend to be more critical (Consultant B) as realised in the cases analysed.

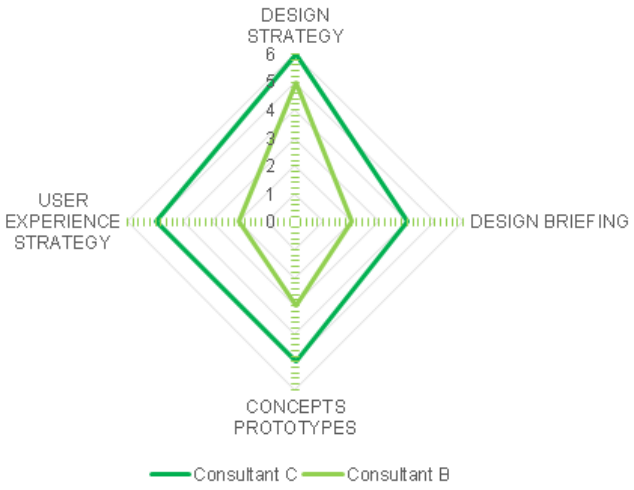


Figure 41: Consultants' evaluation of Acklin's indicators

Map of perceived businesses' conditions and attitudes limitations

The implications on the map of perceived businesses' conditions and attitudes are that Acklin's indicators can receive different evaluations depending on the background of people who are assessing them. Furthermore, in case many design activities are developed outside the beneficiary company, not depending mainly on companies' activities performance (e.g. in the case of cheese logo development), the results are less affected by the company condition or attitude, also considering that the change of the logo and of the packaging communication aimed at making the product suitable to current compulsory standards to introduce the product in the market. Hence, it was not a 'choice' but a reaction to a limitation on product commercialisation.

Therefore, in situations in which changes are pushed by the external environment, such as to make a product suitable for the purpose of current compulsory standards, the map is not useful to indicate companies' engagement once they have to engage as soon as possible in order to still commercialise their products, and in the case in which design activities do not rely mainly on companies' performance, being carried out outside the beneficiaries' firms.

PART III

LEARNINGS, FINDINGS AND DISCUSSION

Might we envision a promising scenario to design innovation? What strategies can be drawn on how to get there? This part of the thesis aims at answering these issues, proposing recommendations to overcome the barriers and strategies to attain the preferred scenario to cultivate design innovation. Recommendations on design support programmes and a metamodel are proposed to better craft design support initiatives considering the empirical cases and the literature analysis. A promising scenario to design innovation for Brazilian MSMEs is drawn from the prior analysis of barriers and drivers. Key issues that should be addressed are set out in a holistic perspective using the How Might We (HMW) question framework. These HMW questions aim at promoting a reflection and stimulating the use of participatory approaches rather than providing immediate answers, being a starting point to further development, indicating promising directions. Implications for key stakeholders are pointed out. Finally, the discussion emphasises the research contribution to the design policy and design management studies focused on MSMEs, its findings, limitations, and need for further research.

Keywords: Design innovation; MSMEs; promising scenario

CHAPTER 8

Recommendations on design support[59]

In short, design practices consolidation is not harnessed throughout design support programmes and projects. Design is used in practice to achieve other priorities related to, for example, compulsory standards regulations, adequacies to technology, and market requirements characterized by short-term strategies, immediate perspectives towards which benefits can be achieved. Therefore, design support initiatives are more 'pushed' interventions than 'pulled' ones, being crafted in a market failure perspective.

Hence, design as a connector, a functional integrator; an enabler of product-service systems (PSS) that fosters innovation to users; as a strategic driver; a way to boost economic growth; to envision futures, collaborating and co-creating them together with citizens, users or beneficiaries of policies, are not observed in project practices, policy priorities and approaches to crafting design support initiatives.

[59] The first version of this chapter was published in the paper 'Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support' (Fonseca Braga & Zurlo, 2018). It was originally presented at DRS2018 Conference: Catalyst, held at University of Limerick, Ireland, 25-28 June 2018. An initial version of this chapter was included in the Proceedings of the event. This is one part of the reviewed version of the paper, improved with the contributions from the Conference, and further analysis of the issues proposed, especially on the implications for key stakeholders and on the design support model process which was developed after the first version publication.

In addition, looking at the design support and policy frameworks, and at most research and supportive institutions that relate to design, leads to interpreting that design is seen as an addition, as it is usually included in other policy priority, such as technology or quality requirements, to attain compulsory regulations. There are exceptions regarding this design understanding considering the diversity and heterogeneity of design in Brazil. However, analysing the picture of the Brazilian Design Innovation Ecosystem and how it works, we might state that, generally, the potential of design has a very narrow understanding. This is evidenced by organisational, institutional, and political practices, as well as by current Brazilian design management research (e.g. CBD, Apex-Brasil, MDIC, 2014; Murphy & Raulik Murphy, 2015), which also evidences the lack of data at national level, including public investment in design (CBD, Apex-Brasil, MDIC, 2014).

Although evaluation has been considered a controversial issue even in advanced economies, and it is costly (Raulik-Murphy, 2010; Whicher et al., 2013), frameworks that enable from short to long-term assessment need to be taken into account and to be discussed in accordance to local realities and to international adopted scoreboards and parameters in order to monitor the outcomes and impacts of these initiatives locally and globally. This can be seen as a long-run development process rather than an immediate solution, requiring not just design expertise but collaboration with other experts, as well as the consideration of local contexts and the ones in which standard design scoreboards are used.

The difficulty in identifying public investment can be due to the inclusion of design as an additional asset in other branches of policies programmes or to the lack of specific policies, institutions or agencies concerned with design, as well as the lack of professionals with a design or design management background influencing the ecosystem and taking part in the leadership, decision-making, and coordination of these processes.

The scheme (Figure 42) addresses design support programmes gaps found in the empirical cases, considering also insights from the literature review analysis.

The objective of this metamodel is to support the design of initiatives which aim at introducing, consolidating or improving the use of design in MSMEs. It proposes an experimental approach to crafting design support programmes based on participatory processes to formulate proposals, and is built upon typical design processes and methods to take up scale, including prototyping and pilots prior to scaling up a programme. As a prior stage, a design audit and a portfolio analysis of businesses are suggested in order to identify the design maturity and needs of businesses. This helps set out a group of businesses with similar needs, addressing specific programmes according to this understanding.

These suggestions contribute to aligning programmes goals and strategies with actual businesses' needs considering experts and beneficiaries' perspectives earlier, avoiding the cost of immediately scaling up programmes that do not reach industry needs, not being sustainable after the end of the initiative because the background of beneficiaries was not considered in crafting the proposal.

Evaluation of programmes should be accomplished considering outcomes and impacts of these in a design perspective and in collaboration with other experts in order to establish hard and soft metrics related to the initiatives. The legacy of design support programmes has to be built by sharing the learnings from programmes' experiences locally and at the national level, as well as acknowledging global best practices. The design support programmes' learnings and legacy shall feed next cycles of programmes, contributing to better crafting next initiatives, considering adaptations and changes required.

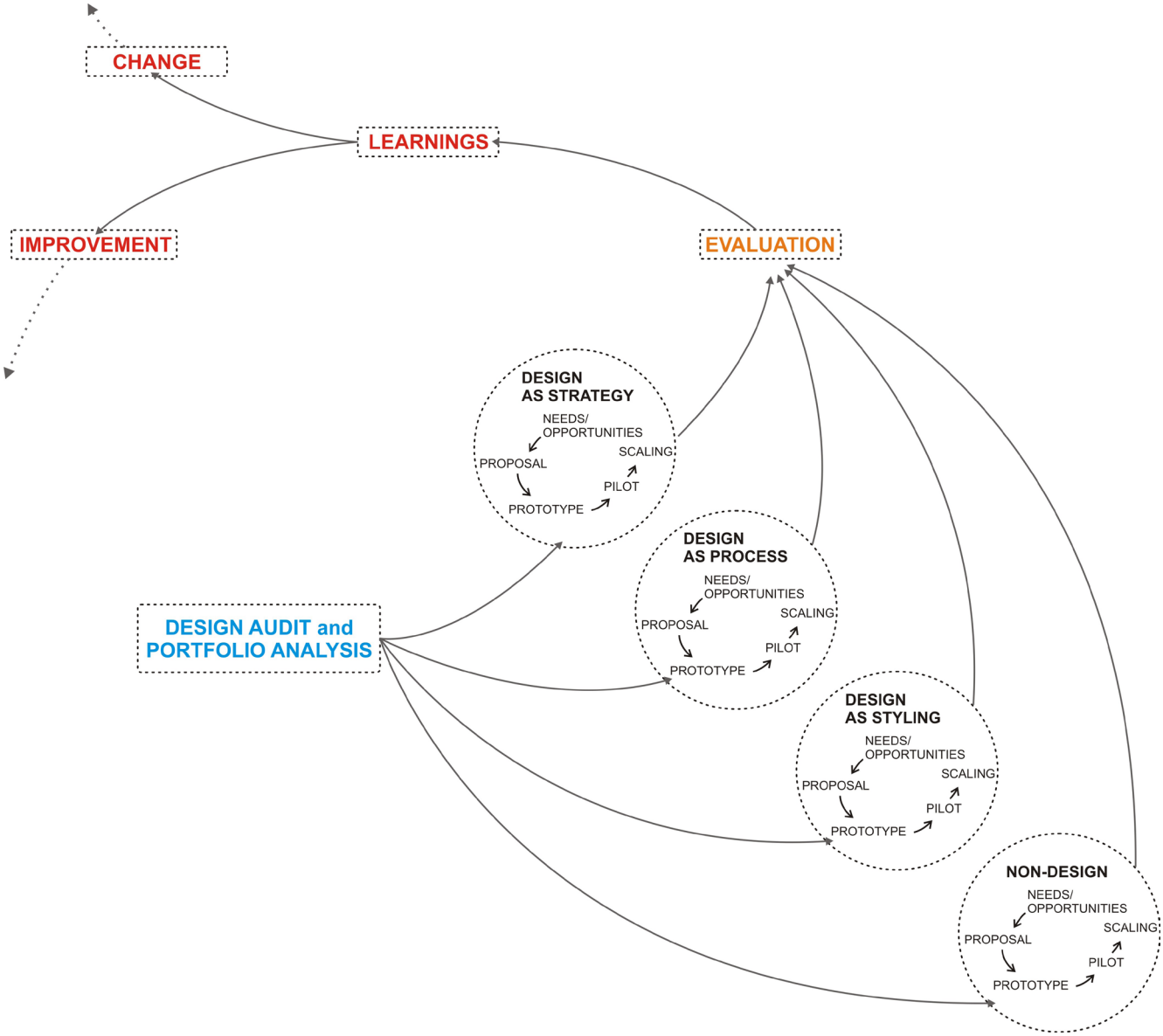


Figure 42: Design support programmes' metamodel

Furthermore, the fragmentation of the design innovation ecosystem and the way current annual accountability reports were done do not facilitate (a) the communication to a general public (citizens) and (b) distinguishing which part was specifically destined to design, as well as measurable evidence of benefits directly related to the design interventions. Thus, the aforementioned design support metamodel suggestions might contribute to filling in these gaps.

A promising scenario to design innovation: What is next?

The preferred scenario addresses critical variables which were identified in each level as follows:

1. the design support programmes/projects have an important social and economic impact;
2. the processes of policy-making are participatory;
3. the programmes/projects are evaluated[60] and monitored regarding short (outcomes) and long-term (impacts) benefits;
4. the organisations are international market focused, human-centred and future-oriented;
5. the actors are design aware and build on appropriate education and skills to lead design innovation.

How Might We (HMW) questions (IDEO.org, n.d.) are proposed to be answered in collaboration with key stakeholders' representatives through a co-creation approach using design thinking methods. The HMW questions elaborated are:

1. the design support programmes/projects have an important social and economic impact;
   - How might we propose design support programmes/projects' goals that have an important social and economic impact?
   - How might we communicate design support outcomes and impacts to the general public and to potential partners?
2. the processes of policy-making are participatory;
   - How might policy-makers elaborate new ways of crafting design support programmes/projects in collaboration with experts and beneficiaries?
3. the programmes/projects are evaluated and monitored regarding short (outcomes) and long (impacts) term benefits;
   - How might we evaluate short and long-run benefits of design support programmes/projects?
   - How might we monitor short and long-run benefits of design support programmes/projects?
4. the organisations are international market focused, human-centred and future-oriented
   - How might we prepare companies/beneficiaries to become internationally competitive through design support programmes/projects?
   - How might we make the firms be dedicated to their users' needs through design support programmes/projects?
   - How might we make the firms be future-oriented through design support programmes/projects?

[60] The evaluation framework has been discussed in Europe (Maffei, Arquilla, Mortati, Villari, Evans, Chisholm, and Londoni, 2014) and the assessment of design has been a matter of discussion at micro (see Fonseca Braga, 2016) and macro (Schneider et al., 2015) levels. We need to consider local conditions and the actors' perspectives, understanding current frameworks in order to analyse and generate alternatives for the Brazilian case.

5. the actors are design aware and build on appropriate education and skills to lead design innovation;

   – How might we make policy-makers and beneficiaries aware of design?

   – How might we improve policy-makers' and beneficiaries' conditions, education and skills towards design innovation?

These HMW questions are exploratory rather than searching for immediate answers. They aim at fostering reflections. In order to propose strategies to achieve this scenario, the need for more participatory and collaborative processes, including the voice of experts and beneficiaries in the earlier stages of design support initiatives development, as well as long-term strategies and appropriate follow-ups that can keep and foster design innovation within businesses strategies throughout time are required. Otherwise, the sustainability and viability of design in one-shot projects are not assured. Generally, annual reports elaborated by the non-profit private entity in charge of SMEs development focus on the number of businesses which were opened; however, this indicator is not necessarily related to the non-profit private entity initiatives, and the main concern is how to keep up with these businesses to provide appropriate support enabling them to thrive.

The need for the development of an appropriate evaluation framework and for a clear communication of outcomes and impacts to diverse audiences, especially citizens, MSMEs, and policy-makers are also pointed out.

The education of users, policy-makers, and entrepreneurs towards design innovation in order to attain design awareness is crucial. In the case of policy-makers and entrepreneurs, design management is a key issue to make design innovation part of the day-to-day activities, as well as to develop design awareness as emphasised in prior research (e.g. Amir, 2002; Bitard & Basset, 2008; Margolin, 2007; McNabola et al., 2013; Nunes, 2013; Raulik-Murphy, 2010; Thenint, 2008). Education is seen as a precondition to enable an environment favourable to international competitiveness since to open the domestic market to global competition, inward-focused businesses need to promote consistent changes, catching up with (or, preferentially, surpassing) international businesses innovation standards.

Implications for key stakeholders

The suggested recommendations in order to start improving design support in Brazil are mainly related to the policy-maker role, considering the current top-down approach to design support programmes. They are:

– To increase designers, consultants', and beneficiaries' participation in the policy-making process, so they can take part in the definitions of projects' goals and strategies, and their experience and knowledge are considered earlier. This kind of earlier beneficiaries' involvement tends to make them strongly committed to the project once they participate in its decisions. Designers and other experts can support prior assessments to design appropriate policy projects according to beneficiaries needs and conditions. The collaboration with experts in earlier phases can prevent misleading decisions regarding the lack of background in design;

– To set out clear goals and strategy during the earlier collaborative phase. For instance, what is to be achieved, the competencies required, how the programme/project will be carried out, who will be in charge of what and how, communicating this information to all key stakeholders;

– To revise best practices in their field across the world. Several aspects related to MSMEs conditions to absorb design

innovation or to develop design capabilities through design support programmes are not particular of a context but found in other situations too;

- To look for tools that can support design programmes' and projects' development, monitoring, evaluation, and legacy building, as well as experts' collaboration in order to strengthen their design capabilities towards future projects;
- To be updated and informed about the regional[61], national, and global content and data related to design support programmes/projects, as well as design in the world and in Brazil (collecting also current and comparable data in time), building on reasoning that evidences the outcomes and impacts on the Brazilian society and economy in order to negotiate required changes (e.g. to decrease bureaucracy and better consider meritocracy) to better accomplish their role in the supply and demand of design in Brazil, as well as to define budget destinations;
- To move the focus of the work from inside the institution (e.g. fulfilling demanding forms and reports) to outside, including visits to beneficiaries with the specific purpose of understanding their needs and conditions, listening to their expectations and what they need from the institution;
- To be immersed in the design world. To cultivate an environment that includes the design industry professionals, as well as beneficiaries, promoting events and meetings where people can have the opportunity to meet each other, to set connections, to share knowledge, to propose solutions to common problems or to discuss businesses' topics that interest both. To be present in design sector events and fairs (not just related to the institution).

The capacity to communicate with diverse audiences, especially to entrepreneurs, providing examples and using accessible vocabulary, suitable to the audience were crucial factors for designers and consultants. Furthermore, a good reputation and a practice-based know-how built upon experience is a recognised driver that facilitates design introduction. As to build a good reputation and experience a newly graduated designer might be included in those programmes being led by a senior designer. The novice designers can have a fresh mind to foster design innovation, contributing to the innovativeness of a project while learning from seniors' experience and contributing to update them about the ongoing trends in the field.

Moreover, the entrepreneurs or beneficiaries of a design support programme have also a fundamental role towards design absorption. They can facilitate the introduction, consolidation or improvement of design use in their businesses through support programmes by:

- embracing the risks of the design project,
- setting up an agenda to accomplish programmes activities in the company,
- behaving proactively towards the project and spreading this feeling among organisation's members, being committed and making time of people with the required skills to carry out an activity available,
- collaborating with other entrepreneurs and with designers towards the achievement of project's aims, and the building of learnings' legacy.

[61] The lack of knowledge about the real local context of small businesses and lack of capability to accomplish companies needs and expectations of non-profit private entities corroborates prior Nunes's (2013) research findings in Uberlândia (Brazil, Minas Gerais Federation).

CHAPTER 9

Discussion

This research has evidenced barriers and drivers to introducing design innovation into MSMEs through design support programmes which are largely applied in Brazil. In the first empirical cases analysis, a map that indicates the businesses' engagement intensity and its impact on Acklin's design capabilities indicators was proposed. Businesses' attitude and conditions throughout projects' implementation are generally overlooked in design management research, particularly regarding MSMEs with little or no design experience. The preconditions to better absorb design in those cases were also identified.

The map should not be interpreted as an evolvement scale in which each firm passes through all stages but should be seen as a way to visualise the position (condition or attitude) of a company throughout design support projects implementation, working as a soft metrics' assessment of the firms done by senior designers who joined the implementation of projects. Design programmes might be better designed and managed considering the firms' conditions and attitudes. Programmes might have diverse designs and activities according to the position of the firms, setting up firms with similar positions and needs in the same initiative's project. Table 20 points out this relationship, considering a cost-benefit perspective on design programmes (i.e. Tether, 2006):

Table 20: Soft metrics guidance on design programmes' activities

Position in the map of perceived businesses' conditions and attitudes	**Suggested design programme activities**
Lack of essential knowledge	Basic skills development (emphasis on design promotion) Workshops, seminars, and lectures with emphasis on the competencies required to keep up with the specific industry and design basic requirements for product development, implementation, and commercialisation.
Unclear decision Last-minute task	Rising design awareness (emphasis on design promotion) Workshops, seminars, and lectures focused on best practices examples, industry trends, user-centred design, lifestyle, market, new technologies and materials, sustainability.
Take part and solve questions	Basic design support (emphasis on design support) Development of products, communication and brand considering improvements, benchmarking or incremental innovation, expansion of market share or product value increment.
Engage with and cooperate	Design support towards innovation (emphasis on design innovation) Development of products, communication, and brand considering exports, new market shares, forefront technologies, lifestyle trends. Network development. B2B meetings.

Table 20 is a speculation, an example of how soft metrics feedback based on the map of perceived businesses' conditions and attitudes can help provide a guidance on programmes design considering a better cost-benefit relationship. This can be done for businesses that have already joined design programmes and were in touch with senior designers. Other cases require a design audit as suggested in the design support programme metamodel.

However, the map of perceived businesses' conditions and attitudes, as well as the use of Acklin's indicators, showed limitations regarding some specificities in the second group of cases. The map did not work when a project involved fitting products in compulsory standards, and when most design activities were held outside the firm, showing that even in the case of low engagement, Acklin's indicators received good grades/marks/scores. Acklin's indicators also presented other constraints. They had diverse evaluations of the same project depending on the background of people who are assessing them. Non-designers usually gave better scores and are not familiar with the indicators' concepts. Designers showed more criticism in the evaluation, and one designer preferred another evaluation method. Hence, Acklin's indicators evaluation by an experienced designer is suggested but senior designers can also be harsh on the use of these and would rather use another method considering their own professional experience.

In the second group of cases, the landscape of analysis was broadened. Although most barriers and drivers are already reported in prior literature, most of them were not previously related to the specific context of design support programmes, especially in a holistic perspective that addresses the complexity of design support programmes' projects as this study provided through the framework of analysis at three levels.

This framework can work as a tool or a metamodel to handle the complexity of design policies' and programmes' contexts. It can also be useful to promote collaboration between key stakeholders and to bring awareness of barriers and drivers that are seen by them, as well as to promote an opportunity for discussion considering diverse actors' points of view before setting up a programme or policy strategy, underpinning the decision-making strategy.

Another function is to provide a quick 'before' and 'after' assessment considering what was discussed and agreed as barriers and as drivers before the programme's or policy's strategy formation, and what was achieved at the three levels after the implementation regarding outcomes and impacts. Even though this cannot constitute a very accurate evaluation, it can be less costly as a process and can provide a broader view of changes that took place and remaining challenges through the lens of key stakeholders.

This study showed that barriers and drivers at the actors' level were more often and easily recognised by a range of key stakeholders, likely because they had enough face-to-face contact throughout projects that helped them identify one another's drawbacks and strengths. The lack of background in design management of policy-makers (which is already stated in prior research), the absence of companies' prior design audit led by people with a design background, and the introduction of designers usually from the implementation of programme's project phase, underpinned the fact that many barriers and drivers that are already discussed in prior research focused in the context of MSMEs might exist but were not addressed at the organisational level.

The ecosystem level can be seen as quite challenging once to promote ecosystem changes a network of key collaborators that agree and corroborate each other's needs should be set out and take action, sharing a purpose and strategy. Most barriers and drivers at the ecosystem level were not identified by interviewees despite the fact that they are clearly quoted in

prior research addressing the Brazilian context (see Figures 43, 44). They were only recognised when directly affecting the established programme process or programme implementation, relating to day-to-day constraints and short-term outputs. Though they are crucial to moving towards a promising scenario, people seemed to get used to them. Hence, one might not be aware of a problem because one cannot recognise it in a certain lasting situation that takes place at the national level. Thus, the proposed framework helps bring the awareness of their existence, spurring the importance in setting out collaboration with diverse stakeholders (e.g. government, institutions, universities, industry, firms, designers associations, industry unions) to achieve consistent changes through a more systematic and long-term development strategy.

Figure 43: Barriers found at three levels

Figure 44: Drivers found at three levels

Few barriers and drivers were new and distinguished from others in prior research only regarding the rationale used to address them by the interviewee or the lack of empirical evidence within design studies or regarding design support programmes. This analysis showed that barriers and drivers differ according to: (1) the context in which each project is embedded, including the economic and political priorities and orientation, as well as cultural aspects; (2) the way programmes and their projects were crafted, managed, implemented and evaluated; (3) the background and mindset of key stakeholders who take part in these projects.

A design support programme metamodel was proposed addressing the design support programmes' drawbacks. This metamodel, as well as the framework at three levels, should be seen as dynamic metamodels that can change according to the specific project's contexts characteristics, the industry typology, the level of intervention (local, regional, national), and innovation needed, background of people who use them, and time (barriers and drivers can emerge or change and can vary in a certain context, being more important or insignificant). Therefore, an expert with background in design policy or in design management, and in participatory methodologies, is suggested to moderate a collaborative and more participatory approach, helping lead and figure out controversies that can arise, promoting symmetry of key representatives' participation, checking the awareness of possible barriers and drivers that can be overlooked, as well as solving questions about design concepts and contents and their relations to a broader context (or ecosystem level).

A promising scenario was envisioned through the selection of critical variables which were organised within 5 headlines that are emphasised in prior research, particularly those which focus on less advanced economies contexts, and some of them were reinforced by empirical evidence which arose from analysis of interviewees' speeches. Challenges were proposed using the 'How Might We' question framework in order to suggest a starting point for a more participatory re-beginning rather than pointing out immediate solutions to them, considering the advantages of the non-profit private entities of diffused structure across the country and the significant autonomy of resources use regarding national government.

