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CONNECTIVITY and CREATIVITY in times of CONFLICT

Cumulus Phd network

Implementation of design culture as a strategic innovation through design-oriented industrial conversion and product diversification

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Abstract

Italian manufacturing companies, SMEs in particular, are lately experiencing a context of great economic uncertainty. Therefore, achieving high levels of flexibility concerning changes in consumption and demand is necessary to increase competitive advantage. The discipline of Design can play an essential role in addressing the challenge of perceiving unexpected change and managing new market visions through new products. The doctoral research concerns a qualitative/quantitative analysis of design-driven industrial conversion and product diversification; both business strategies aim to share company risk in crisis, production inefficiency, or change in technological paradigms through updating and expanding the product portfolio.

The PhD research has adopted the Research through Design as the methodological approach, and in addition, a specific methodology is defined for guiding the experimentation phase. Indeed, the research includes a testing phase with two model companies of Turin and its province (as the Turin Chamber of Commerce founds the doctoral research) concerning a path to accompany a design-oriented production diversification or industrial conversion. The design culture and typical design methods, enriched with those of Innovation Management, create interdisciplinary support for reading the local and corporate production context.

The research is currently in the experimentation phase through the "Design in Progress" project, where two companies with different degrees of design orientation are encouraged to diversify their product portfolio through Design and technology-driven processes.

The final objective of the PhD research is to define good practices for efficient production diversification or, in more extreme cases, industrial conversion, adaptable and scalable according to company needs.

So far, the main results achieved in two years are 1. Five semi-structured interviews with companies; 2. A database with more than 60 case studies of Design-driven industrial conversion; 3. A classifying framework of case studies to display trends in common; 4. A collection of insights from interviews, preliminary desk research and the framework; 5. An analysis of the evolution of the manufacturing landscape in Piedmont, the region in the northwest of Italy, to explore possible new design-oriented sectors. 6. An interdisciplinary methodology to measure the propensity for design-led industrial conversion 7. The launch of the "Design in Progress" project, an experiment to bring two companies in Turin and its province closer to design 8. A literature review focused on: Research through Design, Design and territory, Territorial economy, Design and Innovation Management, Industrial conversion and product diversification.

In parallel to the "Design in Progress" project, a collaboration is underway with a Dutch university to test the path to design for manufacturing companies with young researchers and design students. In particular, a focus group with young researchers to test, expand, and modify the experimentation tools and a workshop with design students to simulate the experimentation path.

These results warrant further investigation with a larger perspective. The doctoral research is currently exploring the strategies of industrial conversion and production diversification towards new products; further research with more focus on the dematerialization of production through services, also in a circular economy perspective, is therefore suggested.

Author keywords

Industrial conversion; product diversification; strategic innovation; industrial design; competitive advantage

Introduction

The Design discipline was born with a solid strategic and pragmatic attitude to support change processes and realize visions and values through products. As it is considered the connector between creativity and innovation (Design Council, 2011), a design-driven industrial conversion or product diversification can be evaluated and used as a strategic lever to foster internationalization and as a tool for visibility and recognition in the territory (Parente & Sedini, 2018) in this period of significant external changes in the corporate environment. Over the last 20 years, numerous researchers working on new directions of design research have focused their studies on the strategic role of designers in firms through design management and design leadership processes (Borja de Mozota, 2003; Brown, 2009; Calabretta, Montaña & Iglesias, 2008). "For more than 175 years, the field of design has followed developments in business, technology, and culture" (Muratovski, 2015, p.119), but the study of the valorization of the figure of the designer in business strategy is still part of the debate in the scientific community in the Design field.

Thus, there is a strong need to enhance the skills of designers and bring them into play to go beyond the mere 'styling', the final form-giving stage (Danish Design Centre, 2001) or an operative tool to solve styling problems (Celaschi, Celi & García, 2011).

The research responds to this request by identifying industrial conversion and production diversification strategies as a means of implementing design culture as a strategic innovation that places designers at the center of business strategy. Specifically, the research proposes an accompanying design path for manufacturing companies, divided into several steps. This accompaniment path to design aims to encourage and simplify the transition from the intuition of research to its implementation and realization (Design Council, 2014), not only to create economic value for the company but to understand the changes taking place and identify future challenges.

Research methodology and working plan

The PhD research adopts the Research through Design as a methodological approach, namely project-grounded research (Findeli, Brouillet, Martin, Moineau & Tarrago, 2008). The methodology is divided into four chronological steps that follow the three-year doctoral path and includes several qualitative and quantitative methods (Figure 1).