Finally, two major wicked (Buchanan, 1992) design issues were set at the outset of this thesis: What matters when bringing or to considering design in the core of organisations' strategies? Is design for everyone, for every nation? The reflection on these wicked design issues is open-ended as follows.

Design has set up a great potential to deal with complex problems and opportunities due to its experimental nature that enables to address systems' interconnections and complexity. The need for design from private to public sphere has been increasingly highlighted with the emergence of new design domains, specialisations, and practices which have spilled over diverse industries, and created new ones. However, decision-makers' design awareness and understanding, combined with macro features related to economy, politics, and culture in a country, can hinder harnessing design contributions. Thus, reflecting on this research path, I might state that design is for everyone concerned about improving their real context, and in envisioning and building desirable futures besides their own perspective, being predisposed to collaborate with others and to integrate others' visions in a strategy shared by key stakeholders in a process of change. A starting point is to build design awareness and understanding among decision-makers who can support and shape the desired change, because one cannot fully appreciate what he/she does not have the appropriate know-how in or not collaborate towards. Therefore, the need to acquire appropriate skills to deal with more complex environments, which are characterised by open-ended challenges rather than pre-set issues, is a fledg-

ling issue among decision-makers.

Other triggers of change can come up from designers with appropriate backgrounds (e.g. in service design, social innovation, design thinking, participatory methodologies, design management, design policy, policy for design, strategic design) who might acquire political skills to reach a decision-makers role and influence their peers' 'political' conversations and decisions. Otherwise, we can hope for another Juscelino Kubitschek's (known as JK, a former Brazilian president, considered a visionary politician) encounter with Oscar Niemeyer (a remarkable Brazilian architect) in a different moment and context in history in which a visionary politician meets a skilled designer (regarding the above-mentioned appropriate background).

Other design policy's matters

This research also brought situated insights which arose and were referred to other relevant subjects in the design policy field. They are related to:

- the need for an explicit national design policy,
- the need to bring design awareness and understanding into the policy-makers' world,
- the need for long-run strategies and actions,
- the influence of neoliberalisation processes, especially the New Public Management approach, which is currently convergent with the design support programmes approach in Brazil,
- the need for evaluation processes,
- the reliance on policy-makers' background, interest, willingness, and mindset.

In addition, findings related to the design management field were drawn.

The need for an explicit national design policy was not noticed in the Brazilian case according to the literature analysis and to the empirical evidence raised that reflected on the current context. A national design policy can undoubtedly contribute to identifying design initiatives, and to setting up an agenda and strategy to design, aligning initiatives across a country and positioning design in the attainment of national goals contributing to the country's competitiveness, social conditions improvement and economic growth, and to setting out what is to be achieved in qualitative and quantitative ways in collaboration with other experts related to the specific sectors. Examples of diverse government sectors' outline in which design can contribute are: boosting exports, agriculture, nature preservation, technological innovation, clean energy, water access, earlier entrepreneurship education, healthcare, policies development, and citizens' empowerment within different government policies. This kind of relationship has been already explored in prior research (Raulik-Murphy, 2010).

Policy-makers can be influenced to harness design across Brazil. One way is to identify design investment, initiatives, goals, real outcomes (immediate effects), and impacts (long-term value). The need to invest in and implement design support programmes and projects that assist in identifying, monitoring, and evaluating these initiatives in terms of outcomes and impacts is critical. Hence, the main problem is not the branch in which design initiatives are placed but the identification of which action addresses design and which outcomes and impacts can be attributed to these design actions, as well as the design contribution towards a major policy goal. However, the current shortage of knowledgeable design support initiatives can decrease the potential use of design and possible positive outcomes and impacts, as well as their identification considering the one-shot design support programmes approach without follow-

ups or long-run strategies.

Therefore, the most critical need emerged was to raise the policy-makers design awareness and design understanding. In the cases studied here, policy-makers are also the ones who act within non-profit private entities which run national and regional design programmes. The need for a knowledgeable and structured national design system or design innovation ecosystem that shares the language, methods, measures, and learnings regarding design initiatives' outcomes and impacts is noticed and has also been realised in prior research (e.g. Raulik-Murphy, 2010). This evidence of design benefits (qualitative and quantitative) should be connected to the contribution to social welfare and economic growth, and communicated in accessible ways to general citizens or wider audiences and fields of expertise related to these contributions or targeted audiences.

Design support in Brazil and the New Public Management approach present similarities regarding the focus on the management of the system rather than ensuring the quality of the conception and design of services that should be provided. Hence, constant measurement and audit of processes and outcomes drive the services' arrangements in order to satisfy measurement criteria rather than being designed to best serve the target or beneficiaries of these programmes. This is a fact that seems worsened in Brazil once the measures that are gathered are not directly related to the implementation of initiatives, and to a design orientation.

Major design benefits are perceived in long-term strategies (8-10 years) in design-centric companies (Rae, 2013, 2014) that are well-informed and structured in their businesses, generally multinational and large enterprises with high financial assets value, and in advanced economies with a robust design innovation ecosystem (e.g. UK) or a strong cultural orientation to design (e.g. Denmark) that motivates investment and measurement of design benefits at the national level. Moreover, the South Korean and Singaporean cases show great transformations promoted by structured national policies with a long-term strategy.

In less structured incipient contexts, as in MSMEs with little or no design experience, and in Brazil, an emerging country with an agriculture- and mining-based economy, where the domestic market is inward-focused, with recognised social inequality and low quality of education across a large and heterogeneous country, failures will arise. Flaws also happen in experienced and knowledgeable companies towards innovation and countries that have a significant emphasis on innovation through their investment and policies. The approach used to address failures can be a meaningful input for future design support programmes and projects. What can be learnt from the experienced failures (see also Ball et al., 2011), as well as how fast we can learn from them, are fundamental aspects to move forward, improving or changing future design support initiatives in order to be more effective. This use of learnings from failures requires an experimental, structured, and informed way to recognise drawbacks as soon as possible, and share learnings among key stakeholders, feeding further initiatives.

However, all these proposed evaluations and structured and knowledgeable system cannot become paperwork in addition to the existing system which is already overwhelmed by 'making paper'.

This evaluation system should be developed in cross-functional collaboration. For instance, designers, economists, and sociologists can collaborate aiming at a lean framework and process to evidence what matters to demonstrate design benefits and their relations to economic growth and social welfare concerning outcomes and impacts. Another cross-functional contribution is to provide ways to compare Brazil to other contexts through international scoreboards and standards. Designers can provide the communication to diverse audiences, especially general citizens and MSMEs, in a more

accessible way. This enables a better diffusion and comprehension of programmes' outputs and impacts for main stakeholders.

Design support initiatives, investment, and processes are vulnerable to policy-makers' mindset and background, political moments, cycles, climate, and priorities. Policy-makers can receive design training by identifying and using design tools to solve problems, to envision opportunities, to map information, to listen to citizens, and to communicate to diverse audiences, for example. However, it is not assured the effectiveness of mindsets' and human traits' changes by this kind of training. Hence, design support interventions, as well as their intensity and investment, will rely on political willingness that can be spurred by policy-makers background, beliefs, and interests in a certain context and moment.

Most Brazilian design support initiatives are offered and managed by non-profit private entities which are funded by public money and are still presenting a New Public Management (NPM) approach to design interventions. This NPM approach does not facilitate these practices' upgrade according to changes in the real (users'/citizens'/beneficiaries') context, in trends, and in industries. Hence, generally failing to perform in current dynamic and complex environments.

External pressures, coming from large enterprises, are emerging, questioning the reason for paying the tax that is destined to these non-profit private entities, and international consultancies and collaborations[62] (e.g. Mazzucato & Pena, 2015; Piore & Cardoso, 2017) have pointed out the need for a connected innovation system, for meritocracy or skilled professionals within these systems. These facts can lead to a movement towards the focus on real users', beneficiaries' or citizens' needs instead of shaping and evaluating actions to serve requirements of these non-profit private entities that often do not fit in beneficiaries', territories' or industries' current or future needs, which is evidenced through the double work of design service suppliers that have to engage with beneficiaries to find a personal solution to attend their businesses, while fitting in the system standards' requirements that generally do not correspond to businesses' real needs.

[62]For instance, CNI and SENAI have established collaborations with good reputation international bodies, such as Fraunhofer (Germany), Poli.design (Italy) and Massachusetts Institute of Technology (MIT, the USA) in recent years. On the one hand, these collaborations are welcome, considering that these international bodies can be regarded as international best practices in their fields. On the other hand, the lack of a prior strategic scope which defines the specific contribution of these international consultancies considering the Brazilian differences concerning infrastructural, economic, political, historical, social, and cultural aspects in which fledgling Brazilian communities of practice are embedded in. Another issue is the conflict of interests. For example, an international consultant might be likely to adopt a diplomatic attitude, not emphasising or clearly addressing leadership shortcomings that exist, while there are significant aspects to implement crucial changes towards the improvement of the Brazilian innovation system at this level. Thus, the positive impact of these international consultancies might be hampered, not reaching significant changes or benefits for the Brazilian context. Hence, considering that the budget which supports these international consultancies is mainly sourced at public funding, it is critical to rethink how these collaborations can be better harnessed considering the Brazilian context and defining strategic directions that do not aim at 'copying' a phenomenon that flourished in countries which present a quite different environment, infrastructure, economic, and political approach, as well as history and culture.

Moreover, as has been noticed in several countries' contexts (e.g. Singapore, South Korea), a change towards more innovative contexts is fostered by diverse influences in the public and private sphere. In other words, several factors contributed to those changes, converging towards a shared interest and goal that motivate public and private investment. Then, the framework at three levels can also spur catalysts' forecasting through its holistic approach.

This research started with an interest in better understanding these design actions from a design management lens. One of the contributions addressed refers to this field. This research pathway showed limitations regarding the current design management approaches which generally take for granted that design capabilities can be absorbed regardless the context in which design takes place, and the influence of diverse stakeholders' background and mindset towards design.

Hence, the attempt to shed light on barriers and drivers to design in ordinary contexts (MSMEs with little or no design experience) and in an emerging economy situation brings the particularities that should be considered and identifies the common aspects regarding design management and other complementary grounds. In short, this study contributes to an approach of design as a situated practice in which design limitations and opportunities are embedded in the inquired contexts' characteristics and actors' conditions and attitudes towards design.

A brief reflection on Bonsiepe's centre/periphery

Bonsiepe (1991) contrasts centre (advanced and industrialised economies) and periphery (less advanced, third world, undeveloped economies), pointing out how the centre economies see design in the periphery as a 'second-rate, resource-poor and delayed replay' of the process that advanced economies have already passed through without considerations about differences in context's reality. Bonsiepe provides a developmentalist approach to design in less advanced economies in which design should play a crucial role in enhancing social conditions.

However, research (Er, 1997) demonstrates that, in fact, the design aim in advanced and in less advanced economies is connected to design as a tool for better competitiveness of companies, industries, and economies. Conversely, improving social conditions has been addressed by design field specialisms, such as social innovation, design thinking, participatory methodologies, design for policies, and others in advanced economies that have passed through the neoliberalisation process followed by an economic crisis (Julier, 2017). Thus, it can be understood that the developmentalist theorists' suggestion has actually flourished in Europe.

Western countries, particularly European ones, have experienced the impacts of an economic crisis and of immigration that have highlighted social inequalities and led to efforts towards integration and, on the other hand, segregation in some political approaches. At the same time, the use of design even in countries that have invested in and demonstrated economic benefits of the design industry, such as the UK, is not homogeneous across the country (e.g. Design Council, 2015), which is also noticed across Europe (Thomson & Koskinen, 2012). Furthermore, we can find out differences regarding the use and understanding of design across a country in less advanced economies (e.g. Brazil, China). Moreover, the speed of innovation development and diverse forms in which it has manifested in emerging economies, differing from western patterns (e.g. China, see for instance Heskett, 2010, 2016; Julier, 2017), challenges the classical idea of centre-periphery that shows the world through the lens of advanced countries.

All these current conditions suggest that centre and periphery cannot be seen as separated spaces by national labels but, instead, they can be sharing the same nation, although social inequalities are still presenting diverse intensities according to countries' economic development. Hence, we should not overlook these heterogeneous contexts and the possibilities for a more broadened learning from contrasting contexts sharing the same space rather than regarding economic development and the national labels they hold. Thus, focusing more on context characteristics and their respective 'how' and 'why' design has been addressed in social and industrial mainstreams.

Limitations and future research

Research in the design policy field is acknowledged as a new phenomenon despite the long tradition of design policy practice, remaining the lack of conceptual and theoretical foundations (Er, 2002; Hobday, Boddington and Grantham, 2012; Raulik-Murphy, 2010). Moreover, the diversity of design policy programmes, the lack of a common terminology, definitions, comparable data, and indicators across countries, policies, and projects also evidence this aspect (Raulik-Murphy, 2010; Tether, 2006). In addition, there is the lack of studies and data related to design in the Brazilian context (CBD, Apex-Brasil, MDIC, 2014). Therefore, the literature used to support the cases' analysis is fragmented, coming from several fields as a consequence of the holistic view required to inquiry the issues proposed and of the fledgling design policy field.

Design support best practices are fledgling, also lacking conceptual and theoretical foundations, as well as empirical evidence. Then, it is still not clear which are the downsides faced by MSMEs when trying to make an effective use and management of design. This issue goes beyond the implementation of design support initiatives, requiring better understanding of the reasons why some MSMEs succeed and why others do not even when best practices of design support are applied.

Design support programmes (or initiatives) and their projects per se do not assure the design acknowledgment and potential design use within companies and countries. The need for diverse interventions that can be combined with design support is recognised (Cox, 2005; Raulik-Murphy, 2010; Swann, 2010; Tether, 2006). Hence, this is one of this research's limitations. This study looks at design support and its recommendations focus on that. As discussed throughout this thesis, different factors can move a country towards innovation, better competitiveness, and quality of life beyond design policies and initiatives. In addition, political and economic conditions and orientations affect priorities of investment, actions, and strategies across the country.

A review by the Design Research Society (DRS) Conference in 2018 presented a positive evaluation about the paper which addressed the barriers to introducing design innovation from an 'ecosystem' perspective in Brazil, stressing the comprehensive nature of the manuscript (Fonseca Braga & Zurlo, 2018) as follows:

> "Strengths and Weaknesses: After several readings of this paper, I could not add any further points to enhance its overall quality. Comprehensive in nature and well-articulated throughout, it provides a reasoned and critically informed interrogation of design support systems that yield invaluable findings as to their value and relevance in their particular domains of application. Particular strengths of the discussion rest upon the 'implications and recommendations on design support', which raise a whole series of points that could inform the effectiveness of these programmes in operation. This paper will have wide appeal to DRS attendees and audiences far beyond the conference itself.
>
> General Comments: An intellectually robust

> and critically informed paper that could be of benefit to a large number of interested audiences. Findings arising from the paper could be applied to different industry/geographic contexts other than Brazil due to the comprehensive nature of the paper." Anonymous reviewer of the DRS2018 Conference

After this paper was written, the framework evolved, including factors mainly related to the ecosystem level through further literature review analysis. Further research can improve the framework at three levels; for instance, through an open source platform that can be fed by actors who join diverse design programmes' and projects' typology in different regions and countries. This can provide a rich source of design programmes understanding, enabling to set out more robust relations about what is particular of a context and what is spurred by specific ecosystem factors, as well as to better identify diverse stakeholders' point of view. Hence, patterns of success or failure associated with defined contexts features and time might be further grasped.

In addition, the design support metamodel suggested was developed based on findings considering the largely applied design support models in the Brazilian context. Further research is required to validate it in practice, as well as to explore improvements and adaptations or divergences regarding other contexts.

Beneficiary B clearly stated a precondition to joining a project and truly dedicate to it:

> "I have to believe in the project" Beneficiary B

Diverse factors can influence this 'belief in a project' connected to an internal motivation that is a quite subjective matter and also deserves attention, remaining an unanswered issue which can be better detailed, although some clues emerged in this research, such as 'the neighbourhood firm success' (when one firm in the same cluster achieves success spurred by a design support initiative). What kinds of conditions (at the individual, micro, and macro levels), experiences, backgrounds of diverse actors, trust among key stakeholders or kinds of attitudes might a belief in design be associated with?

Furthermore, some constraints emerged during the research process: some people contribute a lot, telling their perspectives on the projects, while others are more difficult to reach, and were not available to a face-to-face interview, even though they have contributed by other means. Some consultants feel afraid for their relationship with the design support agency when pointing out projects' criticisms. The beneficiaries' list provided by the design support agency did not contain all the beneficiaries that joined a project, and one of them did not have all their contacts up to date, which delayed the last interview.

In the Brazilian context, the isolated use of design (or more collaborative or participatory approach) is not enough to change the current scenario. Other transformations are also needed. The need (1) to improve the social and economic infrastructure across the country, (2) to foster design education among key stakeholders, (3) to invest in and better monitor design innovation, and (4) for meritocracy among decision-makers call for policy and management change. Design is one of the means or vehicle for political and organisational change. However, the openness to it is not taken for granted. The ability to put citizens' and beneficiaries' real needs at the core of responsible policies creation is the main contribution of designers' role and competencies to policy-making (Junginger, 2014; Mortati et al., 2016).

Nonetheless, while decision-makers are still not truly committed to the public good, avoiding to promote changes in their approach to policy-making that increasingly require human-centred and collaborative perspectives to address a complex and dynamic world, in the fear for being responsible for, or, for sharing responsibility for what they shall be strongly committed to, and should struggle to achieve, things are likely to not change too much in the coming decades.

GLOSSARY

Communities of practice

They are "molded out of people with diverse backgrounds and perspectives and the need in organizing for innovation to create and maintain such communities" (e.g. Silicon Valley) (Piore & Cardoso, 2017, p. 6). In the 1990s and 2000s, communities of practice play a key role in creating the appropriate environment for new ideas to flourish. However, studies from the 1990s and 2000s have pointed out that creating and maintaining such communities is feasible in theory but hard to implement in practice (Piore & Cardoso, 2017, p. 22).

Design capabilities

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 capabilities (e.g. Acklin, 2013; Borja de Mozota, 2006; Bruce, Cooper, & Vazquez, 1999; Chiva & Alegre, 2009; Jevnaker, 2000; Mortati, et al, 2014). The terminology adopted is not convergent in these studies and differences are identified according to the conceptual framework developed in each research.

Design-centric company

Companies that consciously use design as an integral part of their business strategy, understanding the power of design, how to use it as a tool, and how to scale it in a way that will drive success for their businesses (Rae, 2014). Rae (2014) points out the criteria to recognize a design-centric firm used to establish the Design Management Institute (DMI) design value index throughout a ten-year study, which shows that design-centric companies outperform the S&P 500 (S&P index is determined by Dow Jones indices and includes 500 leading companies and captures approximately 80% coverage of available market capitalization. Source: http://us.spindices.com/indices/equity/sp-500) by 228%.

Design-driven innovation

> "… customers hardly help in anticipating possible radical changes in product meanings. The sociocultural context in which they are currently immersed makes them inclined to interpretations that are in line with what is happening today. Radical changes in meanings instead ask for radical changes in sociocultural models, and this is something that might be understood (and affected) only by looking at long-term phenomena with a broader perspective. Design-driven innovation is therefore pushed by a firm's vision about possible

> breakthrough meanings and product languages that could emerge in the future. As this vision cannot be developed solely by looking at current user behaviors, the process of these firms has little in common with user-centred approaches." (Verganti, 2008, p. 438)

Design-driven innovation is an approach or strategy in which organisations propose the innovation for customers. Its process does not start from users' insights but it has its core in the companies' capabilities to redefine the product's meaning for a customer. Examples of firms which have built these capabilities are among design-intensive firms or design-led organisations, such as the worldwide leaders: Apple, Bang & Olufsen, Philips, and Italian firms, such as Alessi, Artemide, and Kartell, that achieved leadership in their industry despite their small size and limited resources (Verganti, 2008).

However, since around 2008 the term has been also used to approach innovation and its relation to design, including human-centred design and social innovation, especially in European Commission documents.

Design innovation

Despite the absence of a commonly agreed design definition (see for instance Arquilla, Maffei, Mortati, & Villari, 2015; Swann, 2010), design can be:

- a tool that drives innovation, competitiveness, and national economic growth (European Commission, 2016; Thomson & Koskinen, 2012);
- a way to shape creativity towards innovation (Cox, 2005);
- a lever of non-technological innovations (D'Ippolito, 2014; Thomson & Koskinen, 2012; Verganti, 2008);
- a way to humanise technologies (Heskett, 2009).

Design results can range from new ideas into the market in terms of users' experience, services, products, and business strategy at the company's level, to better public services and quality of life in social and public spheres in which its value is in its processes rather than in its results (European Commission, 2016; Julier, 2017; Thomson & Koskinen, 2012).

Design-intensive firm

A rapidly-growing company that attaches much greater weight to design than average-growing companies; a company where design is integral to business strategy (DTI, 2005). See also the definition of design-intensive firm according to the Design Council (2015) in the design-intensive industry definition.

Design-intensive industry

Industries in which design plays an essential role to develop outstanding products and services. For instance, Verganti (2003, p. 35) quotes furniture, lighting, kitchenware, and small appliances in this typology of industry. The Design Council (2015) follows the Nesta method, which considers design-intensive firms and industries when 30% or more of the workforce are employed in design occupations. Some examples of these industries that practice and sell design are digital design, web design, animation, architecture, and built environment (Design Council, 2015). Verganti's approach is not connected to the workforce in design occupations as Nesta and Design Council's approach but is related to how these firms use design to innovate in their industries, establishing also external collaborations with designers.

Design-led company

It is when design thinking promotes a cultural transformation process within a business, moving from the design thinking focus on specific

processes and tools to building leadership to support design activity (Bucolo, Wrigley, and Matthews, 2012).

> "Being design-led requires a company to have a vision for top-line growth within its business, one based on deep customer insights and expanded through customer and stakeholder engagements, with the outcomes being mapped to all aspects of the business to enable that vision to be achieved." (Bucolo, Wrigley, and Matthews, 2012)

Design-oriented company

A company in which design is the core activity and is the lever for innovativeness, where designers drive and support the development process and design is completely integrated with the other functions and its outputs contribute to the overall performance of the company (Calabretta, Montaña and Iglesias, 2008).

"… kinds of organization favourable to collective learning cycles, which are themselves conducive to this simultaneous regeneration of objects, skills and occupations." (Hatchuel and Weil, 1999 cited in Landoni, Dell'Era, Ferraloro, Peradotto, Karlsson, and Verganti, 2016).

Developing x Emerging x Newly Industrialised Countries (NICs)

These terms are used interchangeably throughout the thesis and are clarified below.

Brazil is included in three major group definitions: developing country or economy, emerging market, economy or country, and Newly Industrialised Countries (NICs). "The term developing used to denote low- and middle-income countries does not imply that all economies in the group are experiencing similar levels of development or that other economies have reached a preferred or final stage of development" (World Bank, 2015). Emerging market, country or economy have been related to countries which have reached a rapid economic growth and integration into world markets (OECD, 2009) but these countries are still considered very risky for several reasons (Emerging markets, 2003) including inequality (OECD, 2011). We note that the terms are also used overlapped (see International Monetary Fund [IMF], 2008, 2012). The emerging countries (markets or economies) are developing ones (e. g. Brazil and China are considered upper-middle income economies). It is possible to identify different groups of emerging economies depending on the source, aim of information or analysed subject (e. g. Morgan Stanley Investment Funds, 2015; Tsounta, 2014). The NICs term refers to countries whose level of economic development ranks somewhere between the developing and first-world classifications, presenting a transition from an agriculture-based economy to a more industrialized, urban economy based on manufacturing, construction, and mining, during the late 20th and early 21st centuries (Newly Industrialized Country - NIC, 2018; Singal & Wokutch, 2014). Trade and living standards are higher in NICs than in developing countries (Singal & Wokutch, 2014). They are also known as "newly industrializing economies" or "advanced developing countries" (Newly Industrialized Country - NIC, 2018). Er (1997, p. 294) defines NICs as a subgroup of less advanced economies that include countries that 'have attempted to gain design capabilities in parallel to their industrial development' from about the 1970s, although industrial design is still unknown in the less advanced economy practices.

Effective design policies

The effectiveness of design policies is related to the positive change and/or transformation of design capabilities observed in beneficiaries (Maffei, Arquilla, Mortati, Villari, Evans, Chisholm, & Londoni, 2014a). Maffei et al. (2014a) and Mortati, Villari, and Maffei (2014) include as design capabilities, design manage-

ment skills or capabilities (design leadership and design management), as well as design skills (design execution). Acklin (2013) distinguishes design management capabilities and design capabilities and their differences related to design 'absorption' in small companies with little or no design experience.

The effectiveness of design policies in this research is considered when the design policy contributes to the (1) adaptation of benefited companies, organizations, groups or territories to the competitive dynamics of markets, enabling (1.1) the valorization of products or services, or (1.2) employment growth, or (1.3) market range expansion (e.g. contributing to exports and regulation of products and services, promoting consumer awareness), or (1.4) to build skills towards innovative cultures, such as capabilities to visualize opportunities and introduce new ideas into the marketplace.

Innovative culture

An innovative organisational culture is based on the implementation of ideas (Kenny & Reedy, 2006, p. 119). Innovative cultures are risk-taking, engage all members promoting participation, encourage creativity, learning, share responsibilities, are committed to innovation (Kenny & Reedy, 2006; cited in Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2016), and can be measured by number of innovative services or products launched (Kenny & Reedy, 2006) and investment in innovation (Rao & Weintraub, 2013).

REFERENCES

Aalto University, Finnish Funding Agency for Technology and Innovation et al. (2012). *Design ROI: Measurable Design*. Retrieved from http://www.seeplatform.eu/images/DROI%20Measurable%20Design(1).pdf

Acklin, C. (2011). Design Management Absorption Model – A Framework to Describe the Absorption Process of Design Knowledge by SMEs with Little or No Prior Design Experience. In J. Moultrie, B. Dusch, J. Johnson, K. Keränen, K. Miller (Eds.), *Proceedings of the 1st Cambridge Academic Design Management Conference*, (pp. 1-14). Cambridge: University of Cambridge.

Acklin, C. (2013). Design Management Absorption Model – A framework to describe and measure the absorption process of design knowledge by SMEs with little or no prior design experience. *Creativity and Innovation Management*, 22(2), 147-160.

Airaksinen, A., Luomaranta, H., Alajääskö, P., & Roodhuijzen, A. (2015). *Statistics on small and medium-sized enterprises. Dependent and independent SMEs and large enterprises*. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_on_small_and_medium-sized_enterprises.

Altenburg, T., & Meyer-Stamer, J. (1999). How to Promote Clusters: Policy Experiences from Latin America. *World Development*. doi: 10.1016/S0305-750X(99)00081-9.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., Herron, M. (1996). Assessing the Work Environment for Creativity. *The Academy of Management Journal*, 39(5), 1154-1184.

Amir, S. (2002). Industrial Design in Indonesia: Education, industry, and policy. *Design Issues*, 18(2), 36-48.

Amir, S. (2004). Rethinking Design policy in the Third world. *Design Issues*, 20(4), 68-75.

Araújo, S. (2016). *Untying the knots strangling Brazil's competitiveness*. OECD ECOSCOPE. Retrieved from https://oecdecoscope.wordpress.com/2016/05/20/untying-the-knots-strangling-brazils-competitiveness/

Arnold, J. (2016). *Brazil: A tale of two industries or how openness to trade matters*. OECD ECOSCOPE. Retrieved from https://oecdecoscope.wordpress.com/2016/03/22/brazil-a-tale-of-two-industries-or-how-openness-to-trade-matters/

Arquilla, V., Maffei, S., Mortati, M., Villari, B. (2015). Assessing European Design Policy: Towards an Evaluation Culture. In L. Collina, L. Galluzzo, A. Meroni (Eds.), *Proceedings of the Culumus Conference: The Virtuous Circle* (pp. 915-926). Milan: McGraw-Hill Education Italy. Retrieved from http://cumulusmilan2015.org/proceedings/articles/abs-068-Assessing/

Ball, J., Fonseca, K., Knecht, J., Melander, C., Melioranski, R., Ryan, L., Thompson, J., Thurston, P., Vaarmann, H., Whicher, A. (2011). *Building Next Generation Design Support Programmes. Putting policy into action*. SEE Policy Booklet. Retrieved from http://www.businesssupportcanvas.com/wp-content/uploads/NextGenPublication.pdf

Barcelona Design Center. (2014). *€ Design: Measuring Design Value. Guidelines for collecting and interpreting design data: A proposal for a future Barcelona Manual on Design*. Retrieved from: http://www.measuringdesignvalue.eu

Bason, C. (2014). Introduction: The Design for Policy Nexus. In C. Bason (Ed.), *Design for Policy* (pp. 1-8). Abingdon, Oxon: Grower Publishing.

Bason, C., & Schneider, A. (2014). Public Design in Global Perspective: Empirical Trends. In C. Bason (Ed.), *Design for Policy* (pp. 23-40). Abingdon, Oxon: Grower Publishing.

Baxter, M. (1998). *Projeto de produto: guia prático para o design de novos produtos* [Product design: a practical guide to systematic methods of new product development]. São Paulo, Brasil: Edgard Blücher.

Bell, S. (2015). *Small and Medium Enterprises (SMEs) Finance*. Retrieved from http://www.worldbank.org/en/topic/financialsector/brief/smes-finance

Bentley, T. (2014). Design in Policy: Challenges and Sources of Hope for Policy-makers. In C. Bason (Ed.), *Design for Policy* (pp. 11-22). Abingdon, Oxon: Grower Publishing.

Bessant, J. (2002) Why design? In M. Bruce, J. Bessant, *Design in business: strategic innovation through design* (pp. 3-7). London, England: Financial Times Prentice Hall.

Bitard, P., Basset, J. (2008). *Design as a tool for Innovation - Mini study 05*. pro-Inno Europe - Inno Grips. Retrieved from http://grips-public.mediactive.fr/ministudies/view/5/design-as-a-tool-for-innovation/

Boeri, S. (2018, May). Presentazione del volume Le politiche del quotidiano di Ezio Manzini [Presentation of the book 'The everyday policies' by Ezio Manzini] [Class handout]. In B. Niessen (Chair). *cheFare: Politiche del quotidiano. Progetti di vita che cambiano il mondo*. Lecture conducted from La Triennale di Milano, Milan, Italy.

Boland, R. J., Collopy, F. (2004). Design matters for management. In R. J. Boland; F. Collopy (Ed.), *Managing as designing* (pp. 3-18). Stanford, California: Stanford University Press.

Bonsiepe, G. (2006). Design and Democracy. *Design Issues*, 22 (2), 27-34.

Bonsiepe, G. (2011) *Design, cultura e sociedade* [Design, culture, and society]. São Paulo, Brasil: Blucher.

Bonsiepe, G., Krippendorff, K., Maser, S, Spitz, R. (2015, Winter). Traces and Hopes of Design Research: An Interview with Gui Bonsiepe, Klaus Krippendorff, Siegfried Maser, and René Spitz. Interview by S. Groll. *Design Issues*, 31 (1), 18-31. doi: 10.1162/DESI_a_00305

Borges, A. (2009). Design. In *Cultural Mapping Brazil 2009* (pp. 52-85), Dutch Culture Centre for International Cooperation. Retrieved from https://brazil.dutchculture.nl/sites/default/files/Cultural_Mapping_Brazil_2009_by_DutchCulture.pdf

Borges, A. (2011). *Design + artesanato: o caminho brasileiro* [Design + crafts: the Brazilian way]. São Paulo, Brasil: Terceiro Nome.

Borja de Mozota, B. (2006) The Four Powers of Design: A Value Model in Design Management. *Design Management Review*, 17, 43-53.

Boult, J. (2006, September). Emerging Demands and Challenges for Design Support. In G. Cawood and G. Raulik (Eds.), *SEEdesign Bulletin*, Sharing experience on design support, Issue 3, 6-7.

Bradesco. (2017). *Indústria de Móveis* [Furniture Industry]. Departamento de Pesquisas e Estudos Econômicos. Economia em dia, Osasco, São Paulo. Retrieved from https://goo.gl/pvm9Dr.

Brown, T. (2008). *Design thinking*. Harvard Business Review, 86(6), 84-92.

Brown, T. (2009). *Change by design: how design thinking transforms organizations and inspires innovation*. New York, NY: HarperCollins Publishers.

Bruce, M., & Bessant, J. (2002) Design definitions and management processes. In M. Bruce, J. Bessant, *Design in business: strategic innovation through design* (pp.1-2). London, England: Financial Times Prentice Hall.

Bruce, M.; Cooper, R.; Vazquez, D. (1999). Effective design management for small businesses. *Design Studies*, 20, 297–315.

Buchanan, R. (1992). Wicked Problems in Design Thinking. *Design Issues*, 8 (2), 5-21.

Bucolo, Sam, Wrigley, Cara, & Matthews, Judy H. (2012) Gaps in organizational leadership: linking strategic and operational activities through design-led propositions. *Design Management Journal*, 7(1), pp. 18-28. Retrieved from: http://eprints.qut.edu.au/54013/

Bürdek, B. E. (2006) *História, teoria e prática do design de produtos* [History, theory, and practice of product design]. São Paulo, Brasil: Edgard Blücher.

Burns, K., Annable, L. (2011). Measuring Design Effectiveness. In *9th European Academy of Design Conference Proceedings: The Endless End*, Porto, Portugal.

Cabello, A. F., Martins Costa Póvoa, L. (2016). Análise econômica da primeira Lei de Patentes brasileira. *Estudos Econômicos*, 46(4), 879-907. doi: http://dx.doi.org/10.1590/0101-416146484aclp

Calabretta, G., Montanã, J., Iglesias, O. (2008) A cross-cultural assessment of leading values in design-oriented companies. *Cross Cultural Management: An International Journal*, 15 (4), 379-398.

Caloête, E. Q. M., Westin, D. G. (Coord.). (2014). *Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (SEBRAE) - Design no Brasil: relatório 2014 do setor de design* [The Brazilian Micro and Small Businesses Support Service - Design in Brazil: report 2014]. Brasília, Brazil: Sebrae. Retrieved from https://www.sebrae.com.br/sites/PortalSebrae/artigos/o-design-no-brasil-relatorio-2014,6d818242d5e67410VgnVCM1000003b74010aRCRD

Cantù, C. (2013). *Innovazione e prossimità relazionale. Il contesto dei parchi tecnologici* [Innovation and relational proximity. The context of technology parks]. Milan, Italy: Franco Angeli.

Cawood, G. (1997). Design Innovation and Culture in SMEs. *Design Management Journal*, 8(4), 66-70.

CBD, Apex-Brasil, MDIC. (2014). *Diagnostic Review of Design in Brazil*. Retrieved from http://www.cbd.org.br/downloads/

Celaschi, F., Celi, M., García, L. M. (2012) The Extended Value of Design: An Advanced Design Perspective. *Design Management Journal*, 6-15.

Chisholm, J., Cruickshank, L., Evans, M., Cooper, R. (2013). Can policy be participatory? – The application of design practice to policy development. In H. Melkas & J. Buur (Eds.), *Proceedings of the Participatory Innovation Conference* (pp. 446-452). Lahti, Finland: Lappeenranta University of Technology. Retrieved from https://www.lut.fi/documents/27578/292022/PIN-C+2013_Proceedings_HQ.pdf/17fa385b-cc30-4ae4-82a6-59308a80d503

Chiva, R., Alegre, J. (2009). Investment in Design and Firm Performance: The Mediating Role of Design Management. *The Journal of Product Innovation Management*, 26, 424-440.

Cho, D.-S. (2004). Design, Economic Development and National policy: Lessons from Korea *Design Management Review*, 15(4), 10-20.

Choi, Y. (2009). *A Comparative Study of Nation-*

al Design Policy in the UK and South Korea (Doctoral dissertation, Lancaster University). Retrieved from http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.523481

Choi,Y., Cooper,R., Lim,S., and Evans,M. (2010), National Support for Design: Developing Propositional Models. *The Design Management Institute*, 21 (4), 60-69.

Chung, K. W. (1993). The Miracle of Han River: Korean Government Policy and Design Management in the Motor Industry. *Design Management Review*, 4(3), 41-47.

Chung, K. W. (2015). The Miracle of Han River: Korean Government Policy and Design Management in the Motor Industry, *DMI 40th Anniversary issue 2015*, 63-73.

Clark, K. B., and S. C. Wheelwright. (1993). *Managing New Product and Process Development: Text and Cases*. New York, NY: Free Press.

CNI. (n.d.a). *SENAI* [the National Service of Industrial Training (SENAI)]. Retrieved from http://www.portaldaindustria.com.br/senai/en/about/senai/

CNI. (n.d.b). *Structure*. Retrieved from http://www.portaldaindustria.com.br/senai/en/about/structure/

CNI. (n.d.c). *Variáveis e fontes* [Variables and sources]. Retrieved from http://perfilestados.portaldaindustria.com.br/variaveis

Cohen, W. M., Levinthal, D. A. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35 (1), 128-152.

Cooper, R.; Hernandez, R. J.; Murphy, E. & Tether, B. (2016). *Design Value: The Role of Design in Innovation*. Lancaster University, Lancaster, UK. Retrieved from http://imagination.lancs.ac.uk/news/Design_Value

Cox, G. (2005). *Cox Review of Creativity in Business: building on the UK's strengths*. Retrieved from http://webarchive.nationalarchives.gov.uk/

Cross, N. (2001). Designerly Ways of Knowing: Design Discipline Versus Design Science. *Design Issues*, 17 (3), 49-55.

Csillag, J. M. (1991). *Análise do Valor: metodologia do valor: engenharia do valor, gerenciamento do valor, redução de custos, racionalização administrativa*. São Paulo, Brasil: Atlas.

Danish Design Centre. (2003). *The Economic Effects of Design*. Copenhagen: National Agency for Enterprise and Housing. Retrieved from http://www.seeplatform.eu/images/the_economic_effects_of_designn.pdf

Danish Design Centre. (2007). *The Design Ladder*. Copenhagen: Danish Business Authority. Retrieved from http://ddc.dk/wp-content/uploads/2015/05/Design-Ladder_en.pdf

D'Elia, A. (2018, May). Presentazione del volume Le politiche del quotidiano di Ezio Manzini [Presentation of the book The daily policies by Ezio Manzini] [Class handout]. In B. Niessen (Chair). *cheFare: Politiche del quotidiano. Progetti di vita che cambiano il mondo*. Lecture conducted from La Triennale di Milano, Milan, Italy.

Dell'Era, C., Verganti, R. (2007). Strategies of Innovation and Imitation of Product Languages. *The Journal of Product Innovation Management*, 24, 580-599.

Departamento de Pesquisas e Estudos Econômicos (2015). *Indústria de Móveis* [Furniture Industry]. Bradesco. Retrieved from http://www.economiaemdia.com.br/EconomiaEmDia/pdf/infset_industria_de_moveis.pdf

Deserti, A., & Rizzo, F. (2014). Design and the Cultures of Enterprises. *Design Issues*, 30, 36-56. doi: 10.1162/DESI_a_00247

Design Council. (2007a). *Eleven lessons: managing design in eleven global brands: A study of the design process*. Retrieved from www.designcouncil.org.uk

Design Council. (2018). *The Design Economy 2018: the state of design in the UK*. Retrieved from: https://www.designcouncil.org.uk/resources/report/design-economy-2018

Design Council. (2015). *The Design Economy: The value of design to the UK economy*. Retrieved from http://www.designcouncil.org.uk/resources/report/design-economy-report

Design Council. (2007b). *The Value of Design: Factfinder report*. Retrieved from https://www.designcouncil.org.uk/sites/default/files/asset/document/TheValueOfDesign-Factfinder_Design_Council.pdf.

Design Policy Lab. (2018). *Explaining the Design Policy Beacon Framework*. Politecnico di Milano, Milan, Italy. Retrieved from http://www.designpolicy.eu/design-policy-beacon/framework/

Design. (n.d.). In *Online Etymology Dictionary*. Retrieved from http://www.etymonline.com/index.php?term=design

D'Ippolito, B, Miozzo, M, Consoli, D. (2014). Knowledge systematisation, reconfiguration and the organisation of firms and industry: The case of design. *Research Policy*, 43, 1334-1352. doi.org/10.1016/j.respol.2014.03.013

D'Ippolito, B. (2014). The importance of design for firms' competitiveness: A review of the literature. *Technovation*, 34, 716-730. doi: 10.1016/j.technovation.2014.01.007

Doherty, R., Wrigley, C., Matthews, J., Bucolo, S. (2014) Climbing the Design Ladder: Step by step. In E. Bohemia, A. Rieple, J. Liedtka, R. Cooper (Eds.), *Proceedings of the 19th DMI: Academic Design Management Conference: Design Management in an Era of Disruption* (pp. 2576-2597). Boston, MA, USA: Design Management Institute.

DTI. (2005). *Economics paper No.15. Creativity, Design and Business Performance*. Retrieved from http://www.ico-d.org/database/files/library/economics_paper15.pdf

ECLAC (2015). *The European Union and Latin American and the Caribbean in the new economic and social context*. Retrieved from http://repositorio.cepal.org/bitstream/handle/11362/38230/S1500330_en.pdf?sequence=1.

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. Academy of Management. *The Academy of Management Review*, 14 (4), 532-550.

Emerging markets. (2003). *Wall Street Words: An A to Z Guide to Investment Terms for Today's Investor by David L. Scott*. Retrieved from http://financial-dictionary.thefreedictionary.com/Emerging+economies

Er, H. A. (1997). Development Patterns of Industrial Design in the Third World: A Conceptual Model for Newly Industrialised Countries. *Journal of Design History*, 10 (3), 293-307.

Er, H. A. (2002). Does Design Policy Matter? The Case of Turkey in a Conceptual Framework. In S. Lee (Ed.), *Design Policy and Global Network: World Design Forum Proceedings* (pp. 160-191). Seongnam, South Korea: KIDP and ICSID.

Er, H. A. (2015) Padrões de desenvolvimento do design industrial no Terceiro Mundo: um modelo conceitual para países recém-industrializados [Development Patterns of Industrial Design in the Third World: A Conceptual Model for Newly Industrialised Countries]. In G. Patrocínio, J. M. Nunes (Eds.), *Design & desenvolvimento: 40 anos depois* (pp. 29-54). São Paulo, Brasil: Blucher.

European Commission (2015a). *AL-INVEST 5.0: Inclusive Growth for Social Cohesion in Latin America – Guidelines for grant applicants*. Retrieved from https://webgate.ec.europa.eu/europeaid/online-services/index.cfm?ADSSChck=1435233844256&do=publi.detPUB&searchtype=AS&orderbyad=Desc&Pgm=7573839&nbPubliList=15&zgeo=35380&page=1&debpub=&aoref=150066&orderby=upd&u

serlanguage=en.

European Commission. (2009). *Design as a driver of user-centred innovation*. Commission staff working document. Brussels, Belgium: Commission of The European Communities.

European Commission. (2016). *Design for innovation*. Retrieved from http://ec.europa.eu/growth/industry/innovation/policy/design/index_en.htm

European Commission. (2013). *Implementing an Action Plan for Design-Driven Innovation*. Commission staff working document. Brussels, Belgium: European Commission.

European Commission. (2015b). *User guide to the SME definition*. Luxembourg: Publications Office of the European Union. Retrieved from http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8274&lang=en

Evans, M., Chisholm, J. (2014). Towards a Taxonomy. *Design Policy Issues*, 2, 4-7. Retrieved from http://www.deepinitiative.eu

Filson, A., Lewis, A. (2000). Barriers between Design and Business Strategy. *Design Management Journal*, 11 (4), 48-52.

Fonseca Braga, M. (2010). *O ecodesign na marcenaria da ASMARE - BH: um estudo de caso* [The ecodesign at ASMARE-BH's carpentry factory: a case study] (Master's thesis, Universidade Federal de Minas Gerais). Retrieved from http://www.bibliotecadigital.ufmg.br/dspace/handle/1843/MCBR-8AMKQV

Fonseca Braga, M. (2016). The value of design: an issue of vision, creativity and interpretation. In P. Lloyd & E. Bohemia (Eds.), *DRS 2016 Conference Proceedings* (pp. 1865-1881). London, UK: Design Research Society. doi: 10.21606/drs.2016.129

Fonseca Braga, M. (2017a). Ceasing copycat behaviour: developing product design identity through industry and handcraft interaction. *Gestão e Tecnologia de Projetos* [Design Management and Technology], 12 (2), 21-40. doi: http://dx.doi.org/10.11606/gtp.v12i2.110536

Fonseca Braga, M. (2017b). The choice of design. From businesses' conditions to businesses' attitudes. *The Design Journal*, 20:sup 1, S635-S646. doi: 10.1080/14606925.2017.1353011

Fonseca Braga, M., Zurlo, F. (2018). Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support. In: C. Storni, K. Leahy, M. McMahon, P. Lloyd, & E. Bohemia (Eds), *Proceedings of the Design Research Society 2018: Catalyst*, Volume 7, pp. 2987-3006. doi 10.21606/dma.2018.442

Forty, A. (2007). *Objeto de desejo: design e sociedade desde 1750* [Objects of Desire: Design and Society Since 1750]. São Paulo, Brasil: Cosac Naify.

Fundação Getúlio Vargas. (2015). *O Impacto do Design no Desempenho das Empresas: pesquisa setorial* [The Impact of Design on Business Performance: sectoral research]. Porto Alegre: Pequenas Empresas e Grandes Negócios. Retrieved from https://goo.gl/czhGaR

Galinari, R., Teixeira Junior, J. R., & Morgado, R. R. (2013). A competitividade da indústria de móveis do Brasil: situação atual e perspectivas [The competitiveness of the Brazilian furniture industry: current situation and perspectives]. *BNDES Setorial*, 37, 227-272. Retrieved from http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/bnset/set3706.pdf

Gemser, G., & Leenders, M. A. A. M. (2001). How integrating industrial design in the product development process: impacts on company performance. *The Journal of Product Innovation Management*, 18, 28-38.

Giard, J. (1996). Canadian Design and the Na-

tional Agenda: Towards the year 2005. *Design Management Journal*, 7(3), 27-31.

Glaser, B. G., & Strauss, L. A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, Illinois: Aldine Publishing Co.

Gorb, P., & Dumas, A. (1987, 1997) Silent Design. In M. Bruce, R. Cooper (Eds.) (1997), Marketing and Design Management (pp. 159-174). London, England: International Thomson Business Press.

Guedes, S. (2014). *Confecções apostam no mercado varejista para aumentar a competitividade* [Lingerie manufacturers bet on the retail market to increase competitiveness]. Retrieved from http://www.agenciasebrae.com.br/sites/asn/uf/NA/confeccoes-apostam-no-mercado-varejista-para-aumentar-a-competitividade,37c397f2be388410VgnVCM2000003c74010aRCRD

Gupta, N., Weber, C., Peña, V., Shipp, S. S., & Healey, D. (2013). *Innovation Policies of Brazil*. Alexandria, Virginia: Institute for Defense Analyses (IDA). Retrieved from http://www.dtic.mil/docs/citations/ADA603223

Hertenstein, J., Platt, M., & Veryzer, R. (2012). What is "Good Design"?: An investigation of the structure and complexity of design. *Proceedings of the DMI 2012 International Research Conference: Leading Innovation through Design* (pp. 175-192). ISBN 978-0-615-66453-8 (electronic)

Heskett, J. (2010, January). Aspects of Design Policy in History. In G. Raulik-Murphy, A. Whicher & G. Cawood (Eds.), *SEE Bulletin*, Sharing Experience Europe, Policy Innovation Design, Issue 2 (pp. 3-6).

Heskett, J. (2009). Creating Economic Value by Design. *International Journal of Design*, 3(1), 71-84.

Heskett, J. (2016). Design and Industry in China. In C. Dilnot (Ed.), *A John Heskett Reader: Design, History, Economics* (pp. 237-251), London, UK: Bloomsbury.

Heskett, J. (2006). *Design Policy and the Rise of Asian Design* [PowerPoint slides]. Third International Workshop on Design Support, Design Wales, Cardiff, Wales.

Heskett, J. (2001a). *Design Policy – Historical Background* [Word document]. Institute of Design, Illinois Institute of Technology (IIT), Chicago, Illinois.

Heskett, J. (2001c, Spring). *Design Policy* [PowerPoint slides]. Institute of Design, Illinois Institute of Technology (IIT), Chicago, Illinois.

Heskett, J. (2001b). *Design Policy* [Word document]. Institute of Design, Illinois Institute of Technology (IIT), Chicago, Illinois.

Heskett, J. (1993, 2016). Lessons Abroad: Learning from Germany's Integrated Design Policy. In C. Dilnot (Ed.), *A John Heskett Reader: Design, History, Economics* (pp. 233-236), London, UK: Bloomsbury.

Heskett, J. (1999, 2016). National Design Policy and Economic Change. In C. Dilnot (Ed.), *A John Heskett Reader: Design, History, Economics* (pp. 229-232), London, UK: Bloomsbury.

Hinterhuber, A. (2008). Value delivery and value-based pricing in industrial markets. In A. G. Woodside, F. Golfetto, M.Gibbert (Eds.), *Creating and managing superior customer value* (pp. 382-448). Bingley, UK: Emerald Group Publishing Limited.