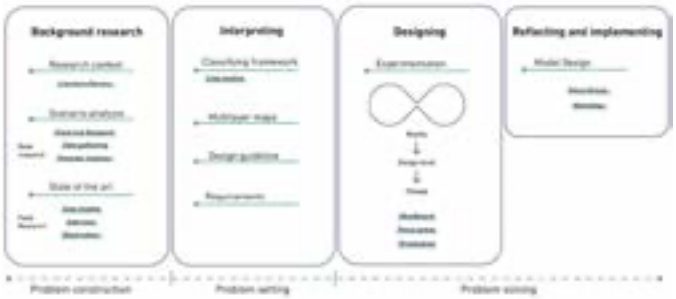

Figure 1. Research method

The first step includes the "Background Research", which aims to formulate the research statement and questions and analyze the topic and scenario. Within this step, the results achieved are manifold; firstly, the analysis of the research contest made it possible to create a PhD-specific literature review consisting of five different macro-themes: Research through Design, Design and territory, Territorial economy, Design and Innovation Management, Industrial conversion and product diversification.

More punctual research on the locution "industrial conversion" followed; in particular, the research investigated different contexts and historical aspects in which it is used, deepening its contextualization of the design debate and formulating a new meaning. The search for case studies helped in this regard, and the opportunity to interview five CEOs or managers of local companies that have implemented the strategies of industrial conversion or product diversification in the past made it possible to collect valuable suggestions and insights for the subsequent stages of research. The semi-structured interviews were conducted within the following ethics parameters: voluntary participation, informed consent, and confidentiality. The results will be communicated to the interviewees during the thesis writing to check the transcription's accuracy.

The keyword "industrial conversion" was rarely used as a password to access this information, making it more challenging to search for case studies. During the first and second years, the research involved a database of approximately 100 case studies of industrial conversion and product diversification to understand the strategic paths taken by companies. The case studies reveal several strategies, such as the exploitation of production assets, thus using different materials by exploiting or implementing the same technology; the achievement of a complete manufacturing process, therefore reaching the level of the assembled product, overreaching that of the semi-finished product or component; the acquisition of high levels of specialization using design strategies such as large format, off-scale, unique surface finishes.

Scenario analysis, which included field and desk research, made possible the construction and definition of the problem. To focus on the cited theme, the research defined the following research questions:

RQ1: How to explore and manage the process of industrial conversion and product diversification from a design perspective?

RQ2: How can designers participate in the processes of strategic business decisions?

RQ3: How to analyze the company's capabilities to identify new products/productive processes/futures strategies?

The second phase included interpreting previously collected data through desk and field research. An essential phase of doctoral research was defining a method for classifying case studies of enterprises implementing industrial conversion or production diversification strategies in mature industries to identify new strategic directions.

The tool built to address this purpose was a case study cataloguing framework (Figure 2).

The framework consists of two levels; the first, the base, consists of three macro areas that demarcate the framework and identify three different conditions: the condition prior to the strategy and a snapshot of the company's condition following a production diversification and/or industrial conversion strategy. Each area contains an additional indication, the life cycle of the technology.

The vertical axis indicates whether the change affected only the product, or whether it led to a production process.

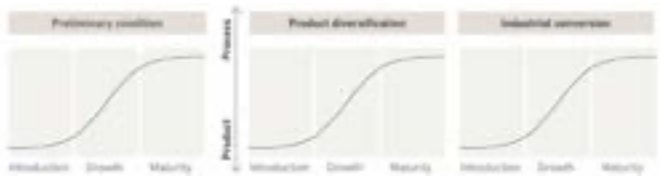

Figure 2. Framework: first level

Each company is then represented through a graph (Figure 3) containing additional information. It is also essential to indicate the company's design orientation in the framework. It can be null, overt, where design activity is active and present, or potential, where the design may be absent, but there is room to intervene (Germak & De Ferrari, 2001; Cantó, Frasquet & Irene, 2019).

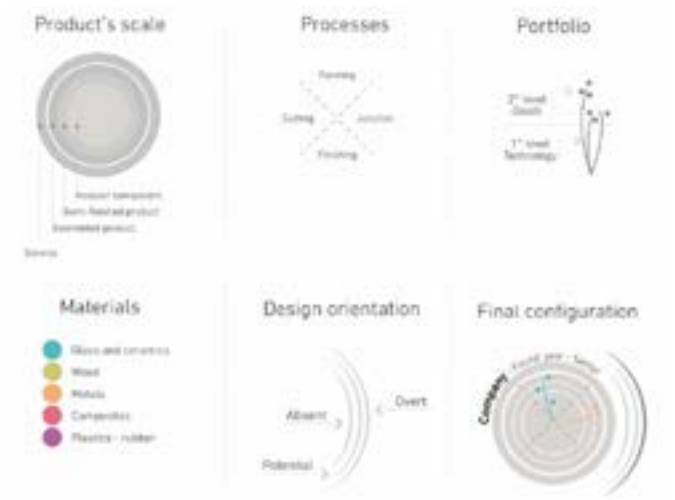

Figure 3. Framework: second level

Including case studies in the framework highlights trends and insights, namely project or managerial strategies, valid for the experimentation phase and defines requirements and characteristics companies must possess to be included in the testing.