Hobday, M., Boddington, A., & Grantham, A. (2012). Policies for design and policies for innovation: Contrasting perspectives and remaining challenges. *Technovation*, 32, 272-281. doi: 10.1016/j.technovation.2011.12.002

Hunter, M. (2014). *What is design and why it matters*. Retrieved from http://www.thecreativeindustries.co.uk/uk-creative-overview/news-and-views/view-what-is-design-and-why-it-matters

IDEO (2011). *Human-Centered Design Toolkit*

(2nd ed.). Retrieved from https://staticyali.state.gov/uploads/2015/07/IDEO_HCD_ToolKit.pdf

IDEO. (2014). *Design Thinking for Libraries: A Toolkit for Patron-Centered Design*. Retrieved from http://designthinkingforlibraries.com/

IDEO.org (2015). *The Field Guide to Human-Centered Design*. Retrieved from http://bestgraz.org/wp-content/uploads/2015/09/Field-Guide-to-Human-Centered-Design_IDEOorg.pdf

IDEO.org. (n.d.). *How Might We*. Retrieved from http://www.designkit.org/methods/3

IMF (2008). *Emerging and developing economies/Countries*. Retrieved from http://www.imf.org/external/pubs/ft/weo/2008/01/weodata/groups.htm#oem.

IMF (2012). *Emerging, Developing Economies Now More Resilient*. Retrieved from http://www.imf.org/external/pubs/ft/survey/so/2012/RES092712A.htm.

INEP. (2017). *Sinopse Estatística da Educação Superior 2016* [Synopsis of Higher Education 2016]. Retrieved from http://inep.gov.br/web/guest/sinopses-estatisticas-da-educacao-superior

International Council of Societies of Industrial Design (2015) *Definition of design*. Retrieved from: http://www.icsid.org/about/about/articles31.htm

Ito, J., Howe, J. (2016). *Whiplash. How to Survive Our Faster Future*. New York, NY: Grand Central Publishing.

Jevnaker, B. H. (2000). Championing Design: Perspectives on Design Capabilities. *Design Management Journal*, 25-39.

Julier, G. (2017). *Economies of design*. London, UK: Sage Publications Ltd.

Junginger, S. (2008). Product Development as a Vehicle for Organizational Change. *Design Issues*, 24 (1), 26-35. doi.org/10.1162/desi.2008.24.1.26

Junginger, S. (2014). Towards Policy-making as Designing: Policy-making Beyond Problem-solving and Decision-making. In C. Bason (Ed.), *Design for Policy* (pp. 57-69). Abingdon, Oxon: Grower Publishing.

Kang, M. (2015). *Industrial Design Policies: A Review of Selected Countries*. OECD Committee on Industry, Innovation and Entrepreneurship. Retrieved from: http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND(2014)9/FINAL&docLanguage=En

Kenny, B., & Reedy, E. (2006). The Impact of Organisational Culture Factors on Innovation Levels in SMEs: An Empirical Investigation. *Irish Journal of Management*, 27(2), 119-142.

Kim, L. (1997). *Imitation to Innovation: the dynamics of Korea's technological learning*. Boston, Massachusetts: Harvard Business School Press.

Kimbell, L. (2016). Design in the Time of Policy Problems. In P. Lloyd & E. Bohemia (Eds.), *DRS 2016 Conference Proceedings* (pp. 3605-3618). London, UK: Design Research Society.

Kootstra, G. L. (2009). *Design Management Europe Survey 2009*. Rotterdam, The Netherlands: Centre for Brand, Reputation and Design Management, INHOLLAND University of Applied Sciences. Retrieved from http://www.bcd.es/site/unitFiles/2585/DME_Survey09-darrera%20versi%C3%B3.pdf

Kotler, P.(1972) A Generic Concept of Marketing. *Journal of Marketing*, 36(2), 46-54.

Kraichete, D. (2015). *Mapping Brazil – Design*. DutchCulture centre for international cooperation. Retrieved from https://brazil.dutchculture.nl/en/mapping/mapping-brazil-design-0

Krucken, L. (2009). *Design e território: Valori-*

zação de identidades e produtos locais [Design and territory: Valuing local identities and products]. São Paulo, Brasil: Studio Nobel.

Landoni, Paolo; Dell'Era, Claudio; Ferraloro, Gregorio; Peradotto, Mattia; Karlsson, Helena; Verganti, Roberto. (2016). Design Contribution to the Competitive Performance of SMEs: The Role of Design Innovation Capabilities. *Creativity and Innovation Management*, 25(4): 484-499. DOI 10.1111/caim.12165

Larsen, P., Lewis, A. (2007). How Award-Winning SMEs Manage the Barriers to Innovation. *Creativity and Innovation Management*, 16(2), 142-151. doi:10.1111/j.1467-8691.2007.00428.x

Laurenza, A. (2017, April). The experience [Class notes]. In M. Symonds (Chair). *Overcrowded event-challenge*. Lecture conducted from School of Management, Politecnico di Milano, Milan, Italy.

Lawlor, P., O'Donoghue, A., Wafer, B., & Commins, E. (2015). *Design-Driven Innovation. Why it Matters for SME Competitiveness*. Retrieved from http://www.seeplatform.eu/docs/Design-Driven%20Innovation-Why%20it%20Matters%20for%20SME%20Competitiveness(3).pdf

Lerner, J. (2010). The future of public efforts to boost entrepreneurship and venture capital. *Small Business Economics*, 35, 255-264. doi 10.1007/s11187-010-9298-z. Retrieved from https://link.springer.com/content/pdf/10.1007%2Fs11187-010-9298-z.pdf

Little, A. C., Jones, B. C., DeBruine, L. M., & Caldwell, C. A. (2011). Social learning and human mate preferences: a potential mechanism for generating and maintaining between-population diversity in attraction. *Philosophical Transactions of the Royal Society*, 366-375. doi: 10.1098/rstb.2010.0192

Madeuf, B., & Estimé, MF. (2000). *Compendium on International and Regional Bodies: Activities and Initiatives Related to Small and Medium-Sized Enterprises (SMEs)*. Retrieved from https://www.oecd.org/cfe/smes/2090691.pdf

Maeda, J., Kleiner Perkins Caufield & Byers team. (2015). *#DesignIn Tech Report*. Retrieved from: http://www.kpcb.com/blog/design-in-tech-report-2015.

Maffei, S., Arquilla, V., Mortati, M., Villari, B, Evans, M., Chisholm, J., & Londoni, P. (2014a). *Design in European Policy (DeEP) final publication*. Retrieved from http://www.deep-initiative.eu/wp-content/uploads/2012/12/DEEP_FINAL-PUBLICATION.pdf

Maffei, S., Bianchini, M., & Mortati, M. (2014b) Design 2020. *Le sfide della trasformazione del sistema design Lombardo* [Design 2020. The challenges of transforming the Lombard design system]. Regione Lombardia, Direzione Generale Commercio, Turismo e Terziario, Milano, Italia: Libraccio Editore. Retrieved from http://www.designpolicy.eu/wp-content/uploads/2016/04/RegioneLombardia_DESIGN2020_Documento-Finale.pdf

Maffei, S., Mortati, M., & Villari, B. (2014c). Making/Design Policies Together. In M. Mortati, L. Cruickshank, S. Maffei, & M. Evans (Eds.), *10th European Academy of Design Conference - Crafting the Future* (pp. 1-14). Gothenburg, Sweden: European Academy of Design. Retrieved from http://www.trippus.se/eventus/userfiles/67172.pdf

Manzini, E. (2007) *Design, social innovation and sustainable ways of living: Creative communities and diffused social enterprise in the transition towards a sustainable network society*. DIS- Indaco, Politecnico di Milano, Milan, Italy. Retrieved from http://www.producao.ufrj.br/design.isds/material.htm.

Manzini, E. (2018, May). Presentazione del volume Le politiche del quotidiano di Ezio Manzini [Presentation of the book The daily policies by Ezio Manzini] [Class handout].

In B. Niessen (Chair). *cheFare: Politiche del quotidiano. Progetti di vita che cambiano il mondo*. Lecture conducted from La Triennale di Milano, Milan, Italy.

Manzini, E., & Vezzoli, C. (2005). *O Desenvolvimento de Produtos Sustentáveis: Os requisitos Ambientais dos Produtos Industriais* [The Development of Sustainable Products: The Environmental Requirements of Industrial Products]. São Paulo, Brasil: Editora da Universidade de São Paulo.

Margolin, V. (2007). Design for Development: Towards a History. *Design Studies*, 28 (2), 111-115.

Marzano, Francelle. (2015, June 13). *Queijo de Minas é premiado em competição internacional realizada na França* [Cheese from Minas is awarded in international competition held in France]. Retrieved from http://www.em.com.br/app/noticia/economia/2015/06/13/internas_economia,657775/queijo-de-minas-e-premiado-na-franca.shtml

Massa, S.; Testa, S. (2008). Innovation and SMEs: Misaligned perspectives and goals among entrepreneurs, academics, and policy-makers. *Technovation*, 28, 393–407. doi: 10.1016/j.technovation.2008.01.002

Mazzucato, M. (2013). *The Entrepreneurial State: debunking public vs. private sector myths*. London, UK: Anthem Press.

Mazzucato, M., & Penna, C. (2015). *The Brazilian Innovation System: A Mission-Oriented Policy Proposal*. Brasília, DF: Centro de Gestão e Estudos Estratégicos. Retrieved from https://marianamazzucato.com/wp-content/uploads/2016/03/Full-Report-The-Brazilian-Innovation-System-CGEE-Mazzucato-and-Penna.pdf

Micheli, P. (2014). *Leading Business by Design. Why and how business leaders invest in design*. Design Council and Warwick Business School. Retrieved from http://www.designcouncil.org.uk/sites/default/files/asset/document/dc_lbbd_report_08.11.13_FA_LORES.pdf

Michlewski, K. (2008). Uncovering Design Attitude: Inside the Culture of Designers. *Organization Studies*, 29(03), 373–392. DOI: 10.1177/0170840607088019

Millward, H., Lewis, A. (2005). Barriers to successful new product development within small manufacturing companies. *Journal of Small Business and Enterprise Development*, 12 (3), 379-394. doi: 10.1108/14626000510612295

Ministério do Desenvolvimento, Indústria e Comércio Exterior (2015). *Cadeia Produtiva de Madeira e Móveis* [Wood and furniture productive chain]. Retrieved from http://www.mdic.gov.br/sitio/interna/interna.php?area=2&menu=317

Mintzberg, H. (1992). *Structure in fives: designing effective organizations*. NJ, US: Prentice-Hall.

Moraes Junior, D. (2002). *Il rapporto locale-globale, nuova sfida ed opportunità progettuale: il Brasile come caso locale* [The local-global relationship, the new design challenge and opportunity: Brazil as the local case] (Unpublished doctoral dissertation). Politecnico di Milano, Milan, Italy.

Moraes, D. (2006). *Análise do design brasileiro: entre mimese e mestiçagem* [Analysis of the Brazilian design between mimesis and miscegenation]. São Paulo, Brasil: Blucher.

Morgan Stanley Investment Funds (2015). *Emerging Markets Equity Fund*. Retrieved from http://www.morganstanley.com/msamg/msimintl/docs/en_LU/publications/factsheets/sicav/International/en_emergingmarketsequity_msinvf_fs.pdf.

Mortati, M. (2015). *Introducing the Design Policy Beacon*. Retrieved from http://www.designforeurope.eu/news-opinion/introducing-design-policy-beacon

Mortati, M., & Cruickshank, L. (2011). Design and

SMEs: the trigger of creative ecosystems. In *Proceedings of the Conference DPPI11*, Milan, Italy. doi 10.1145/2347504.2347550

Mortati, M., Villari, B., & Maffei, S. (2014). Design capabilities for value creation. In E. Bohemia, A. Rieple, J. Liedtka, & R. Cooper (Eds.), *Proceedings of the DMI Academic Conference* (pp. 2490-2510). London, UK: Design Management Institute.

Mortati, M.; Villari, B.; Maffei, S.; Arquilla, V. (2016). *Le politiche per il design e il design per le politiche. Dal focus sulla soluzione alla centralità della valutazione* [Design policies and design for policies. From the focus on solution to the centrality of evaluation]. Santarcangelo di Romagna, Italia: Maggioli S.p.A.

Moultrie, J., & Livesey, T.F. (2009). *International Design Scoreboard - Initial indicators of international design capabilities*. Great Britain, IfM and University of Cambridge. Retrieved from https://www.designcouncil.org.uk/sites/default/files/asset/document/InternationalDesignScoreboard.pdf

M'Rithaa, M. K. (2015). Design na África: participo, logo existo – entrevista com Mugendi K. M'Rithaa [Design in Africa: I participate, soon I exist - interview with Mugendi K. M'Rithaa]. Interview by G. Patrocínio. In G. Patrocínio, J. M. Nunes (Eds.), *Design & desenvolvimento*: 40 anos depois (pp. 155-166). São Paulo, Brasil: Blucher.

Munari, B. (1981). *Da cosa nasce cosa* [Things rise from things]. Bari-Roma, Italy: Laterza & Figli Spa.

Murphy, D., & Raulik Murphy, G. (2015). *The Design Innovation Performance of Paraná Businesses*. Curitiba, Paraná: Centro Brasil Design (CBD) and Duco – Driving Design Strategies. Retrieved from http://www.cbd.org.br/downloads/

Murray, R., Caulier-Grice, J., Mulgan, G. (2010). *The Open Book of Social Innovation*. London, UK: The Young Foundation and Nesta. Retrieved from https://www.nesta.org.uk/report/the-open-book-of-social-innovation/

Naranjo-Valencia, J. C., Jiménez-Jiménez, D., Sanz-Valle, R. (2016). Studying the links between organizational culture, innovation, and performance in Spanish companies. *Revista Latinoamericana de Psicología*, 48, 30-41.

Newly Industrialized Country - NIC. (2018). *Investopedia*. Retrieved from https://www.investopedia.com/terms/n/newly-industrialized-country.asp

Norman, D. A. (2008). *Design emocional: por que adoramos (ou detestamos) os objetos do dia-a-dia* [Emotional Design: Why We Love (or Hate) Everyday Things]. Rio de Janeiro, Brasil: Rocco.

Norman, D. A., Verganti R. (2014). Incremental and Radical Innovation: Design Research vs. Technology and Meaning Change. *Design Issues*, 30(1), 78-96. doi:10.1162/DESI_a_00250

Nunes, V. G. A. (2013). *Design pilot project as a boundary object: a strategy to foster sustainable design policies for Brazilian MSEs* (Doctoral dissertation, Politecnico di Milano). Retrieved from https://www.politesi.polimi.it/handle/10589/84283

Nunes, V. G. A. (2014). What Does Design & Innovation Mean for MSEs? A case study of eight Brazilian furniture firms. In E. Bohemia, A. Rieple, J. Liedtka, & R. Cooper (Eds.), *Proceedings of the 19th DMI Academic Design Management Conference: Design Management in an Era of Disruption* (pp 95-108). Boston, MA, USA: Design Management Institute.

OECD. (2007). *Eurostat – OECD Manual on Business Demography Statistics*. Retrieved from http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf

OECD. (2013a). *Economic Surveys: Brazil 2013*. Paris, France: OECD. Retrieved from https://

goo.gl/iY4r5y

OECD (2016a). *Financing SMEs and Entrepreneurs 2016: An Scoreboard*. Paris, France: OECD Publishing. doi 10.1787/fin_sme_ent-2016-en. Retrieved from http://www.keepeek.com/Digital-Asset-Management/oecd/industry-and-services/financing-smes-and-entrepreneurs-2016_fin_sme_ent-2016-en#.WC64m3fMw0o#page3

OECD. (2009). *Globalisation and Emerging Economies*. Retrieved from http://www.oecd.org/regional/searf2009/42576801.pdf.

OECD. (2014). *Latin American Economic Outlook 2015: Education, Skills and Innovation for Development*. Paris, France: OECD Publishing. doi 10.1787/leo-2015-en

OECD (2011). *Special Focus: Inequality in Emerging Economies* (EEs). Retrieved from http://www.oecd.org/els/soc/49170475.pdf.

OECD. (2016b). *Start-Up Latin America 2016 Building an Innovative Future*. Development Centre Studies, Paris, France: OECD Publishing. Retrieved from http://www.oecd.org/dev/americas/Startups2016-Assessment-and-Recommendations.pdf

OECD. (2013b). *Start-up Latin America: Promoting Innovation in the Region*. Development Centre Studies, Paris, France: OECD Publishing. Retrieved from https://www.oecd-ilibrary.org/industry-and-services/start-up-latin-america_9789264202306-en

OECD (2015). *Taxation of SMEs in OECD and G20 Countries*. Paris: OECD Publishing. Retrieved from http://dx.doi.org/10.1787/9789264243507-en

OECD (2006). *The Financing Gap (Vol. 1): Theory and Evidence*. Paris, France: OECD Publishing.Papanek, V. (1972). *Design for the Real World: Human Ecology and Social Change*. New York, NY: Pantheon Books.

Paris, S. (2014). Disegno Industriale vs Industrial Design. The Italian history. In *Design and Technology lectures* (84-96). Trento, Italy: LISt Lab Laboratorio Internazionale Editoriale. Retrieved from https://www.researchgate.net/publication/292735723_Disegno_Industriale_vs_Industrial_Design_The_Italian_story

Patrocínio, G. H. T. do (2013). *The Impact of European Design Policies and their Implications on the Development of a Framework to Support Future Brazilian Design Policies*. PhD thesis, Cranfield University, UK. Retrieved April 18, 2016, from https://dspace.lib.cranfield.ac.uk/handle/1826/8565

Peters, T. (2001). *Design Mindfulness: Wellspring of "Corporate Soul" & No.1 Basis for Competitive Advantage?* New York, NY: Tom Peters Company Press. Retrieved from http://tompeters.com/wp-content/uploads/2014/02/Design.pdf

Pilditch, J. (1990). Using design effectively. In P. Gorb (Ed.), *Design management: papers from the London Business School* (pp. 13-23). London, UK: Architecture Design and Technology Press.

Piore, M., & Cardoso, C. F. (2017). *SENAI + ISIs: The Silicon Valley Consensus Meets Organizational Challenges in Brazil*. Working paper series, MIT Industrial Performance Center. Retrieved from https://ipc.mit.edu/sites/default/files/documents/17-005.pdf

Poirier, V., Schwartz, L. H., Eddy, D., Berman, R., Chacour, S., Wynne, J. J., Cavanaugh, W., Martin, D. F., Byrne, R., Sanberg, P. R. (2017). Thoughts on improving innovation: What are the characteristics of innovation and how do we cultivate them? *Technology and Innovation*, 18, 319-330. doi.org/10.21300/18.4.2017.319

Porcini, M. (2017, April). The challenge [Class handout]. In M. Symonds (Chair). *Overcrowded event-challenge*. Lecture conducted from School of Management, Politecnico di Milano, Milan, Italy.

Project Management Institute. (2012). *Um guia do conhecimento em gerenciamento de projetos* [PMBOK guide]. São Paulo, Brasil: Saraiva.

Pugh, S. (1991). *Total Design: Integrated Methods for Successful Product Engineering*. Workingham, UK: Addison-Wesley.

Rae, J. (2013). Design-Conscious Companies: What Is the Real Value of Design? *Design Management Institute*, 30-37. Retrieved from https://www.dmi.org/resource/resmgr/pdf_files/TheRealValueOfDesign.pdf

Rae, J. (2014). *What Is the Real Value of Design?* Design Management Institute and Motiv Strategies, 1-9. Retrieved from http://motivstrategies.com/work/what-is-the-real-value-of-design/

Rao, J., & Weintraub, J. (2013). *How Innovative Is Your Company's Culture?* MIT Sloan Management Review. Retrieved from http://sloanreview.mit.edu/article/how-innovative-is-your-companys-culture/

Raulik-Murphy, G. (2010). *A Comparative Analysis of Strategies for Design Promotion in Different National Contexts* (Doctoral dissertation, University of Wales). Retrieved from https://repository.cardiffmet.ac.uk/handle/10369/6521

Raulik-Murphy, G. & Cawood, G. (2010). Historical review of the paradigm shift in design policies. *Proceedings of the cumulous Shanghai Conference 2010: Young Creators for Better City and Better Life*. Shanghai, China: Cumulous Association. Retrieved from http://www.cumulusassociation.org/images/stories/Working_papers/Cumulus_ProceedingsShanghai.pdf

Raulik-Murphy, G., Cawood, G., Larsen, P., & Lewis, A. (2009a). A comparative analysis of strategies for design in Finland and Brazil. In *Undisciplined! Design Research Society Conference 2008* (pp. 201/1-201/16). Sheffield, UK: Design Research Society.

Raulik-Murphy, G., & Cawood, G. (2009b). *'National Design Systems' – a tool for policy-making*. Research Seminar: Creative industries and regional policies: making place and giving space. Birmingham: University of Birmingham. Retrieved from http://www.see-platform.eu/images/National%20Design%20Systems%20-%20a%20tool%20for%20policy-making.pdf

Raulik-Murphy, G. & Whicher, A. (2010). From 2009 to 2010: EU & Regional Design Policy Developments. In G. Raulik-Murphy, A. Whicher (Eds.) *SEE Bulletin*, Issue 2, pp. 10-12.

Ravald, A. & Grönroos, C. (1996). The value concept and relationship marketing. *European Journal of Marketing*, 30(2), 19-30.

Roper, S.; Hales, C., Bryson, J. R., & Love, J. (2009). *Measuring sectoral innovation capability in nine areas of the UK economy: Report for NESTA Innovation Index project*. Retrieved from https://www.nesta.org.uk/sites/default/files/measuring-sectoral-innovation.pdf

Roy, R., Riedel, J. (1997). Design and innovation in successful product competition. *Technovation*, 17(10), 537-548. doi: 10.1016/S0166-4972(97)00050-3.

Rullani, E. (2011). L'economia della conoscenza nel capitalismo delle reti [The knowledge economy in the capitalism of networks]. *Sinergie Italian Journal of Management*, 67-90. Retrieved from http://sinergiejournal.eu/index.php/sinergie/article/view/s76.2008.07

Sachs, J. (2017, April). *How Entrepreneurs Can Harness the Science of Intuition to Make Smarter Decisions*. New York, NY: Fast Company Magazine. Retrieved from https://www.fastcompany.com/40406042/how-entrepreneurs-can-harness-the-science-of-intuition-to-make-smarter-decisions

Satomura, T., Wedel, M., & Pieters, R. (2014). Copy Alert: A Method and Metric to Detect

Visual Copycat Brands. *Journal of Marketing Research*, 51(1), 1-13, 2014.

Schneider, J. (2006, September). Supporting the Research Phase of a Design Project: Lessons to Share. In G. Cawood, G. Raulik (Eds.), *SEEdesign Bulletin: Sharing experience on design support*, Issue 3 (pp. 4-5).

Schneider, J., Gibet, S., Colomb, A., Orazem, V., Loesch, SL., Kasparyan, C., Salminen, J. (2015). *Supporting design driven innovation: a review of selected programmes*. Regions supporting Entrepreneurs and Designers to Innovate (REDI). Retrieved from http://www.apci.asso.fr/magazine/categorie/activites/rapport-redi-soutenir-l-innovation-par-le-design-analyse-de-quelques-programmes

Schwab, K., Sala-i-Martín, X., Samans, R. (2017). *The Global Competitiveness Report 2017–2018*. Geneva, Switzerland: World Economic Forum. Retrieved from www.weforum.org/gcr

SEBRAE, DIEESE. (2015). *Anuário do trabalho na micro e pequena empresa: 2014* [Annual review of jobs in micro and small enterprises: 2014]. Retrieved from https://m.sebrae.com.br/Sebrae/Portal%20Sebrae/Anexos/Anuario-do%20trabalho-na%20micro-e-pequena%20empresa-2014.pdf

SEBRAE. (2013a). *Como funciona* [How it works]. Retrieved from http://sites.pr.sebrae.com.br/sebraetec/o-programa/como-funciona/

SEBRAE. (2013b). *Design*. Retrieved from http://sites.pr.sebrae.com.br/sebraetec/o-programa/tema-e-servicos-atendidos-areas-tematicas/design/

SEBRAE. (2014). *Participação das Micro e Pequenas Empresas na Economia Brasileira* [Participation of Micro and Small Businesses in the Brazilian Economy]. Retrieved from https://m.sebrae.com.br/Sebrae/Portal%20Sebrae/Estudos%20e%20Pesquisas/Participacao%20das%20micro%20e%20pequenas%20empresas.pdf

SEBRAE. (n.d.a). *Quem são os pequenos negócios?* [Who are the small businesses?] Retrieved from http://www.sebrae.com.br/sites/PortalSebrae/estudos_pesquisas/quem-sao-os-pequenos-negociosdestaque5,7f4613074c0a3410VgnVCM1000003b74010aRCRD

SEBRAE. (n.d.b). *700 Service Centers throughout Brazil*. Retrieved from http://www.sebrae.com.br/sites/PortalSebrae/canais_adicionais/sebrae_english

SEBRAE/MG. (2016). *Relatório de gestão do exercício de 2015* [Management report 2015]. Retrieved from https://m.sebrae.com.br/Sebrae/Portal%20Sebrae/UFs/MG/Sebrae%20de%20A%20a%20Z/Relatorio_Gestao_2015_Sebrae_Minas.pdf

SEE Platform. (2015, August 14). Retrieved from http://www.seeplatform.eu/

Sen, A., Poovaiah, R. (2015). Por dentro da eterna "atemporalidade" da Índia – o design traz mais perguntas que respostas? [Inside the eternal India's "timelessness" - does design bring more questions than answers?] In G. Patrocínio; J. M. Nunes (Eds.), *Design & desenvolvimento: 40 anos depois*, (pp. 125-154). São Paulo, Brasil: Blucher.

Silveira da Rosa, S. E., Correa, A. R., Lemos, M. L. F., & Barroso, D. V. (2007). O setor de móveis na atualidade: uma análise preliminar [The furniture industry today: a preliminary analysis]. *BNDES Setorial*, 25, 65-106. Retrieved from http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/bnset/set2503.pdf

Simon, H. A. (1996). *The Sciences of the Artificial* (3rd ed.). Cambridge, Massachusetts: MIT Press.

Singal, M., & Wokutch, R. E. (2014, February). *Newly Industrialized Country*. Retrieved from https://www.britannica.com/topic/newly-industrialized-country

Smith, A. (1776). Of the Origin and Use of Mon-

ey. In A. Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*. Retrieved from http://geolib.com/smith.adam/won1-04.html

Stake, R. E. (2000). Case Studies. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed.) (pp. 435-454). Thousand Oaks, California: Sage Publications.

Sternberg, R. J. (2006). The Nature of Creativity. *Creativity Research Journal*, 18(1), 87-98. doi: 10.1207/s15326934crj1801_10

Sternberg, R. J. (2012). The Assessment of Creativity: An Investment-Based Approach. *Creativity Research Journal*, 24(1), 3–12. doi: 10.1080/10400419.2012.652925

Sun, Q. (2010). Design Industries and Policies in the UK and China: a Comparison. *Design Management Review*, 21: 70–77. doi:10.1111/j.1948-7169.2010.00097.x

Supporting design-driven innovation across Europe. (n.d.). In Design for Europe. Retrieved from http://www.designforeurope.eu/about

Swann, P. G. M. (2010). *The economic rationale for a national design policy*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32096/10-1112-bis-occasional-paper-02.pdf

Symbola, Unioncamere (2016). *Coesione è Competizione: Nuove geografie della produzione del valore in Italia*. [Cohesion is Competition: New Geographies of Value Production in Italy] Retrieved from http://www.symbola.net/html/article/coesioneecompetizione

Teece, D. J. (1986) Profiting from technological innovation: implications for integration, licensing and public policy. *Research Policy*, 15(6), 285-305.

Tether, B. (2006, September). Evaluating the Impacts of Design Support. In G. Cawood, G. Raulik (Eds.), *SEEdesign Bulletin: Sharing experience on design support* Issue 3 (pp. 8-10).

Tether, B. (2007, December). Evaluating the impact of design support – final report. In G. Cawood, G. Raulik (Eds.), *SEEdesign Bulletin: Sharing experience on design support* Issue 6 (pp. 3-5).

Thenint, H. (2008). *Design as a tool for innovation*. Pro-Inno Europe. Retrieved from http://grips-public.mediactive.fr/workshops/view/2/design-as-a-tool-for-innovation/

Thomson, M., & Koskinen, T. (Eds.) (2012). *Design for growth and prosperity*. Report and Recommendations of the European Design Leadership Board. Retrieved from www.icsid.org

Torres Freire, C., Massami Maruyama, F., & Polli, M. (2017). Inovação e Empreendedorismo: Políticas Públicas e Ações Privadas [Innovation and Entrepreneurship: Public Policies and Private Initiatives]. *Novos estudos*, 36 (03), 51-76. doi.org/10.25091/

Trocchianesi, R., Guglielmetti, I. (2012). Elementos de reconhecimento do design na multiplicidade e "multiversalidade" das diversas dinâmicas de relação com o artesanato. In A. Jaña, I. Abreu, C. Albino (curadoria), *Design, Artesanato e Indústria* (pp. 30-39). Cidade de Guimarães, Portugal: Editoria, Fundação Cidade de Guimarães, Greca Artes Gráficas.

Trueman, M., & Jobber, D. (1998). Competing through Design. *Long Range Planning*, 31(4), 594-605.

Tsounta, E. (2014). *Slowdown in Emerging Markets: Sign of a Bumpy Road Ahead?*. IMF Working Paper. Retrieved from https://www.imf.org/external/pubs/ft/wp/2014/wp14205.pdf.

Ulaga, W., & Chacour, S. (2001). Measuring Customer Perceived Value in Business Markets: A Prerequisite for Marketing Strategy Development and Implementation. *Industrial Marketing Management*, 30, 525–540.

Ulrich, K. T., Eppinger, S. D. (1995) *Product Design and Development*. New York, NY: McGraw-Hill.

Van Horen, F. and Pieters, R. (2013). Preference reversal for copycat brands: Uncertainty makes imitation feel good. *Journal of Economic Psychology*, 37: 54-64. doi: 10.1016/j.joep.2013.05.003

Verganti, R. (2003). Design as brokering of languages: Innovation strategies in Italian firms. *Design Management Journal*, 34-42.

Verganti, R. (2008) Design, meanings and radical innovation: A meta-model and a research agenda. *The Journal of Product Innovation Management*, 25, 436-456.

Verganti, R. (2016). *Overcrowded: designing meaningful products in a world awash with ideas*. Cambridge, MA: MIT Press.

Villa, F. (2017, April). B&B Italia [Class handout]. In F. Zurlo (Chair). *Seminari ADI Impresa Docet*. Lecture conducted from Scuola del Design, Politecnico di Milano, Milan, Italy.

Walsh, V. (1996). Design, innovation and the boundaries of the firm. *Research Policy*, 25, 509-529.

Wenger, E. (2011). *Communities of practice: A brief introduction*. Retrieved from https://scholarsbank.uoregon.edu/xmlui/handle/1794/11736?show=full

Westcott, M., Sato, S., Mrazek, D., Wallace, R., Vanka, S., Bilson, C., & Hardin, D. (2013).*The DMI Design Value Scorecard: A Design Measurement and Management Model*. Feature DMI Design Value Scorecard. Retrieved from: http://c.ymcdn.com/sites/www.dmi.org/resource/resmgr/pdf_files/13244SAT10.pdf

Whicher, A. (2015, April). *Design policy trends 2020* [YouTube video]. Lecture conducted from Stiftelsen Svensk Industridesign (SVID), Stockholm, Sweden. Retrieved from https://www.youtube.com/watch?v=hD3flvYf7FQ

Whicher, A., Cawood, G., Ryan, L. (2013). *Reviewing Design Support Programmes in Europe*. Policy Booklet 6, SEE Platform. Retrieved from http://pdronline.co.uk/Portfolio/see

Whicher, A., & Milton, A. (2018). Journey Towards an Irish Design Strategy. In C. Storni, K. Leahy, M. McMahon, P. Lloyd, & E. Bohemia (Eds), *Proceedings of the Design Research Society 2018: Catalyst*, pp. 792-805. doi: 10.21606/dma.2017.243

Whicher, A., & Walters, A. (2014). *Mapping Design for Innovation in Wales & Scotland*. Research report, Arts and Humanities Research Council (AHRC). Retrieved from https://repository.cardiffmet.ac.uk/handle/10369/6561

Whicher, A., Swiatek, P., & Cawood, G. (2015). *Design Policy Monitor 2015: Reviewing Innovation and Design Policies across Europe*. Retrieved from http://www.seeplatform.eu/docs/SEE%20DPM%202015%20Jan.pdf

World Bank (2015). *Country and Lending Groups*. Retrieved from http://data.worldbank.org/about/country-and-lending-groups#Upper_middle_income

World Economic Forum. (2018). *Brazil Competitiveness and Inclusive Growth Lab Report*. Retrieved from https://www.weforum.org/reports/the-brazil-competitiveness-and-inclusive-growth-lab-report

Xihui Liu, S., Jun, C. (2015). Design para o desenvolvimento: uma perspectiva da China [Design for development: a China's perspective]. In G. Patrocínio; J. M. Nunes (Eds.), *Design & desenvolvimento: 40 anos depois* (pp. 167-182). São Paulo, Brasil: Blucher.

Yang, F., Shaw, A., Garduno, E., & Olson, K. R. (2013). No one likes a copycat: A cross-cultural investigation of children's response to plagiarism. *Journal of Experimental Child Psychology*, 121, 111-119. doi: 10.1016/j.jecp.2013.11.008

Yin, R. K. (1994). *Case Study Research: Design and Methods* (2nd ed.). London, UK: Sage Publications.

Zitkus, E., Na, J. H., Evans, M., Walters, A., Whicher, A., Cooper, R. (2018). Understanding How Design Action Plans Support the Strategic Use of Design. In C. Storni, K. Leahy, M. McMahon, P. Lloyd, & E. Bohemia (Eds), *Proceedings of the Design Research Society 2018: Catalyst*, pp. 780-791. doi: 10.21606/dma.2018.538

Zurlo, F., Cautela, C. (2014) Design Strategies in Different Narrative Frames. *Design Issues*, 30(1), 19-35. doi: 10.1162/DESI_a_00246

Zurlo, F. (1999). *Un modello di lettura per il Design Strategico: La relazione tra design e strategia nell'impresa contemporanea*. (Unpublished doctoral dissertation). Politecnico di Milano, Milano, Italia.

APPENDIX A

ELICITATION PROCESS: BARRIERS TO DESIGN INNOVATION

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"... disponibilidade de contato por parte dos produtores. A gente tem que lembrar que **os produtores normalmente passam o dia inteiro na roça** quando não moram na própria fazenda e aí, isso, às vezes, por ser interior, cargas... etc... o produtor não tem acesso a internet, acesso a telefonia, isso gera uma certa tensão às vezes." Beneficiary A	"... the farmers spend all day in the farm..." Beneficiary A	Beneficiaries are strongly committed to operational day-to-day activities	*Over-involvement in operational-level decisions and activities*	Bruce, Cooper and Vazquez (1999) Nunes (2014) Raulik Murphy and Cawood (2009b)
		"... **a gente sabia de ante mão é que enfrenta um problema sério de falsificações**. Então, tem muita gente, a canastra tem um peso grande nesse mundo dos queijos artesanais, então tinha muita gente que achava, que pegava queijo de qualquer lugar do país ou de Minas, e por ser um queijo redondo etc. isso aqui é queijo canastra e vendia como queijo canastra. Então, **os produtores já tinham essa... precisava separar o joio do trigo, só não sabiam como**..." Beneficiary A	"...we knew beforehand that we face a serious problem of falsifications... the farms knew that they need to separate the tares from the wheat, they just did not know how..." Beneficiary A	Recognised need for design intervention by the owners but lack of knowledge to find appropriate professionals to solve their need.	*Not knowing where to turn for specialised help*	Arquilla, Maffei, Mortati and Villari (2015) Cox (2005) European Commission (2009)
		"... **ele já tem uma certa retração quanto a qualquer inovação**..." Beneficiary A	"... they already resist any kind of innovation..." Beneficiary A	Fear for / distrust of innovation.	*Risk aversion*	Cox (2005) Sternberg (2006, 2012)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	**"Não há interação, os proprietários demandam projetos e esperam que o desenvolvimento seja satisfatório. Não há colaboração durante o processo de desenvolvimento**. [...] Penso que o proprietário/colaborador pode oferecer informações além das demandadas pelo projetista. O briefing, na maioria das vezes, é enviado de forma muito pontual, especificando apenas a demanda." Consultant B, designer "... pegou 10 líderes e quando todos querem liderar, eu acho que não foi positivo, entendeu? Além disso não ser positivo, **a gente não tinha tempo de se dedicar muito, então, eu acho que faltou muita dedicação de nós lideres, talvez, mais, mais empenho mesmo em estar acompanhando o desenvolvimento** da loja... [...] desde o início, eu falei que eu não acreditava, mas aí, para eu não ficar fora, querer contribuir junto, mas aí, **eu acho que eu não contribui o necessário, foi um problema de todos, aí não aconteceu**." Beneficiary B	"...There is no interaction, owners demand projects and wait for a good development. There is no collaboration during the development process." Consultant B, designer "...we did not have time to devote too much to it, so, I think that lacked a lot of dedication from us, leaders, maybe... more commitment to follow the development... [...] since the beginning, I had said that I did not believe (in the project)... I think I did not contribute enough to it, which was a problem everybody had (all entrepreneurs/ beneficiaries), so it did not succeed..." Beneficiary B	Lack of owners' participation and collaboration with designers throughout projects. Passive attitude towards design strategies and processes.	*Passive attitude towards design with lack of co-operation/ engagement with designers throughout projects*	Fonseca Braga (2017) Nunes (2013)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"... você está com **uma pessoa que está acostumada com um modo de produção de 200, 300 anos de história, isolado praticamente do mundo, então ele já tem uma certa retração quanto a qualquer inovação [...] A partir do momento que começou a ter os primeiros trabalhos, e aí foram trabalhos** que foram **com esse contato in loco**, de conhecer a fazenda, de conhecer a família, a história dela etc., **é que começa então** a ter uma..., a ser revisitado esses conceitos, tanto que na cabeça do produtor, quanto nas suas próprias concepções estéticas, não no sentido de enxerto, mas no sentido de **abrir a cabeça para outras abordagens**" Beneficiary A	"... a person who is used to a way of production of 200, 300 years of history, practically isolated from the world, then, they already resist any kind of innovation... From the first design interventions with this contact in loco... they started to open their minds to other approaches" Beneficiary A	Emphasis on the traditional way of thinking because of conditions and traditional production adopted.	*Conventional thinking*	Sternberg (2006, 2012)
		Quando perguntado sobre a existência de experiência ou contato prévio com designers. **"Nunca. Essa daí foi uma das grandes barreiras que a gente começou a ter que quebrar [...] a maioria dos produtores nunca tinha ouvido falar em computador e muito menos que que é design**" Beneficiary A "Aquilo que a gente estava falando um pouco antes, sim, apesar de que com essa história de mercado assim e a divulgação da informação, como ela acontece hoje, traz para eles a certeza de que eles precisam investir nisso, né, **eles não sabem exatamente o que é, como acontece etc**, mas eles sabem que assunto está na pauta, então, assim, eles sabem claramente. É muito interessante isso, desde o pequenininho até o mais estruturado." Consultant A, designer	When asked about previous experience with designers or design "... Never. This was one of the biggest barriers that we had to start overcoming [...] Most producers have never heard about computers much less about what design is" Beneficiary A "...they do not know exactly what it (design) is, how it happens etc" Consultant A, designer	Lack of previous design experiences in beneficiaries' businesses	*Lack of experience*	Arquilla et al. (2015) Bruce et al. (1999) Cox (2005) Schneider, Gibet, Colomb, Orazem, Loesch, Kasparyan and Salminen (2015)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"**O outro limitador, no caso do pequeno produtor familiar, é ele entender a vantagem de se fazer um trabalho desse**. Ele só consegue perceber isso a partir do momento que ele consegue ganhar em mercado.[...] **no início ele sente um pouco de dificuldade de enxergar a vantagem de se investir em alguma coisa em relação ao design**." Policy-maker A "... os produtores chegam até nós por recomendação da entidade sem fins lucrativos e apresentam dificuldades de contribuir para o projeto ao serem solicitados a elencar diferenciais, informar o posicionamento, fornecer dados sobre as normas técnicas. A comunidade é no geral formada por pessoas muito simples. Tenho a impressão de que aceitam participar dos projetos de incentivo ao design porque o "vizinho" participou. **A iniciativa não é espontânea e isso comprova o desconhecimento sobre os processos e os benefícios do design**." Consultant B, designer	"Another limitation, in the case of the small family producer, is that the owner understands the advantages of a work like this (design work)... in the beginning, he feels difficulties in recognising the advantage in investing in something related to design." Policy-maker A "The initiative is not spontaneous and this proves the unfamiliarity/ignorance/lack of knowledge regarding design processes and benefits" Consultant B, designer	Lack of understanding and recognition of design benefits, advantages, value, and way of work as well as the need for design.	*Lack of design awareness*	Bitard and Basset (2008) Choi (2009) Cox (2005) European Commission (2009) Filson and Lewis (2000) Millward and Lewis (2005)
		"**Como não existia o produto pronto, a embalagem teve adequações posteriores**." Consultant C, management background	"Because the product was not ready (to carry out packaging tests), the packing had further adaptations." Consultant C, management background	Difficulty in leading/carrying out projects activities in time (e.g. putting off prototype tests).	*Delay in delivering needed activities (e.g. putting off prototype tests) - not related to availability of economic resources*	None

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"você está com uma pessoa que está acostumada com um modo de produção de 200, 300 anos de história, isolado praticamente do mundo, então ele já tem uma certa retração quanto a qualquer inovação, ao mesmo tempo, você tem a questão dos traços culturais da cultura mineira. E aí, **pegando, especificamente as regiões de queijo**, eu brinco que é até mais problemático ainda, porque, por exemplo, se mineiro é desconfiado, o mineiro da Serra da Canastra, por exemplo, ele chega a ser paranoico, porque, você imagina, **o mineiro é desconfiado quase que por natureza, imagina um mineiro distante 10 km do próximo mineiro, chega a ser paranoico. Daí, então, começou a criar uma série de dificuldades** ou de implantações que foram sendo contornadas aos poucos." Beneficiary A "... **como o pequeno produtor familiar, ele é um cara muito tradicional, no início ele sente um pouco de dificuldade de enxergar a vantagem de se investir em alguma coisa em relação ao design. Então, existe uma barreira inicial que é cultural mesmo [...] é difícil tirar do pequeno produtor rural a informação**. [...] dependendo do público que você for trabalhar, você precisa de mais imersão para conseguir fazer um briefing mais fidedigno com o produtor" Policy-maker A	"... talking specifically about the cheese regions... the mineiro (people from Minas Gerais Federation) is distrustful by nature; imagine a mineiro almost 10 km from another mineiro, he becomes paranoid. Then, it started to create several difficulties..." Beneficiary A "... because the small family producer is a very traditional man; in the beginning, he feels some difficulty in seeing the advantages to investing in something related to design. Then, there is an initial barrier that is really cultural [...] it is hard to get the information from the small producer" Policy-maker A	The regional culture and traditions that leverage a mistrust behaviour influence design interventions/ projects.	*Difficulty in trusting due to regional culture, tradition*	None *Despite there are studies emphasising the role of trust in some innovation ecosystems, it was not found research pointing out the lack of trust as an obstacle to design innovation and related to cultural aspects.