The research included a territorial production context analysis through qualitative and quantitative methods to identify shrinking sectors and screen companies for the accompanying design-driven industrial conversion experimentation.

This phase allows for setting the problem and the focus of the experimentation, the implementation of design culture as a strategic innovation through design-oriented industrial conversion and product diversification.

The problem-solving phase begins with the action-experimentation step of the research that adopts and merges the version of the Double Diamond (Design Council, 2019) for Design for Social Innovation (Anderson, 2019) and the Exploring Design methodology (Germak & De Giorgi, 2008), defining a project methodology (Figure 4). It combines the convergence and divergence path typical of the double diamond methodology and the exploration of feasible scenarios with future products and innovative services of the exploring design methodology (Lerma, Dal Palù, Actis Grande & De Giorgi, 2018).

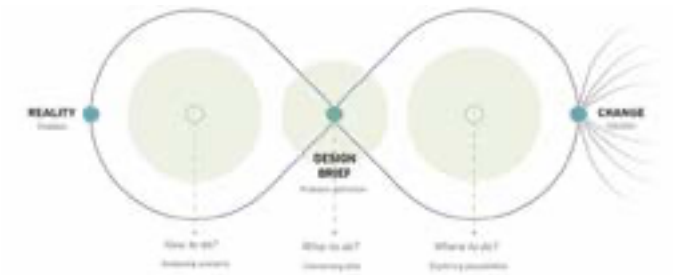

Figure 4. Project methodology

The project methodology defines the boundaries of experimentation, which starts from the business reality, widens the view with the scenario analysis, converges towards the definition of the problem and design brief, and diverges again to explore different possibilities and finally converges in the definition of the solution leading to change.

In detail, the experimental phase consists of the "Design in progress" project, which aims to accompany Turin's manufacturing SMEs on a path of a conscious approach to the design discipline, increasingly understood as a means of strategic innovation and opening up to new markets to increase competitive advantage (Björklund, Maula, Soule & Maula, 2020; Bianco & Rampino, 2017), by reconverting or diversifying production, starting from the company's history, know-how, skills and assets. This is the current stage of research.
The final step includes the verification and implementation of the process through collaboration with a foreign university in the coming months, in which a focus group with young researchers in the design discipline and a workshop with design students are planned to simulate and implement the process of the "Design in Progress" project.

Discussion and conclusion

The research is currently in the experimentation phase with the "Design in progress" project, intending to demonstrate the ability of the design discipline to intertwine and strengthens entrepreneurship (Telalbasic, 2021), as a means of performance improvement of innovation (Borja de Mozota 2002) through the incorporation of new products or services that can exploit company skills and know-how. The project can be the starting point for other activities with companies that want to prevent a period of crisis and experiment with the inclusion of design activities.

Manufacturing SMEs, producing components or semi-finished products with a low degree of design orientation and at a time of business instability or economic distress, are the main target of the project into which to insert the design, according to Borja de Mozota (2010) as "good business" through industrial reconversion or product diversification.

The research fits into and enriches the scientific and industrial landscape dealing with design leadership as it enhances the figure of designers within complex business strategies.

Designers, capable of handling higher levels of complexity (Dorst, 2019), can be critical players in strategic decisions in companies alongside typical management figures. Considering that business strategies inevitably impact the surrounding area, shaping and changing it over the years, the design-oriented industrial conversion can be included in broader projects to enhance local production culture as a policy capable of conferring a new territorial production specialization; this is an important issue for future research.

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This book contains academic papers and posters of the Cumulus Antwerp conference, held in Antwerp on 12-15 April 2023. The Cumulus community, designers, artists, and educators were invited to submit contributions on how culture and creative industry can offer resilience, consolation, and innovation models on human scale, in line with the conference theme 'Connectivity and Creativity in times of Conflict'.

The contributions were double blind reviewed in the tracks

1) Nature positive/Design for transformation,
2) Digital futures/Hybrid reality,
3) Handle with care/Inclusivity, and
4) PhD network.

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