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"Tem um produtor, por exemplo, que ele fez de uma forma qualquer. Aí, só que **na hora que ele vai na feira, nos eventos, ele percebe os outros, a diferença do outro rótulo. Esses** assim **já estão procurando a gente**, "ah... eu quero que você faz o rótulo para nós", "um novo rótulo pra gente" Policy-maker B "... **em qualquer grupo tem aquelas pessoas que ficam em cima do muro,** né. **"Eu vou esperar fulano entrar se der certo, eu entro**" Policy-maker C "**Tenho a impressão de que aceitam participar dos projetos de incentivo ao design porque o "vizinho" participou**" Consultant B, Designer "... eu devo entrar só realmente em projeto que a gente acredite. E, a marca para o consórcio, **desde o início, eu falei que eu não acreditava, mas** aí, **para eu não ficar fora, querer contribuir junto, mas** aí, **eu acho que eu não contribui o necessário, foi um problema de todos, aí não aconteceu**." Beneficiary B	"... when he (the owner/ producer/beneficiary) goes to the fair, to the events, he notices the others, the difference of other labels. These... are already looking for (design support)..." Policy-maker B "... in any group (of beneficiaries) there are people who are undecided... 'I will await for other people join; if it works, I will take part in it.'(citing the sort of beneficiaries' reasoning)" Policy-maker C "I have the impression that they accept to take part in the design incentive projects because their 'neighbour' has taken part in it" Consultant B, Designer "... since the beginning, I had said that I did not believe (in the project), but... (in order not to) stay out (of the project), to contribute together, but... I think I did not contribute enough to it, which was a problem everybody had (all entrepreneurs/ beneficiaries), so it did not succeed." Beneficiary B	People depend on other beneficiaries' decisions and outcomes to make a decision; they do not make a decision based on their own attitude or reasoning; relying on others.	*'Follow the crowd' attitude (join actions because others are joining)*	Sternberg (2006, 2012)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"... **você tem que orientar, trazer a informação de forma, é... mastigada pro produtor para ele conseguir captar e conseguir fazer**, porque vontade ele tem, **ele não tem acesso a informação**, ou não tinha até pouco tempo [...]apesar da vontade, **todos ou praticamente todos, têm um déficit muito grande de informações** [...] a gente sabia de ante mão é que enfrenta um problema sério de falsificações. [...] que pegava queijo de qualquer lugar do país ou de Minas, e por ser um queijo redondo etc. "isso aqui é queijo canastra" e vendia como queijo canastra. Então, **os produtores** já tinham essa... **precisava** separar o joio do trigo, **só não sabiam como**" Beneficiary A "**As vezes eu sigo um roteirinho de briefing de projeto, desvia um pouco, eles [os beneficiários] não têm o conhecimento nenhum**, e nem pode se exigir que tenha, mas eles [os beneficiários] têm sensibilidade para a necessidade do trabalho dia cuidado com a imagem [...] a divulgação da informação, como ela acontece hoje, traz para eles a certeza de que eles precisam investir nisso, né, **eles não sabem exatamente o que é, como acontece** etc..." Consultant A, designer "... **os produtores... apresentam dificuldades de contribuir para o projeto ao serem solicitados a elencar diferenciais, informar o posicionamento, fornecer dados sobre as normas técnicas. A comunidade é no geral formada por pessoas muito simples**." Consultant B, designer	"... you (consultant, designer) have to guide, to bring the information in an accessible (spoon-fed) way to the farmers in order to make them grasp the information and get things done... they do not have access to information... all or almost all of them show a huge deficit of information... The producers know their need for (design interventions), they just did not know how" Beneficiary A "Sometimes I follow a briefing script; it deviates a little; they (beneficiaries) have no knowledge (design knowledge) [...] they do not know exactly what it (design) is, how it happens etc" Consultant A, designer "... the producers... show difficulties in contributing to the project when they are requested to list features (competitive advantages), to inform positioning, to provide data about product standards. The community is generally made up of very simple* people." Consultant B, designer *the adjective simple in Portuguese is a way to refer to the shortage of knowledge, access to education and resources, as well as being humble. It is socially considered a polite manner to do so. It is generally used as a euphemism in the day-to-day speech.	Shortage of design knowledge and experience that leverages the need to communicate in an accessible way.	*Little understanding of product development/design*	Arquilla et al. (2015) Bitard and Basset (2008) Filson and Lewis (2000) Millward and Lewis (2005)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	DESIGNERS & CONSULTANTS	"... **o profissional com pouca experiência de mercado... Você pegar uma pessoa que é a primeira vez que ela vai aplicar o conhecimento dela,** ela **... só tem essa experiência... eu tenho muito problema**... com relação a profissionais..." Policy-maker C	"... the professional with little market experience... when you take a person who is applying his/her knowledge for the first time... someone who has just this experience... I have many problems..." Policy-maker C	Lack of designer's practice-based know-how.	*Lack of experience, practice-based know-how*	D'Ippolito (2014)
		"Faltou, faltou também uma experiência maior, sabe?! **No ramo de lingerie, o Consultor X,** assim, **é bem antenado, muito bom,** mas não tem a... **tem a experiência com moda, roupa, não tanto com lingerie. Então, eu acho que faltou um profissional mais ligado a lingerie [...] precisaria ser mais assertivo, entendeu? Como eu disse, faltou ter mais a visão de lingerie para criar essa coleção"** Beneficiary B	"... there was a lack of more experience... In the lingerie field, Consultant X is very updated, very good... has experience with fashion, clothing, not so much with lingerie. So, I think there was a shortage of lingerie professionals [...] needed to be more assertive, you know? As I said, I missed having a better knowledge about lingerie to create this collection" Beneficiary B	Importance of product design experience in the specific market or field.	*Lack of experience, know-how in the specific field, market.*	None
		"... **as vezes o profissional pode ser bom, mas não têm uma didática boa**, tipo profissionais que eu tive que tirar porque a didática não era bacana. **A forma de repassar a informação... Isso implica demais... às vezes são bons profissionais, mas não sabem repassar conhecimento"** Policy-maker C	"sometimes, the professional can be good, but he/she does not have a good didactic... The way of transferring information... this has a big impact... sometimes, they are good professionals, but they are not able to transfer their knowledge" Policy-maker C	Shortage of ability to transfer design knowledge to others.	*Lack of ability to communicate design knowledge to company members*	Brown (2009)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	POLICY-MAKERS	"... **o técnico que faz capitação das necessidades do cliente, esse técnico não entende,** assim, **ele não faz a mínima ideia do que seja design, ele tem muito pouca informação sobre. Já tivemos até discussões** lá **com a entidade privada sem fins lucrativos** é, **de fazer uns road shows, que eu poderia por os técnicos todos para aprender um pouquinho de design, mas a entidade privada sem fins lucrativos sempre quer que agente faça isso gratuitamente... o que a gente não acha justo. Que é um projeto que demanda planejar, detalhar, reunir, então, assim, tá todo mundo um pouco resistente a fazer isso desta maneira, sabe**." Consultant A, designer	"... the technician [newly graduated designer] who identifies the customer's needs... he has no idea what design is, he has very little information about it. We have already argued with the non-profit private entity... about doing some roadshows; I could teach all technicians, but the non-profit private entity wants us [senior designers, associations of designers] to do this for free... which we did not think was fair. It is a project that requires planning, detailing, meeting, then... everyone is a bit resistant to doing this in this way, you know..." Consultant A, designer	The policy-makers' (non-profit private entity) attitude towards design training by senior designers for free. This makes evident that design benefits are not recognised by the entity system.	*Lack of design awareness and familiarity with design*	Amir (2002) Bitard and Basset (2008) Maffei, Bianchini and Mortati (2014b) Margolin (2007) McNabola et al. (2013) Raulik-Murphy (2010) Thenint (2008)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ACTORS	POLICY-MAKERS	"... **o técnico que faz capitação das necessidades do cliente esse técnico não entende**, assim, **ele não faz a mínima ideia do que seja design, ele tem muito pouca informação [...] como as coisas funcionam aqui elas vão... como se você tivesse que empurrar, sabe, não tem,** assim, **pode ter um pensamento da necessidade de planejamento e da organização, mas, na prática, as coisas se atropelam um pouco. Essa sensação que eu tenho, não é assim que seja uma má intenção, é uma dificuldade mesmo de fazer a coisa em um processo mais claro, mais planejado** de fato [...] **a demanda estava clara, a forma de realizar que foi um pouco tumultuada [...] No momento da execução do projeto que eu acho que faltou uma, uma organização, uma centralização... da informação... pouca coordenação da história toda** sabe [...] **em um determinado momento entra o design, uma atividade que cria lá o diferencial para as empresas etc. eu acho que eles não, até agora eles não têm uma, é lógico que esta coisa vai sendo gradativa, vai se alimentando da formação e da informação sobre design mas, é isso aí, ele não tinha este conhecimento** e foi para, **é como se estivesse se formando para isso**. [...] Algumas pessoas, Eu acho, [assim, com modéstia eu acho que me coloco dentro deste grupo,] alguns nomes pessoas que pela experiência já tinham conhecimento maior no design passaram estar mais juntos do ... neste período [...]Então assim, você tinha uma presença assim que ia transferindo conhecimento." Consultant A, Designer	"... the technician [newly graduated designer] who identifies the customer's needs... he has no idea what design is, he has very little information about [...] how things work here, they (projects) go on... as if you had to push, you know, there is not... There may be a thought of the need for planning and management; however, in practice, things get mixed up a bit. This is the feeling I have; it is not a bad intention, it is a real difficulty in doing things in a clearer, more planned process [...] the demand was clear, the way of carrying it out was a little confusing [...] In the moment of the project execution I think that there was a lack of organization, of centralization... of information... little coordination of the whole story [...] at a certain point, design emerges, an activity that creates competitive advantages for companies etc. I think they do not, so far they do not have a, it is logical that this thing is going to be gradual, it is feeding on design training and information; however, that is it, they (policy-makers) did not have this knowledge, it is like they were being prepared for this." Consultant A, designer	Little design experience, knowledge, know-how to run/coordinate/manage projects.	*Lack of background in design management*	Cox (2005) Maffei, Bianchini and Mortati (2014)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ORGANISATIONAL	STRUCTURE	"**O principal facilitador é o próprio subsidio que facilita muito para que a pequena empresa, o pequeno produtor, possa ter acesso a serviços mais especializados de design**." Policy-maker A "**Para aqueles produtores que não têm recurso financeiro, muitos, eu acho o que é importante sim é a questão do financiamento**" Policy-maker B "Como nos trabalhamos com grupo saiu um valor muito baixo para cada empresa, esse valor de 30.000 era dividido entre os 25 empresários, então cada um pagava 1000 mil e pouquinho dividido em várias prestações. Então, assim, **a gente facilita muito para eles... O que mais facilita é essa parceria que a entidade tem com as empresas,** né, **dos recursos serem subsidiados uma parte, isso nos dá condições de trabalhar**" Policy-maker C	"The main facilitator is the subsidy itself, which makes it much easier for the small company, the small producer, to have access to more specialized design services" Policy-maker A "For those producers who do not have financial resources, for many of them, I think, what is truly important is the issue of financing" Policy-maker B "... we facilitate a lot for them... What most facilitates is the partnership between the entity and the companies (beneficiaries)... one part of the resources is subsided; this gives us conditions to work" Policy-maker C	These speeches highlight the lack of economic resources to access and to invest in design as a constraint, especially for small businesses; despite also pointing out a driver, credit availability, at the ecosystem level.	*Limited resources*	Acklin (2013) Larsen and Lewis (2007)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ORGANISATIONAL	STRUCTURE	"**As vezes eu sigo um roteirinho de briefing de projeto, desvia um pouco, eles [os beneficiários] não têm o conhecimento nenhum, e nem pode se exigir que tenha**..." Consultant A, designer "... você tem que orientar, trazer a informação de forma, é... mastigada pro produtor para ele conseguir captar e conseguir fazer, porque vontade ele tem, **ele não tem acesso a informação**, ou não tinha até pouco tempo [...]**apesar da vontade, todos ou praticamente todos, têm um déficit muito grande de informações** [...] a gente sabia de ante mão é que enfrenta um problema sério de falsificações. Então, tem muita gente, a canastra tem um peso grande nesse mundo dos queijos artesanais, então tinha muita gente que achava, que pegava queijo de qualquer lugar do país ou de Minas, e por ser um queijo redondo etc. isso aqui é queijo canastra e vendia como queijo canastra. Então, **os produtores** já tinham essa... **precisava separar o joio do trigo, só não sabiam como**" Beneficiary A "... **os produtores... apresentam dificuldades de contribuir para o projeto ao serem solicitados a elencar diferenciais, informar o posicionamento, fornecer dados sobre as normas técnicas**. A comunidade é no geral formada por pessoas muito simples." Consultant B, designer	"Sometimes I follow a briefing script; it deviates a little; they (beneficiaries) have no knowledge, and you cannot require them to have..." Consultant A, Designer "... they do not have access to information... despite willingness, all or almost all of them have a huge deficit of information... the producers... needed to separate the tares from the wheat, they just did not know how" Beneficiary A "... producers show difficulties in contributing to the project when they are requested to list features (competitive advantages), to inform positioning, to provide data about product standards ..." Consultant B, designer	Lack of know-how to contribute to design innovation processes.	*Limited in-house capabilities for conducting innovation processes*	Acklin (2013) Bruce, Cooper and Vazquez (1999) Cox (2005) Filson and Lewis (2000)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ORGANISATIONAL	STRUCTURE	"As vezes eu sigo um roteirinho de briefing de projeto, desvia um pouco, **eles [os beneficiários] não têm o conhecimento nenhum, e nem pode se exigir que tenha**..." Consultant A, designer "... **você tem que orientar, trazer a informação de forma**, é**... mastigada pro produtor para ele conseguir captar e conseguir fazer, porque vontade ele tem, ele não tem acesso a informação**, ou não tinha até pouco tempo [...] apesar da vontade, **todos ou praticamente todos, têm um déficit muito grande de informações** [...] a gente sabia de ante mão é que enfrenta um problema sério de falsificações. Então, tem muita gente, a canastra tem um peso grande nesse mundo dos queijos artesanais, então tinha muita gente que achava, que pegava queijo de qualquer lugar do país ou de Minas, e por ser um queijo redondo etc. isso aqui é queijo canastra e vendia como queijo canastra. Então, os produtores já tinham essa... precisava separar o joio do trigo, só não sabiam como" Beneficiary A "... **os produtores... apresentam dificuldades de contribuir para o projeto ao serem solicitados a elencar diferenciais, informar o posicionamento, fornecer dados sobre as normas técnicas. A comunidade é no geral formada por pessoas muito simples**." Consultant B, designer	"...they (beneficiaries) do not have any knowledge, and you cannot require them to have it..." Consultant A, designer "... you (consultant, designer) have to guide, to bring the information in an accessible (spoon-fed) way to the farmers in order to make them grasp the information and get things done [...] in spite of the willingness, they do not have access to information... all or almost all of them have a huge deficit of information..." Beneficiary A "... producers present difficulties in contributing to the project when they are requested to list features (competitive advantages), positioning, to provide technical standards data. The community is generally made up of very simple* people." Consultant B, designer	Lack of access to education, knowledge, information, as well as difficulties in contributing throughout projects development.	*Underdeveloped education and training*	Larsen and Lewis (2007)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ORGANISATIONAL	CULTURE	"Não há interação, **os proprietários demandam projetos e esperam que o desenvolvimento seja satisfatório. Não há colaboração durante o processo de desenvolvimento. [...] Penso que o proprietário/colaborador pode oferecer informações além das demandadas pelo projetista. O briefing, na maioria das vezes, é enviado de forma muito pontual, especificando apenas a demanda**." Consultant B, designer	"... the owners demand projects and wait for a good development. There is not collaboration throughout the development process. [...] I think the owner/company employee can provide information beyond those requested by the designer. The briefing, many times, is sent in a very precise (short, regarding one or a few topics) manner, specifying only the demand." Consultant B, designer	The owners' passive attitude and lack of participation/collaboration towards design.	*Lack of top management support*	Cawood (1997) Filson and Lewis (2000) Larsen and Lewis (2007) Schneider et al. (2015)
		"... **existia muita desconfiança. Os empresários... desconfiavam muito, tinham concorrentes no grupo por produzirem o mesmo produto**." Policy-maker C	"... there was too much mistrust. The entrepreneurs... distrusted a lot, they had competitors in the same group (of project beneficiaries) because they manufacture the same product." Policy-maker C	Mistrust among entrepreneurs who see other peers (beneficiaries of a project) as competitors that can 'steal' or 'copy' their ideas, impacting at the organisational level (e.g. the way they try to solve problems or approach opportunities themselves) as well as at the ecosystem level.	*Lack of trust to build up partnerships*	Larsen and Lewis (2007) Schneider (2006)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ORGANISATIONAL	DESIGN PROCESS	"...**ele fez pesquisa, ele nos perguntou muita coisa, só que shopping, ainda mais que a gente não tinha nenhuma experiência, a gente não sabia muito, que esse shopping que a gente está, existem pessoas da cidade e da região, vai muito turista lá também, então, não tem um público totalmente definido, sabe?! [...] Saiu um pouco do que a gente costumava vender porque era uma porta em um shopping. Então, fez-se as peças pensando neste shopping, e, assim, não foi tão assertivo. Eu não sei se é por esse público ser tão variado, assim, na verdade, todas coleções são apostas,** né. E, **a gente, enquanto marca só da gente, a gente é mais assertiva**. No consórcio, por terem várias cabeças, dentro um shopping, nós tentamos ser assertivos, mas não aconteceu muito..." Beneficiary B	"... he did research, asked us many things, but about shopping malls, mainly because we had no experience with it, we did not know very much, that this shopping mall where we are, there are people from the city and from the region, many tourists go there, so, there is not a completely defined target public, you know?! [...] It deviates a little from what we were used to selling because it was a door (B2C sales point) in a shopping mall. Then, the pieces were designed having this mall in mind, and so this was not so assertive. I do not know if it happened because this public is very varied, so, actually, all collections are bets... we are more assertive with our own (individual business) brand..." Beneficiary B	Lack of a defined opportunity regarding a group of potential users and their behaviour, lifestyle, needs, as well as indications of market gaps related to potential users and companies interest.	*Lack of customers/users orientation*	Larsen and Lewis (2007)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	"... **a gente começou a trabalhar com o foco de interação focando na interação do grupo empresarial** lá. Então, **a gente implementou vários cursos focados no tipo da cooperação para que eles ganhassem confiança entre eles mesmos** porque ... **existia muita desconfiança. Os empresários... desconfiavam muito, tinham concorrentes no grupo por produzirem o mesmo produto**." Policy-maker C	"... we started to work focused on the integration emphasising the entrepreneurial group integration... we implemented several courses focused on the kind of cooperation in order to make them trust each other because... there was too much mistrust. The entrepreneurs... distrusted a lot, they had competitors in the same group (of project beneficiaries) because they manufacture the same product." Policy-maker C	Mistrust among entrepreneurs who see other peers (beneficiaries of a project) as competitors that can 'steal' or 'copy' their ideas what hinders cooperation.	*Lack of co-operation between businesses motivated by distrust among entrepreneurs in the same industry.*	Nunes (2013)
		"... **o mercado ilegal**, independente de ser queijo cocaína ou álcool, bebida alcoólicas não regularizadas, **é um mercado completamente alienado, que foca sobretudo preço**..." Beneficiary A	"... the illegal market... is a completely alienated market, which focuses mainly on price..." Beneficiary A	The presence of illegal products in the market leads to a price-oriented competition, influencing the industry to adopt low-quality standards.	*Illegality (shadow economy products/non-certified products)*	None

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **a entidade privada sem fins lucrativos, ela conduz de um jeito muito, a não sei, eu acho que ele tem que cumprir meta sabe, cumprir. Então, as coisas não tem um controle,** assim, **tão claro.... no primeiro momento, você sabe como é o processo, você organiza um documento, a demanda vem né, a gente liga para confirmar um pouco assim aquela intenção né ali descrita, elabora um documento de contrato, que agora está um saco, porque eles estão exigindo que a gente siga uma ficha técnica, que é uma coisa meio copia cola conteúdos, e, muitas vezes, na conversa que você está tendo para confirmar aquilo, às vezes, extrapola um pouquinho, tem algumas variações ali, mas a avaliação interna da entidade privada sem fins lucrativos está exigindo que seja cumprido o conteúdo da ficha técnica. Então, às vezes, eu até falo com eles assim, vocês estão pedindo para que eu aja de maneira burra, porque eu vou copiar uma ficha que eu não estou acreditando no conteúdo que está ali, mas se vocês querem cobrar assim, manda a ficha, aprova, depois eu vou lá e vou corrigir essa distorção** né. **Então, eu chego no cliente, eu confirmo o que ele quer**." Consultant A, designer	"... the non-profit private entity... guides in a way that is quite, I do not know, I think they must fulfill goals, fulfill. Then, things do not have a very clear control... At the first moment, you know how the process works, you organise the paperwork, the demand comes..., we call to check a bit of that described intention, we elaborate a contract which is annoying because they [non-profit private entity] are requiring us to follow a standard form which is something like copying-pasting contents, and many times during the chat to check the demand, sometimes it extrapolates a bit, there are some variations, but the internal evaluation of the non-profit private entity is requiring the fulfilment of the standard form. Thus, sometimes, I talk to them, are you asking me to act dumb?, because I am going to copy a form in which content I do not believe is there, but if you want to charge like that, send the form, approve it, then I will go there and I will correct this distortion... So, I will go to the client [beneficiary], I will confirm what he wants. Consultant A, designer	Paperwork focused on regulations and standards rather than actual beneficiaries needs from design services.	*Bureaucracy – slow decision making, investments focused on standards and regulations rather than actual solutions, lengthy paperwork to access government funds, hurdles for partnership agreements (mainly referred to the time required to fulfill government standard procedures)*	Nunes (2013) Raulik-Murphy (2010)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **a gente não pode contratar um consultor diretamente em uma empresa privada, nós temos que contratar instituições, universidades, institutos de pesquisa, ou, associações** como a ABE design, por exemplo, e a partir desse contrato com as instituições, a gente começa a desenvolver o trabalho [...] **o sistema faz um rodízio entre as entidades que estão inscritas e credenciadas para atender essas demandas. Então a gente tem esse aí como o principal limitador**." Policy-maker A "... acaba sendo **um dificultador, a própria burocracia interna que nós temos, a gente tem um processo muito forte do Ministério Público, então a gente tem que estar muito atento as normas [...] Burocracia é o que mais emperra qualquer contratação**." Policy-maker C	"we cannot hire a consultant directly from a private company, we have to hire institutions, universities, research agencies, or, associations... the system alternates among the entities that are registered and accredited to meet these demands. So we have this one as the main constraint." Policy-maker A "... a difficulty, the internal bureaucracy that we have, we have a really strong process from the Federal Public Ministry, then we have to be very attentive to the rules [...] Bureaucracy is what most hinders any hiring." Policy-maker C	Bureaucracy constraints to hire consultants in the market.	*Bureaucracy limitations to select/contract consultants*	None

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"**Hoje é a questão da legislação,** a legislação, ela **não facilita muito para o produtor rural, principalmente para o pequenininho**, então, há uma briga aí, há uma expectativa grande que saia uma legislação, né, adequada, que atenda realmente as necessidades do produtor rural" Policy-maker B "... **no que tange a parte legal ou pelo menos de formação e fiscalização de legislações,** né, **é simplesmente ignorância e 'burrocracia' estatal**" Beneficiary A "**O projeto ainda está em implementação, aguardando o registro no IMA***." Consultant C, management background *Instituto Mineiro de Agropecuária	"Nowadays the issue of legislation... does not facilitate a lot for the rural producer, especially for the very small one..." Policy-maker B "... what concerns the legal part or at least training and formal oversight of legislation rules... is simply ignorance and Federation 'sillycracy'." Beneficiary A "The project is still being implemented, waiting for IMA* registration." Consultant C, management background * Minas Gerais Agriculture Institute	Legislation rules/regulatory processes show constraints to rural artisanal production and delay introduction of projects in the market.	*Bureaucracies related to local authorities/ regulatory issues*	Acklin (2013) Cox (2005)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"como as coisas funcionam aqui elas vão na Como se você tivesse quem empurrar sabe não tem assim **pode ter um pensamento da necessidade de planejamento e da organização, mas na prática as coisas se atropelam um pouco** essa sensação que eu tenho não é assim que seja uma má intenção, é **uma dificuldade mesmo de fazer coisa em um processo mais claro mais planejado de fato [...] sabia**, assim, **o que precisava ser feito. O processo foi um pouco tumultuado**, teve um período desse aí, tipo assim, queria ter uma inauguração, foi um momento da coisa da sinalização e o governador, e não sei quem, representante, então tinha que fazer, né, não tinha saída não, O negócio tinha que estar pronto. Então, foi tudo assim, tudo, acho que **a demanda estava clara, a forma de realizar que foi um pouco tumultuada** [...] eu acho que foi a organização assim do... porque, veja só, em termos de ... vou começar do princípio, da demanda configurada assim a necessidade de eles terem uma identidade para reservar mercado para fazer valer o conhecimento do produto para não deixar morrer a tradição da produção. Quer dizer, tudo isso aí que levava a necessidade da batalha pela marca, pelo reconhecimento de uma identidade. Isso estava claro, todo mundo nivelado nisto. **No momento da execução do projeto que eu acho que faltou... uma organização uma centralização, Assim, da informação** e basicamente isso. [...] teve **pouca coordenação da história toda** sabe [...] Consultant A, designer	"... There may be a thought of the need for planning and management; however, in practice, things get mixed up a bit... a real difficulty in doing things in a clearer, more planned process [...] knew what needs to be done. The process was a little confusing... the demand was clear, the way of carrying it out was a little confusing... At the moment of the project execution I think that there was a lack of organization, of centralization... of information... little coordination of the whole story..." Consultant A, designer	No clear plan and management to coordinate the achievement of project goals/ demands.	*No clear strategy to attend to a businesses/ design cluster demand/need – HOW*	Maffei, Bianchini and Mortati (2014)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **a gente queria se organizar um pouco melhor, a gente queria ser lembrado porque está começando a aparecer outros produtos concorrentes mas não é como o nosso produto**'... muito legal, então assim ela ficou no céu com a história, agora legal, **já tenho uma assinatura, aí você discuti um pouco de estratégia** né, **como é que ela põe o produto nas pousadas, aí você começa a entrar em outros assuntos, aí isso ela fica mais entusiasmada ainda, mas o projeto é só aquele pedacinho, mas aí ela te liga de vez em quando** fala assim: Oh Consultant A, o que você acha de fazer uma [banquinha, Corte, não deu para entender direito] com um negócio, então assim ela sabe, ela começa **a partir daí a entrar na estratégia do negócio dela não importa se é um negocinho ou um negoção, mas é uma importância** né..." Consultant A, designer	"... 'we would like to better organize; we would like to be remembered because other competitors' products are emerging but they are not like our product... I already have a brand' (consultant exemplifying beneficiary speech) then, you (consultant) discuss a little bit of strategy... how she (beneficiary) introduces the product into lodgings... she (beneficiary) feels more excited; however, the project is just that little bit, but sometimes she (beneficiary) calls you (for advice on business) ... from there we come into her business strategy, it does not matter if it is a small business or a large business, but it matters..." Consultant A, designer	Projects are shaped disregarding possible follow-ups that could lead to a more strategic use of design. Hence, when setbacks arise beneficiaries develop their own solutions based on their know-how, giving up/ abandoning the design strategy established during design support initiatives.	*One shot projects without follow-ups or long run strategies*	Mazzucato and Penna (2015) Nunes (2013) Raulik-Murphy, Cawood, Larsen and Lewis (2009a) Patrocínio (2013)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **desses 10 líderes nem todos eram voltados para o comercial** então **precisaria ser mais voltado para comercial para conseguir vender, porque a loja ficou bonita, a coleção ficou legal, ficou apresentado tudo certinho, mas a gente não conseguia vender [...] Aí, a gente teve a ideia de começar a levar produtos das nossas lojas, melhorou um pouco e a gente punha etiqueta da marca do consórcio. Depois, a gente resolveu que precisava ter mais produtos e que se precisasse ficar trocando a etiqueta não ficaria legal, aí as marcas começaram a mandar produtos com as próprias marcas mesmo. Aí, a loja do consórcio ficou tipo uma Multimarcas, também foi uma tentativa, mas coincidiu de estar em um ano bem ruim nos shoppings**, sabe? **De venda, de movimento.** E aí, **a gente não conseguia pagar.** Aí **ficou muito dispendioso. Todos os sócios tendo que por dinheiro todo mês.** E aí, **resolvemos que não ia ficar com a loja, tentamos vender, não conseguíamos vender**..." Beneficiary B	"... among these 10 leaders there was a lack of a commercial know-how... it should be focused on commercial aspects in order to sell because the store was beautiful, the collection was nice, everything was presented right, but we did not sell [...] So, we have the idea to start offering products from our stores putting the consortium brand label, it improved a little. After that, we decided that more products were needed, and if we needed to change labels, it would not be nice, then, the brands started to send products with their own labels. So, the consortium store became a kind of multi brand, which was also a trial, but this coincided with a bad year for shopping malls... Sales, movement... we could not afford that... it became very expensive. All partners had to put money every month... we decided that we were not going to keep the store, we tried to sell (the store), we did not get a buyer..." Beneficiary B	Projects are shaped disregarding possible follow-ups that could lead to a more strategic use of design. Hence, when setbacks arise beneficiaries develop their own solutions based on their know-how, giving up/ abandoning the design strategy established during design support initiatives.	*One shot projects without follow-ups or long run strategies*	Mazzucato and Penna (2015) Nunes (2013) Raulik-Murphy, Cawood, Larsen and Lewis (2009a) Patrocínio (2013)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **pegou 10 líderes e quando todos querem liderar, eu acho que não foi positivo**, entendeu [...] **quando tem algum insucesso mexe com a gente**, mas tudo é válido como experiência ... **cada um com sua experiência de marca, querendo pôr uma marca única, eu acho que essa é a resposta, essa foi a grande dificuldade** né..." Beneficiary B	"... they take 10 leaders and when all want to lead, I think that this was not positive... when we are unsuccessful, we feel messed up... everyone with their brand experience, aiming at building only one brand, I think this is the answer, this was the big difficulty..." Beneficiary B	The policy was crafted by policy-makers and consultants. Diverse beneficiaries' brand identities, market focus, and experiences were not considered in the design support project strategy and development.	*Top-down policies*	None. Although participatory policy-making processes have been highlighted in design policy and in design for policy domains, this indication is not prescriptive, depending on the context. The studied design support initiative showed the need for participatory (bottom-up) processes.

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **desses 10 líderes nem todos eram voltados para o comercial então precisaria ser mais voltado para comercial para conseguir vender, porque a loja ficou bonita, a coleção ficou legal, ficou apresentado tudo certinho, mas a gente não conseguia vender [...] Aí, a gente teve a ideia de começar a levar produtos das nossas lojas, melhorou um pouco e a gente punha etiqueta da marca do consórcio. Depois, a gente resolveu que precisava ter mais produtos e que se precisasse ficar trocando a etiqueta não ficaria legal, aí as marcas começaram a mandar produtos com as próprias marcas mesmo. Aí, a loja do consórcio ficou tipo uma Multimarcas, também foi uma tentativa, mas coincidiu de estar em um ano bem ruim nos shoppings,** sabe? **De venda, de movimento.** E aí, **a gente não conseguia pagar.** Aí **ficou muito dispendioso. Todos os sócios tendo que por dinheiro todo mês.** E aí, **resolvemos que não ia ficar com a loja, tentamos vender, não conseguíamos vender**..." Beneficiary B	"... among these 10 leaders there was a lack of a commercial know-how... it should be focused on commercial aspects in order to sell because the store was beautiful, the collection was nice, everything was presented right, but we did not sell [...] So, we have the idea to start offering products from our stores putting the consortium brand label, it improved a little. After that, we decided that more products were needed, and if we needed to change labels, it would not be nice, then, the brands started to send products with their own labels. So, the consortium store became a kind of multi brand, which was also a trial, but this coincided with a bad year for shopping malls... Sales, movement... we could not afford that... it became very expensive. All partners had to put money every month... we decided that we were not going to keep the store, we tried to sell (the store), we did not get a buyer..." Beneficiary B	Design ideas are not evaluated in terms of economic sustainability throughout time (short-, medium- and long-term). Moreover, the new supply, sales and next product developing situations were not tested by prototyping.	*Lack of a viability analysis of design strategy*	Brown (2008) IDEO (2011, 2014) IDEO.org (n.d., 2015)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **a entidade privada sem fins lucrativos**, ela **conduz de um jeito muito, a não sei, eu acho que ele tem que cumprir meta sabe, cumprir. Então, as coisas não tem um controle**, assim, **tão claro.... no primeiro momento, você sabe como é o processo, você organiza um documento, a demanda vem** né, **a gente liga para confirmar um pouco assim aquela intenção** né **ali descrita, elabora um documento de contrato, que agora está um saco, porque eles estão exigindo que a gente siga uma ficha técnica, que é uma coisa meio copia cola conteúdos, e, muitas vezes, na conversa que você está tendo para confirmar aquilo, às vezes, extrapola um pouquinho, tem algumas variações ali, mas a avaliação interna da entidade privada sem fins lucrativos está exigindo que seja cumprido o conteúdo da ficha técnica. Então, às vezes, eu até falo com eles assim, vocês estão pedindo para que eu aja de maneira burra, porque eu vou copiar uma ficha que eu não estou acreditando no conteúdo que está ali, mas se vocês querem cobrar assim, manda a ficha, aprova, depois eu vou lá e vou corrigir essa distorção** né**. Então, eu chego no cliente, eu confirmo o que ele quer**." Consultant A, designer	"... the non-profit private entity... guides in a way that is quite, I do not know, I think they must fulfill goals, fulfill. Then, things do not have a very clear control... at the first moment, you know how the process works, you organise the paperwork, the demand comes..., we call to check a bit of that described intention, we elaborate a contract which is annoying because they [non-profit private entity] are requiring us to follow a standard form which is something like copying-pasting contents, and many times during the chat to check the demand, sometimes it extrapolates a bit, there are some variations, but the internal evaluation of the non-profit private entity is requiring the fulfilment of the standard form. Thus, sometimes, I talk to them, are you asking me to act dumb?, because I am going to copy a form in which content I do not believe is there, but if you want to charge like that, send the form, approve it, then I will go there and I will correct this distortion... So, I will go to the client [beneficiary], I will confirm what he wants." Consultant A, designer	Unclear management/monitoring of processes. ineffective process to formalize design services. Standard forms that are useless in order to define beneficiaries needs and services required to solve their needs.	*Inefficient monitoring, insufficient assessment, complicated and immature evaluation process*	Choi (2009)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	EDUCATION	"... **o técnico que faz capitação das necessidades do cliente esse técnico não entende,** assim, **ele não faz a mínima ideia do que seja design, ele tem muito pouca informação [...] como as coisas funcionam aqui elas vão... como se você tivesse que empurrar**, sabe, não tem, assim, pode ter um pensamento da necessidade de planejamento e da organização, mas, na prática, as coisas se atropelam um pouco. Essa sensação que eu tenho, não é assim que seja uma má intenção, é uma dificuldade mesmo de fazer a coisa em um processo mais claro, mais planejado de fato [...] a demanda estava clara, a forma de realizar que foi um pouco tumultuada [...] No momento da execução do projeto que eu acho que faltou uma, uma organização, uma centralização... da informação... pouca coordenação da história toda sabe [...] **em um determinado momento entra o design, uma atividade que cria lá o diferencial para as empresas etc. eu acho que eles não, até agora eles não têm uma, é lógico que esta coisa vai sendo gradativa, vai se alimentando da formação e da informação sobre design mas, é isso aí, ele não tinha este conhecimento** e foi para, **é como se estivesse se formando para isso**. [...] Algumas pessoas, Eu acho, [assim, com modéstia eu acho que me coloco dentro deste grupo,] alguns nomes pessoas que pela experiência já tinham conhecimento maior no design passaram estar mais juntos do ... neste período [...]Então assim, você tinha uma presença assim que ia transferindo conhecimento." Consultant A, designer	"... the technician [newly graduated designer] who identifies the customer's needs, this technician does not understand... he has no idea what design is, he has very little information about [...] how things work here, they (projects) go on... as if you had to push [...] the demand was clear, the way of carrying it out was a little confusing [...] at a certain point, design emerges, an activity that creates competitive advantages for companies etc. I think they do not, so far they do not have a, it is logical that this thing is going to be gradual, it is feeding on design training and information; however, that is it, they (policy-makers) did not have this knowledge, it is like they were being prepared for this." Consultant A, designer	Lack of knowledge and experience to develop, carry out and manage design initiatives	*Under-skilled design agencies and designers*	Choi (2009)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	BARRIER	PRIOR RESEARCH
ECOSYSTEM	EDUCATION	"... **a formação de público externo, mostrar para os grandes centros quais são essas diferenças** que, por exemplo, **o queijo Canastra não é uma massa láctea branca, redonda cilíndrica. O queijo da Canastra é o queijo feito na Canastra nos 7 municípios da indicação geográfica, com as técnicas tradicionais reconhecidas** [...] tem muita gente, a canastra tem um peso grande nesse mundo dos queijos artesanais, então **tinha muita gente que achava, que pegava queijo de qualquer lugar do país ou de Minas, e por ser um queijo redondo etc**. 'isso aqui é queijo canastra' e **vendia como queijo canastra**." Beneficiary A	"... the education of customers, to show the cities what are these differences... the Canastra cheese is not a white, round, cylindrical milky mass. The Canastra cheese is the cheese made in Canastra, in the 7 municipalities of the geographical indication, with the traditional techniques recognized..." Beneficiary A	Users/customers did not distinguish the cheese origin and features in the market.	*Lack of design awareness/ end-users education to recognise the design value*	Swann (2010)
	GEOGRAPHY	**Quando falava sobre as dificuldades "Distância**, agenda, ehh... Metereologia e... disponibilidade de contato por parte dos produtores. A gente tem que lembrar que os produtores normalmente passam o dia inteiro na roça quando não moram na própria fazenda e aí, isso, às vezes, por ser interior, cargas... etc... o produtor não tem acesso a internet, acesso a telefonia, isso gera uma certa tensão às vezes." Beneficiary A	When I talked about difficulties "Distance [from designers, design services, studios]..." Beneficiary A	Geographical distance from designers/ studios/design services.	*Distribution of design services*	CBD, Apex-Brasil, MDIC (2014) Choi (2009) Design Council (2015)

APPENDIX B

ELICITATION PROCESS: DRIVERS TO DESIGN INNOVATION

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"As vezes eu sigo um roteirinho de briefing de projeto, desvia um pouco, **eles [os beneficiários] não têm o conhecimento nenhum, e nem pode se exigir que tenha, mas eles [os beneficiários] têm sensibilidade para a necessidade do trabalho de cuidado com a imagem. Isso em todos é muito evidente. Eles estão sentindo que os processos e a dinâmica do negócio têm que estar adequada ao mundo de hoje onde a exposição da marca, da mensagem, tem que estar muito clara, coerente. [...] o grande facilitador é o reconhecimento de que ele precisa daquilo**. Aquilo que a gente estava falando um pouco antes, sim, apesar de que com **essa história de mercado** assim **e a divulgação da informação, como ela acontece hoje, traz para eles a certeza de que eles precisam investir nisso**, né, eles não sabem exatamente o que é, como acontece etc, mas eles sabem que assunto está na pauta, então, assim, eles sabem claramente. É muito interessante isso, desde o pequenininho até o mais estruturado. [...] da mesma maneira que no individual, o grupo individualmente acontece da mesma forma, individualmente **eles sabem da necessidade**" Consultant A, Designer "... **os produtores tinham** o, **a..., consciência da necessidade**" Beneficiary A	"... they (beneficiaries) have sensitivity to the need to take care of their image. This is quite evident among them. They are feeling that the processes and business dynamics have to be appropriate to the world today where the exposure of the brand, the message, has to be very clear, coherent. [...] the great facilitator is the recognition that he needs that [...] this market story and the dissemination of information, as it happens today, bring them the certainty that they need to invest in it [...] they know the need for it" Consultant A, Designer "... the producers have... the awareness of the need" Beneficiary A	The perception, feeling, sensitivity for the need of design and its benefits.	*Design awareness*	Arquilla, Maffei, Mortati and Villari (2015) Bitard and Basset (2008) Cox (2005) Choi (2009) European Commission (2013) Larsen and Lewis (2007) Millward and Lewis (2005)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"... **eles começaram a ver a importância do designer [...] a percepção que eles tiveram de que eles precisavam ser diferentes e buscar a diferença em todos detalhes do negócio [...] Foi a partir daí, da vontade de perceber, de ter esse poder da percepção, eles precisavam fazer diferente, ser diferente, fazer diferente**" Policy-maker C "... **eu acredito na importância do design, porque o design estuda comportamento, tem percepção do mercado, enquanto cliente, comportamento, necessidades, demanda. Eu invisto e investiria muito**, sim, **no design, porque eu acho que uma grande experiência para a gente foi isso, a importância de se ter realmente um profissional atuando na área**." Beneficiary B	"... they started to see the importance of the designer [...] the perception they had that they needed to be different and seek the difference in every detail of the business ... It was from there, from the will to perceive, to have this power of perception, they had to do differently, to be different, to do different" Policy-maker C "... I believe in the importance of design, because design studies behaviour, it has market perception about customers, needs, demands. I invest and I would invest much more... in design, because I think that a great experience for us was that: the importance of having an active professional in the business field." Beneficiary B	The perception, feeling, sensitivity for the need of design and its benefits.	*Design awareness*	Arquilla, Maffei, Mortati and Villari (2015) Bitard and Basset (2008) Cox (2005) Choi (2009) European Commission (2013) Larsen and Lewis (2007) Millward and Lewis (2005)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	BENEFICIARIES	"... você tem que orientar, trazer a informação de forma, é... mastigada pro produtor para ele conseguir captar e conseguir fazer, **porque vontade ele tem**, ele não tem acesso a informação, ou não tinha até pouco tempo" Beneficiary A "... **o querer deles é muito bacana** [...] Foi uma necessidade deles, nasceu da vontade deles [...] **são pessoas com vontade, entendeu**. Isso assim, faz a gente ter motivação para continuar trabalhando, a vontade do grupo [...] **O que mais facilita em qualquer projeto é as pessoas quererem fazer a transformação** [...] Foi a partir daí, da vontade de perceber, de ter esse poder da percepção, eles precisavam fazer diferente, ser diferente, fazer diferente" Policy-maker C "**Então,** aí, **aprendizado eu peguei para minha vida: eu só vou entrar realmente em um negócio que eu realmente acredite, porque o negócio bom é aquele que você acredita e se dedica, né.** Então, **eu só vou entrar no que eu acreditar, porque aí eu sei que eu vou me dedicar**." Beneficiary B	"... because they (beneficiaries) have the will..." Beneficiary A "... their (beneficiaries's) will is very nice... they are people with will, you know. [...] What most facilitates any project is people wanting to make the transformation" Policy-maker C "So... the lesson I've gotten for my life: I'm just going to really go into a business that I really believe, because a good business is one that you believe in and dedicate yourself to, right. Then, I'm just going to get into what I believe because then I know that I'm going to dedicate myself." Beneficiary B	Desire, wish, will, willingness, motivation, want to make changes and do believe in those proposed changes.	*Internal motivation / willingness*	Acklin (2013) Poirier, Schwartz, Eddy, Berman, Chacour, Wynne, Cavanaugh, Martin, Byrne, and Sanberg (2017) Sternberg (2006, 2012)
		"... **o que a gente propõe para eles, eles fazem [...] têm empresários que são muito afoitos, muito dinâmicos, que vão atrás, que correm. Hoje fazem as coisas acontecerem independente da entidade apoiadora**..." Policy-maker C	"... what we propose to them, they do [...] there are entrepreneurs who are very enthusiastic, very dynamic, who go ahead, who are active. Nowadays, they make things happen regardless of the supporting entity..." Policy-maker C	Proactive attitude towards change, to make things happen.	*Proactivity*	None

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	DESIGNERS & CONSULTANTS	"... **a gente vai usando palavras,** assim, **tem que tomar cuidado, usar as palavras mais simples e adequadas**" Consultant A, Designer "... **o produtor, às vezes, ele não sabe, ele só faz o rótulo, a hora que a moça começa a conversar com ele, os profissionais, é que ele começa, conforme for o que ela conversa é que ele diz 'não, isso é importante, eu quero também**', por exemplo, o cartão de visita que é super importante para eles, né. **E outras coisas** aí **também. A partir dessa conversa que** aí **ele consegue ver outras coisas**" Policy-maker B "**Tem uma consultora [...] ela é idolatrada, porque a mulher dá resultado [...] ela sabe passar, ela tem essa habilidade. Os profissionais que a gente contrata a gente tem muito esse cuidado das tratativas, né, como é que eles lidam com os empresários. Isso é muito importante**" Policy-maker C	"... we use the words... we have to be careful, to use simpler and more suitable words" (about talking to beneficiaries in an accessible way) Consultant A, Designer "... the producer, sometimes, he does not know, he only adopts the label development, when she (designer) starts telling him, the professionals, he (beneficiary, producer) starts, according to what she says, saying 'no, this is important, I want (other design interventions) too' [...] And other things too. From this conversation, he (beneficiary, producer) can see other things" Policy-maker B "There is a consultant [...] she is worshiped because she achieves outcomes [...] she knows how to transfer (teach, transfer knowledge), she has that ability. The professionals that we hire, we truly take the treatment into account... how they (consultants) deal with the businessmen. This matters a lot" Policy-maker C	Language, words, and treatment used to deal with entrepreneurs.	*Good communication (didactics, use of empathy)*	Brown (2009)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	DESIGNERS & CONSULTANTS	"... **você tem que orientar, trazer a informação de forma... mastigada pro produtor para ele conseguir captar e conseguir fazer** [...] sobretudo para as cadeias agro artesanais alimentícias rurais, **um dos maiores cuidados que tem que se ter, é exatamente essa, essa explicitação das informações para essas famílias** [...] é muito de **saber introjetar o que que as pessoas estão falando**, mas ao mesmo tempo **saber também como explicitar isso para elas**. Então, eu acredito que, assim, é um processo de mão dupla, **não podem ter ruídos de comunicação com certeza**, a disponibilidade de informações é crucial, mas que eu acredito que tenha gerado um resultado muito interessante, tanto na abertura de conhecimento por parte dos produtores, quanto na abertura de conhecimento por parte dos próprios consultores e escritórios. [...] **Ele começou a perceber que ele estava procurando ser escutado, não era simplesmente uma coisa de cima para baixo, que ele tinha que não só se posicionar, mas também interagir, e aí, por um lado, auxiliou a abrir ou pelo menos sair da zona de conforto**" Beneficiary A	"... you (consultant, designer) have to guide, to bring the information in an accessible (spoon-fed) (accessible, suitable) way in order to make them grasp the information and get things done [...] One of the things you most need to pay attention to, that you need to have, is exactly this, this explanation of the information to these families [...] he (beneficiary) starts realizing that people wanted to hear from him, it was not something top-down, he had not only to position himself, but also to interact, and so, in one hand, it helps to open yourself or at least to get out of the comfort zone" Beneficiary A	Language, words, and treatment used to deal with entrepreneurs.	*Good communication (didactics, use of empathy)*	Brown (2009)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	DESIGNERS & CONSULTANTS	"... a gente busca as empresas que vão nos auxiliar dentro deste processo, porque **as expertises estão lá, nós aqui somos só os condutores e interlocutores... do negócio**. Então, assim, **tudo que foi determinado em termos de especialidade, a gente buscava os melhores [...] consultora da XXX (marca líder reconhecida no mercado global)**, que ela é brasileira... **é professora** do [...] **a experiência deles**... **Eu acho que**, que **os exemplos utilizados na implementação dos projetos são fundamentais demais ... a boa prática é,** eu acho que é **fazer a soma das habilidades, da experiência com a didática de como repassar isso para os empresários**" Policy-maker C "... estar junto, **esse apoio, essas consultorias, sabe, trazendo profissionais de nome, experiência, para estar nos orientando**. E, assim, nos impulsionou, nós tivemos a coragem de ir para um shopping, O que até então era um tabu, a gente não tinha coragem mesmo, muito em função do custo e com o grupo a gente criou esta coragem de ir [...] Tem muitas coisas positivas, eu acho que **os profissionais que a gente conheceu, coisa que a gente nunca tinha ouvido falar a gente aprendeu com os profissionais a respeito: de conceito, da apresentação da marca, de atendimento, de uma formação de coleção,** nossa, foram **inúmeras as coisas**." Beneficiary B	"... the expertise is there, we, here, are just guides and interlocutors... of the businesses [...] everything was defined in terms of competences, we search for the best (professionals) [...] the consultant of company XXX (brand recognized as a leader in the global market)... she is a professor [...] their (consultants) experience... I think... that the examples provided during the projects' implementation are quite fundamental... the best practice is... to add skills and experience to the didactics of how to transfer this to the entrepreneurs" Policy-maker C "... this support, these consultancies... bringing professionals with a good reputation, experience to guide us [...] the professionals we met, we learned with them what we had never heard about: concept, brand presentation, customer service, fashion collection formation... countless things" Beneficiary B	Importance of experience built, examples to lead businesses tasks, didactics, and reputation in the market.	*Experience, practice-based know-how, good reputation*	Gemser and Leenders (2001) D'Ippolito (2014)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ACTORS	POLICY-MAKERS	"... **essa percepção, essa sensibilidade que tem de como... atuar né, como organizar as coisas, técnico. No caso de Juruaia, por exemplo, que era Policy-maker C, Policy-maker C tinha uma noção mais tranquila do negócio,** assim, **do que era o trabalho, então ela contribuiu de forma bem legal no trabalho**." Consultant A, Designer	"... this perception, this sensitivity to how to ... act, how to organize things, technically. In the case of P2, for example, that was Policy-maker C, Policy-maker C had a more accurate notion of business... about what the work was, so she contributed in a quite nice manner to the work" Consultant A, Designer	Know-how to manage/coordinate design projects, knowing businesses' nature and dynamics.	*Having a design management background*	Cox (2005) Maffei, Bianchini and Mortati (2014)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ORGANISATIONAL	CULTURE	"... foi um projeto muito legal de ter participado que **foi 'cada macaco no seu galho mesmo**'. Então teve assim, **o profissional que entendia mais ou se dedicava mais análise de mercado**, beleza estava presente, **o estilista com a questão do produto, a arquitetura com o desenvolvimento do ponto de venda**, e o design que estava circulando nesta história né... [...] Isso é um negócio legal de vivenciar né, aonde, para mim que, assim, eu já tive projetos, vários outros, aonde você se sente plenamente satisfeito porque você fala: poxa que legal né, cada coisa no seu lugar **informação realizada por gente que sabe** o que etc [...] você circulou assim com Consultor Y, ótimo relacionamento, **entendendo... do Mercado, contribuindo com ela, com o Consultor X, vendo o que estava acontecendo e sabendo que as pessoas do grupo estavam** lá **contribuindo**" Consultant A, Designer	"... it (the project) was truly 'every jack to his trade'... There was ...the professional who understood the most or was more dedicated to market analysis... the fashion designer with the product issues, the architecture with point of sales development... information carried out by people who know... understanding the market, contributing to her, to the Consultant X, seeing what was going on, and knowing that the team was made up of people who were contributing" Consultant A, Designer	Relevance of experts from diverse fields and their collaboration within the team.	*Collaboration among individuals from different backgrounds*	Bitard and Basset (2008) Larsen and Lewis (2007) Piore & Cardoso (2017) Poirier, et al. (2017)
		"... a partir da hora que eu chego no cliente, [eu faço um...] eu faço pelo menos um encontro olho no olho pessoal lá, presencial [...]Então, eu chego no cliente, eu confirmo o que ele quer. Eu indo lá, independente de onde ele esteja, e começamos uma conversa, uma argumentação, um levantamento de informação né." Consultant A, Designer	"... I do at least one face-to-face, in person, meeting... I arrive at the client (beneficiary) and verify what he wants. When I go there, regardless of where he is, we started a conversation, an argumentation, an information gathering" Consultant A, Designer	In-person meetings and face-to-face contact matter	*Face-to-face communication*	Mintzberg (1992)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ORGANISATIONAL	CULTURE	"... **isso não tem como ser feito como um trabalho de escritório, de gabinete**. E aí, o mais importante, **os escritórios também foram a fazenda conhecer, e aí, conhecendo a fazenda, eles começavam a captar, inicialmente, o que que é essa história atrás dessa família produtora de determinado queijo e o que que são as características principais que eles valorizam**. Feito isso, eles começavam a cruzar com detalhamentos de mercado, então, o que que existe no mercado de queijos artesanais hoje e o que que é atraente para esse público [...] eu acho que uns 25 a 30 produtores que utilizaram esse trabalho de inovação de rotulagem e embalagem, desses, **somente 1 fez o trabalho, mas não aceitou o trabalho. E não aceitou, na minha análise crítica, por falta desse contato mais próximo**. Porque, sobretudo esse produtor rural, micro produtor rural, **o contato pessoal é fundamental,** então, **não basta ter contato por telefone, WhatsApp, as vezes etc., mas tem que estar ali,** oh, **olho no olho, explicando o porquê das coisas**. Então, eu acho que às vezes, para essas cadeias, **isso** vai demandar e **demandará com certeza uma atenção um pouco maior para atender e para conseguir** é, **repassar o que foi essa inspiração, de onde surgiu e porque foram utilizados determinados aspectos para que o produtor consiga entender e captar junto a questão da própria identidade dele.**" [...] Então, **é fundamental que tenha esse contato, esse respirar o ar, saber porque que ele faz as coisas de determinado jeito. Porque, na verdade, não é ele que está fazendo porque ele quer, é porque ao longo de 200 anos a família dele foi fazendo uma serie de tentativas e erros para criar um conhecimento empírico**" Beneficiary A	"... this cannot be done as a job done from the office, from the cabinet... the studios also went to the farms to know, so, knowing the farm, they started to get, in the beginning, what the story behind the family that produces a certain kind of cheese is, and what the main features they value are... only one (beneficiary) took part in the work (design project) but didn't agree with the outcome. And, he (beneficiary) didn't accept it, according to my criticism, because of the lack of this close contact. [...] the in-person meeting is fundamental... it is not enough to talk sometimes on the phone, WhatsApp etc. you (consultant) have to be there... face-to-face, explaining the reasons for doing things... this will demand, for sure, more attention to carry out and to translate what was the inspiration, from where it arose, and why some features were used in order to make the producer understand and get the issue of his own identity... this contact (in person) is fundamental... to know why he (beneficiary, the farmer) does things in a certain way. [...] it is not because he (beneficiary) wants it, it is because he learned from his family by trial and error throughout 200 years, creating an empirical knowledge" Beneficiary A	In-person meetings and face-to-face contact matter	*Face-to-face communication*	Mintzberg (1992)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ORGANISATIONAL	CULTURE	"**Essas empresas que sobressaíram fizeram o dever de casa que era proposto**" Policy-maker C	"These outstanding companies did the proposed homework" Policy-maker C	Commitment to carry out proposed project activities.	*Commitment of senior management*	Bitard and Basset (2008) Cawood (1997) Schneider, Gibet, Colomb, Orazem, Loesch, Kasparyan and Salminen (2015)
		"... **uma coisa interessante deste projeto** assim, **ninguém estava com um problema, ninguém tinha um problema, todos estavam bem, cada um no seu negócio, suas vendas** né." Consultant A, Designer	"... an interesting thing in this project, nobody (beneficiaries) was going through a problem, nobody had a problem, everyone was good, everyone in their business, their sales" Consultant A, Designer	Joining projects not to face a crisis or urgent problem, but when business is going well, especially sales.	*Use design support when the business goes well*	Deserti and Rizzo (2014) Schneider (2006)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ORGANISATIONAL	DESIGN PROCESS	"... ***a demanda estava clara***, a forma de realizar que foi um pouco tumultuada. [...]... vou começar do princípio, da demanda configurada assim **a necessidade de eles terem uma identidade para reservar mercado, para fazer valer o conhecimento do produto para não deixar morrer a tradição da produção**. Quer dizer, **tudo isso aí que levava a necessidade da batalha pela marca, pelo reconhecimento de uma identidade**. Isso estava claro, todo mundo nivelado nisto. No momento da execução do projeto que eu acho que faltou uma, uma organização uma centralização, assim, da informação, é basicamente isso." Consultant A, Designer "**Foi tudo muito claro [...] eles conseguiram**, é, **captar a nossa demanda e nos entregar aquilo que estava sendo pedido**, então, assim, eu acho que a gente conseguiu 'brifá-los' muito bem e da mesma forma eles conseguiram nos "brifar" sobre aquilo que eles iam nos entregar" Policy-maker C	"... the demand was clear... the need to have an identity to get a market share, to strengthen the knowledge of the product in order to keep the production tradition alive... Everything led to the need for a battle for the brand, for the recognition of an identity..." Consultant A, Designer "Everything was quite clear [...] they (consultants) got our demand and delivered what was being requested..." Policy-maker C	Accurate/clear/ defined design strategy, opportunities, and deliveries to be achieved throughout projects.	*Clear product development/ design strategy*	Filson and Lewis (2000)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ORGANISATIONAL	DESIGN PROCESS	**Sobre a preparação do projeto para o pólo** **"As pessoas que fizeram esse projeto elas saíram para fora, foram para os Estados Unidos, para Europa, para poder entender o que** que **nós podíamos trazer de melhor** ..." Policy-maker C **Sobre a visita a feira em Paris e best practice em exportação na Colômbia durante o projeto** **"Outra coisa que impulsionou demais foram as visitas internacionais que nós fizemos [...] isso deu um start muito grande, abrindo muito a cabeça deles** né**. E hoje algumas empresas já tem seus produtos todos expostos nessa feira lá em Paris, agora está sendo em Milão**" Policy-maker C	About the project preparation (strategy and plan development) "People who did this project went abroad, they went to the United States, to Europe, to understand what we could better do..." Policy-maker C About visits to an exhibition in Paris and exports best practices in Colombia "Another thing that boosted it a lot was the international visits we made [...] this gave a very big start, opening their (beneficiaries', entrepreneurs') minds a lot. And, nowadays, some companies already have all their products exhibited in this fair that was in Paris, it is currently taking place in Milan" Policy-maker C	Importance of getting insights (main stakeholders) from global/ international best practices in diverse phases of the project, from strategy and planning to implementation.	*International market-focused orientation*	Er (1997, 2002) Larsen and Lewis (2007)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ORGANISATIONAL	DESIGN PROCESS	"Nós encontramos de 15 em 15 dias para discutir ações do grupo e todos os projetos de desenvolvimento tinham seu tempo de acontecimento, por exemplo, desenvolvimento de produto eram vários produtos e várias consultorias, teve projeto que durava 9 meses, 10 meses, um ano, mas que mensalmente tinha um profissional" Policy-maker C "... uma organização maior e marcar determinadas etapas com validação dos representantes do grupo, por exemplo, em Juruaia [...] você tem que definir de repente porta-vozes lideranças, identificar. A gente identificava traços nas pessoas do grupo que eram mais propícias a ser representante de determinada coisa" Consultant A, Designer	"We meet every fifteen days to discuss the actions (activities) of the group and all development projects had their time to be carried out (to happen); for instance, product development, there were many products and several consultancies, there were projects that took nine months, ten months, one year, but every month there was a professional" Policy-maker C "... a larger organization and to define certain steps with validation of the group representatives, for example [...] you have to define spokespeople that are leaders" Consultant A, Designer	Defined stages/ phases (processes and activities) and decision points with beneficiaries' validation throughout projects.	*Plan and resource market launch using stage gates process*	Larsen and Lewis (2007)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	"... **o objetivo era comum a todos [...] se tornar mais profissional na apresentação dos negócios, então o objetivo de todos era isso** né, **extrapolava a questão de serem concorrentes**..." Consultant A, Designer "... **um fator que é importante é a união deles, porque fica muito mais barato para eles e acessível também as ações, porque se a gente tem ação hoje é porque têm um grupo de produtores [...] eu acho que o grande diferencial é essa questão da união deles [...] dessa parceria... eles entenderam a importância de agregar valor ao produto. [...] O objetivo de um produtor de queijo é o mesmo do outro, eles têm objetivos em comum, por isso eles estão juntos**" Policy-maker B "... **a gente começou a trabalhar com o foco de interação focando na interação do grupo empresarial lá.** Então, **a gente implementou vários cursos focados no tipo da cooperação para que eles ganhassem confiança entre eles mesmos [...] a partir daí esse grupo foi criando condições de trabalhar, eles criaram uma central de compras** [...] Policy-maker C	"... the aim was the same to everyone [...] to become more professional in the presentation of the business, so the goal of all was that it extrapolated the issue of being competitors" Consultant A, Designer "... an important factor is their union because the actions are cheaper and more accessible to them, because if we have projects nowadays it is because there is a group of producers [...] I think the great differential is this issue of their union [...] this partnership... they understood the importance of increasing the product value. [...] The aim of a producer is the same of another one, they have shared aims, and because of this they are together" Policy-maker B "... we started to work focused on the integration emphasising the entrepreneurial group integration... we implemented several courses focused on the kind of cooperation that would make them trust each other [...] from there, this group started to create conditions to work, they created a purchase centre company [...] Policy-maker C	Shared aims/ goals and activities. Trust and help among businesses in the same industry.	*Cooperation between businesses / shared concerns and practices*	Nunes (2013) Symbola, Unioncamere (2016) Wenger (2011)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	[...] A partir daí **eles começaram a se destacar, primeiro porque eles se entenderam enquanto grupo, eles se ajudam enquanto grupo, é claro que existem algumas individualidades, mas hoje trabalhar com eles dá muito prazer porque** eles não... **eles fazem, sabem que o que eles aprendem coletivamente, eles aprendem individualmente nos negócios deles** [...] coletividade. **Eles entenderem que trabalhar em conjunto não interfere no individual deles, pelo contrário, eles só conseguiram fazer tudo isso porque eles trabalharam juntos [...] eles entenderam que o concorrente não é o meu vizinho [...] elas só cresceram depois que entraram em um processo coletivo porque, acho que, sozinha elas não estariam onde elas estão hoje**. Porque o que nós fizemos para elas no coletivo deu oportunidade para elas [...] **tudo era buscado coletivamente, as informações chegavam para todas da mesma forma, e a forma pela qual elas iam para as empresas e implementavam aquela informação aí era individual [...] tudo que elas são hoje adveio de todo esse processo de acreditar nelas mesmas e acreditar no coletivo**. Porque se elas tivessem que pagar individualmente todos esses consultores que nos disponibilizamos para elas, elas não fariam" Policy-maker C	[...] they started to stand out, first, because they understood themselves as a team, they helped each other as a team, for sure, there are individualities, but nowadays working with them is delightful because they do (carry out activities), they know that what they learn together, they learn individually in their business [...] They understood that working together with other businesses does not interfere in their individuality; on the contrary, they just got everything they achieved because they were together [...] they understood that their competitor is not their neighbour [...] They only thrive after stepping into a collective process because, I think, alone they would not be where they are today [...] everything was collectively sought, the information arrived to everyone in the same manner, the way it went to the company and the way it was implemented was individual [...] All that they are today came from this whole process of believing in themselves and believing in the collective" Policy-maker C	Shared aims/ goals and activities. Trust and help among businesses in the same industry.	*Cooperation between businesses / shared concerns and practices*	Nunes (2013) Symbola, Unioncamere (2016) Wenger (2011)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	"... mas depois que ele quebra essa barreira, que **ele percebe que o posicionamento dele, juntamente com o novo posicionamento da região como um todo, que é importante ele se reposicionar, ele vê essa vantagem. Depois que um, dois, três fazem, os outros já ficam sensibilizados automaticamente**." Policy-maker A "Eles estão cada vez mais enxergando a necessidade. **Tem um produtor, por exemplo, que ele fez de uma forma qualquer. Aí, só que na hora que ele vai na feira, nos eventos, ele percebe os outros, a diferença do outro rótulo. Esses assim já estão procurando** a gente, "ah... eu quero que você faz o rótulo para nós", "um novo rótulo pra gente" Policy-maker B "Mas **em qualquer grupo tem aquelas pessoas que ficam em cima do muro... 'Eu vou esperar fulano entrar se der certo, eu entro'. Isso aconteceu também... Tanto que esse segundo grupo que nós estamos pondo adveio de pessoas que tavam aqui** e né**, não acreditavam e saíram** fora **e depois buscaram... de novo**" Policy-maker C	"...he (beneficiary) realizes that his positioning, along with the new positioning of the region as a whole, that it is important for him to reposition himself, he sees this advantage. Once one, two, three do, others are automatically sensitized" Policy-maker A "There's a producer, for example, who did it anyhow. Then, only when he goes to the fair, to the events, he notices the others, the difference of other labels. These are already looking for us [professional design interventions supported by the entity] ..." Policy-maker B "... in any group there are those people who sit on the fence ... 'I'm going to wait for others to take part in it, if it works I will join it' (example of beneficiary reasoning quoted). That happened too ... Then, this second group that we are organising came from people who were here... they did not believe and left... and then sought (design support)... again" Policy-maker C	Success of design interventions in other businesses in the same industry stimulates the use of design.	*Other firms successfully used design in their industry/ cluster*	None

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	INDUSTRY	"... você vê a participação deles em feiras, em eventos, e você vê a demanda, a procura... eles não vão agregar valor a queijadinha, eles estão enxergando na queijadinha uma oportunidade, então eles vão trabalhar com isso também, desenvolver rótulo para a queijadinha e para outros produtos. É, a questão, assim, eles tão vendo um número maior de turistas hoje, então, com isso, eles têm que melhorar a forma de atender, atender bem, a hospitalidade [...] a gente tem levado muito chefes de cozinha, donos de casas especializadas que vendem o queijo lá na região da Canastra, para poder conhecer a história do produtor, conhecer a realidade deles. Então, assim, são várias ações, mas tudo com o objetivo de fortalecer a cadeia produtiva, o produtor rural" Policy-maker B	"... you see their (beneficiaries) participation in fairs, in events, and you see the demand ... they (beneficiaries) are seeing a larger number of tourists today, then, they have to improve the way they satisfy them [...] " Policy-maker B	Environment where businesses take part in industry events and fairs, having their products divulged to good reputation personalities (experts that professionally use the sort of product) at the national level. The noticeably raise of the number of more demanding consumers.	*Motivating environments/ external motivation*	Poirier, et al., (2017) Sternberg (2006, 2012)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... eles fizeram um trabalho e depois ficou interrompido um tempo. **Foi uma análise de mercado feita pela Consultora Y da Empresa Y, uma Empresa de São Paulo**, aí teve uma interrupção, ai depois voltou a Consultora Y de novo, Confirmou né, corrigiu os rumos dessa definição para cobrir o gap. Então assim, **já tinha um desenho, já tinha uma coisa lançada dessa intenção, tanto na definição das questões de mercado quanto nas definições da questão de produto**, como, por exemplo, **a participação [...] de um estilista, que foi o Consultor X que foi pra lá [...] desenvolveu alguns laboratórios, workshops com a turma para a questão de estilo** né, coisas desse tipo. Então assim, **eles já tinham mais informação [...] Os objetivos já estavam claramente traçados [...] o que resultaria na história. [...] foi um projeto muito legal de ter participado que foi cada macaco no seu galho mesmo. Então teve** assim, **o profissional que entendia mais ou se dedicava mais análise de mercado**, beleza estava presente, **o estilista com a questão** da da da **do produto**, **a Arquitetura com o desenvolvimento do ponto de venda e o design que estava circulando nesta história** né... Mas aí essa, Isso é um negócio legal de vivenciar né, aonde, Para mim que, Assim, eu já tive projetos, vários outros, aonde **você se sente plenamente satisfeito porque você fala: poxa que legal né, cada coisa no seu lugar, informação realizada por gente que sabe** o que etc [...] **você circulou assim com Consultora Y**, ótimo relacionamento, **entendendo** assim **do mercado, contribuindo com ela**, **com o Consultor X, vendo o que estava acontecendo** em, **sabendo que as pessoas do grupo estavam lá contribuindo**. [...] Então, foi um projeto muito completo" Consultant A, Designer	"...a market analysis carried out by Consultant Y of Company Y, a company from São Paulo... there already was a design, there already was something launched about the intention, whether the definition of market issues as well as product issues... the participation [...] of a fashion designer, who was Consultant X that went there [...] developed some labs, workshops to them (beneficiaries) regarding style...they already had more information [...] The aims were already traced [...] what the story would bring as a result. [...] it was truly 'every jack to his trade'... There was ...the professional who understood the most or was more dedicated to market analysis... the fashion designer with the product issues, the architecture with point of sales development, and the design that was circulating in this story... you feel fully satisfied because you say: 'that's cool', everything in its place, information made by people who know... you work with... Consultant Y... understanding the market, contributing to her, to the Consultant X, seeing what was going on... knowing that people were there, contributing" Consultant A, Designer	The participation of experts in the earlier phases of projects definitions (strategy and teamwork composition) contributing to project clarity and assertiveness.	*Clear strategies built in collaboration with good reputation experts*	None* *Cross-functional (experts from different backgrounds) in order to design the policy (design support programme/project)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **a gente busca as empresas que vão nos auxiliar dentro deste processo, porque as expertises estão lá, nós aqui somos só os condutores e interlocutores... do negócio.** Então, assim, **tudo que foi determinado em termos de especialidade a gente buscava os melhores [...] consultora da XXX (marca líder reconhecida no mercado global),** que ela é brasileira... é professora da Universidade Z também. **Foi a partir dela que que ela nos colocou todas as informações referentes aos profissionais que poderiam ser bacanas de trabalhar. Isso ajudou demais da conta. Primeiro, porque nós também não somos da área [...] as indicações externas, dos profissionais que atuaram conosco. Isso conta muito. Foi bem assertivo para nós**" Policy-maker C	"... we search for companies that will help us within this process, because the expertise is there, here we are just the guides and interlocutors... of business (beneficiaries)... Everything was defined in terms of expertise, we search for the best [...] the consultant of XXX (recognised leader brand in the global market)... From her we got all the information referred to the professionals that would be nice to work with. This helped a lot... First, because we did not come from the field (do not have that background, know-how) [...] the external indications of professionals who worked with us. This matters a lot. It was pretty assertive for us." Policy-maker C	The participation of experts in the earlier phases of projects definitions (strategy and teamwork composition) contributing to project clarity and assertiveness.	*Clear strategies built in collaboration with good reputation experts*	None* *Cross-functional (experts from different backgrounds) in order to design the policy (design support programme/project)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	POLICY & GOVERNANCE	"... **uma organização maior e marcar determinadas etapas com validação dos representantes do grupo**, por exemplo, em Juruaia [...] **você tem que definir** de repente **porta-vozes, lideranças**, identificar. A gente identificava traços nas **pessoas do grupo que eram mais propícias a ser representante de determinada coisa**" Consultant A, Designer	"... more organization and to mark certain steps with validation of the representatives of the group (beneficiaries group)... you have to define... representatives, leadership... people from the group who were more promising to be a representative of a certain topic." Consultant A, Designer	Defined process and activities (stage) with participatory decision points (gates).	*Validation process with beneficiaries/ stage gate with beneficiaries*	None
	ECONOMY	"**O principal facilitador é o próprio subsidio que facilita muito para que a pequena empresa, o pequeno produtor, possa ter acesso a serviços mais especializados de design**." Policy-maker A "**Para aqueles produtores que não têm recurso financeiro, muitos, eu acho o que é importante sim é a questão do financiamento**" Policy-maker B "Como nos trabalhamos com grupo saiu um valor muito baixo para cada empresa, esse valor de 30.000 era dividido entre os 25 empresários, então cada um pagava 1000 mil e pouquinho dividido em várias prestações. Então, assim, **a gente facilita muito para eles... O que mais facilita é essa parceria que a entidade tem com as empresas,** né, **dos recursos serem subsidiados uma parte, isso nos dá condições de trabalhar**" Policy-maker C	"The main facilitator is the subsidy itself, which makes it much easier for the small company, the small producer, to have access to more specialized design services" Policy-maker A "For those producers who do not have financial resources, many of them, I think, what is truly important is the issue of financing" Policy-maker B "... we facilitate a lot for them... What most facilitates is the partnership between the entity and the companies (beneficiaries)... one part of the resources is subsided, this gives us conditions to work" Policy-maker C	Financial and economic resources availability to invest in design.	*Finance (e.g. credit availability)*	Bell (2015) Larsen and Lewis (2007)

LEVEL		INTERVIEWS FRAGMENTS FROM RESPONDENTS	SELECTED FRAGMENTS TRANSLATION	SYNTHESIS	DRIVER	PRIOR RESEARCH
ECOSYSTEM	EDUCATION	"... a formação de público externo, **mostrar para os grandes centros quais que são essas diferenças** que, por exemplo, o queijo Canastra não é uma massa láctea branca, redonda cilíndrica. **O queijo da Canastra é o queijo feito na Canastra nos 7 municípios da indicação geográfica, com as técnicas tradicionais reconhecidas**. [...] você orienta esse externo [...] esse diferencial, **mantendo o mesmo padrão de qualidade e com conceitos e identidades únicas. Para cada um dos produtores, facilitou essa percepção do consumidor final, de que cada queijo é um queijo diferente. E, ao mesmo tempo facilitou a própria identidade do consumidor**, ao identificar: 'pera aí, **esse rótulo aqui eu sei que é da família tal'. Então, conseguiu criar um link**, que foi, também é uma das diretrizes estratégicas do projeto que é exatamente, ehhh, **conexão consumidor produtor.** Então **reforçou, seja na abordagem de linguagem, seja na abordagem visual, conseguiu facilitar essa empatia entre os dois universos**" [...] isso acaba criando e reforçando essa identidade de cada produtor, porque aí hoje, por exemplo, uma dessas ações de formação de público [...] **aí a gente já tem recebido visitas de turistas na Canastra**, por exemplo, que visita determinada fazenda e fala 'oh, eu tô vindo aqui para te conhecer, porque **eu já comprava o seu queijo a seis meses, e agora eu vim conhecer sua família** [...] Então, isso daí **você começou a tirar o produtor** do 'knowhow', **da percepção que ele tinha de ser o fundo do poço para uma pessoa que tem** a sua, **a sua profissão, o seu 'knowhow' reconhecido**." Beneficiary A	"... to show the cities what these (cheeses) differences are... Canastra cheese is the cheese made in Canastra, in the seven municipalities of the geographical indication, with the recognised traditional techniques. [...] keeping the same quality standards and with unique concepts and identities. This final consumer's perception of each cheese as a different cheese facilitated for each farmer. And, at the same time, it facilitates the identification by consumers...: '... this label is from that family' (example of consumer reasoning quoted). Then, a link was formed... a connection between consumer and producer... it strengthened, whether in the approach of language or in the visual approach, it facilitated this empathy between the two worlds (farms and cheese consumers) [...] so, we have received visits of tourists in Canastra... 'I have already bought your cheese for six months, and today I come to know your family... you start shifting the perception that he (beneficiary, farmer) was at rock bottom and is now a person who has his profession, his recognized know-how" Beneficiary A	End users/consumers understanding and identification of brands, their values, features, and offers.	*Design awareness*	Swann (2010)

APPENDIX C

LIST OF PUBLICATIONS
2015 - 2018

LIST OF PUBLICATIONS
2015 - 2018

Fonseca Braga, M., Zurlo, F. (2018). Introducing design-driven innovation into Brazilian MSMEs: Barriers and next challenges of design support. In: C. Storni, K. Leahy, M. McMahon, P. Lloyd, & E. Bohemia (Eds), *Proceedings of the Design Research Society 2018: Catalyst*, Volume 7, pp. 2987-3006. doi 10.21606/dma.2018.442

Fonseca Braga, M. (2017a). Ceasing copycat behaviour: developing product-design identity through industry and handcraft interaction. *Gestão e Tecnologia de Projetos* [Design Management and Technology], 12 (2), 21-40. doi: http://dx.doi.org/10.11606/gtp.v12i2.110536

Fonseca Braga, M. (2017b). The choice of design. From businesses' conditions to businesses' attitudes. *The Design Journal*, 20:sup 1, S635-S646. doi: 10.1080/14606925.2017.1353011

Fonseca Braga, M., Mondelli, E. (2017). Automotive: Post-acquisto. In: Lunardi, V., Malerba, C., Costa, B. (eds.) Envisioning with millennials. *La customer experience del futuro*, pp. 21-23. Retrieved from: http://marketrevolution.it/pubblicazioni/envisioning-with-millennials-customer-experience-futuro

Fonseca Braga, M. (2016). The value of design: an issue of vision, creativity and interpretation. In P. Lloyd & E. Bohemia (Eds.), *DRS 2016 Conference Proceedings*, pp. 1865-1881. London, UK: Design Research Society. doi: 10.21606/drs.2016.129

Fonseca Braga, M.; Manhago, M. S.; Ingaramo, M. O. (2015). Design boundaries in Brazilian SMEs: A case study in the furniture sector. in: E. Canli & R. M. Branco, eds., *Proceedings of UD15: Periphery and Promise 4th PhD in Design Forum*, pp 327-337. ISBN: 978-989-98284-3-8. Retrieved from: http://www.ud15.org/ud15proceedings.pdf

Vignati, A., Fonseca Braga, M. (2018). Design thinking for public good: moving towards change? in: Z. Linghao, L. Yanyan, X. Dongjuan, G. Miaosen, S. Di, *Cumulus Conference Proceedings Wuxi 2018 -Diffused Transition & Design Opportunities*, pp. 75-87. School of Design Jiangnan University; Aalto University School of Arts, Design and Architecture: Wuxi, China; Aalto, Finland. 31st October - 3rd November, Wuxi, China.

Forthcoming (2019)

Fonseca Braga, M., Zurlo, F. (2019). Handling design support programmes complexity: An interpretative framework for barriers and drivers to introducing design innovation into Brazilian MSMEs. in: L. Rampino and I. Mariani, *Advancement in Design Research at Polimi. Notes on doctoral research 2019*. Milan, Italy: FrancoAngeli.

APPENDIX D

AUTHOR'S SHORT BIOGRAPHY

Mariana Braga

is a designer with a Master's Degree in Production Engineering. Braga is currently a PhD candidate in the Design Department at Politecnico di Milano. Her PhD research is focused on the introduction of design innovation into Brazilian MSMEs. She has identified drivers and barriers to introducing design into small businesses in traditional industries, and developed new models for supporting design.

Braga enjoys crafting better futures, and has developed skills to help non-expert (non-designers) teams apply design methods or human-centred approaches. Her background in product design and ergonomics has been enriched at Politecnico regarding design thinking, service design, strategic design, and design management through tutoring, mentoring, teaching, and research activities in 7 European countries and 9 cities. She is used to multicultural environments, and enjoys dealing with people from several backgrounds.

Prior to this, her experience was mainly in product design, especially in home appliances and furniture, and ergonomics consultancy for Brazilian companies. She also worked at SENAI (Brazil) where she managed innovation projects, performed consultancy work, research on ergonomics and taught in the furniture design course. Braga took part in the Brazilian Association of Technical Standards (ABNT) as a guest member of the office chairs study committee.

mfbraga@gmail.com

https://www.linkedin.com/in/mariana-braga-59596a26/?locale=en_US