VISUAL MAPPING STRATEGIES TO ORGANIZE, COMMUNICATE AND MAINTAIN DESIGN KNOWLEDGE

BELLEMARE Jocelyn

University of Quebec in Montreal (UQAM), School of Business and Management (ESG),
Department of Analytics, Operations, and Information Technology (AOIT). Montreal (Quebec), Canada
E-mail: bellemare.jocelyn@uqam.ca

Abstract: Responding to increasingly demanding customers, facing global competition and managing the life cycle of a product are all instances of problematic situations that force different players in the fashion, textiles and clothing industry to be more creative in their search for solutions. It therefore becomes in some cases a priority to implement simple systems in order to ensure the availability of tools and information, so that teams can react quickly to problems that slow down product development. The goal was to improve and facilitate the processes of innovation and clothing conceptualization while having a more reliable performance and a greater capacity for adaptation during the creative processes. Various tools have been developed over the past few years, such as mind mapping and several visual mapping tools in order to organize, communicate and maintain knowledge regarding collection design in the fashion industry. It is a practice open to organizing ideas and collaborating on a specific topic, all of this through a graphic representation that is creative and adapted to the development of thought. This article describes the characteristics and relevance of the application of visual mapping tools in the context of product development from a study with fashion designers. The results of this project confirm that the heuristic approach in a design process could potentially facilitate the marketing of fashion clothing products.

*Key words: Fashion Apparel Industry, Product Development, Mind Mapping, Visual Management.*

1. INTRODUCTION

Plenty of people would like to go into business and offer their own clothing collection on the market. But how should one envision this for people who do not yet have much experience in the fashion market and/or the fashion industry which seems to be very aggressive and ruthless at times to new players. This study was conducted in Quebec in the winter and spring of 2020, on a voluntary sampling basis from the various members, partners and collaborators of the École supérieure de mode at ESG UQAM. In total, 15 designers responded to a questionnaire and 10 interviews were conducted to complete the collected data. The consulted designers had a minimum of 5 years of experience, in order to ensure a minimal structure for the management of the improvement of the fashion product design. Respondents all participated in this survey on a voluntary basis. Of course, the participating designers were more likely to perform well and be well advanced in integrating design improvement practices. But since this portrait is part of a larger survey aimed at establishing benchmarks for all fashion manufacturing companies, this perspective only increases the impact of the good practices presented. It is therefore important to keep this aspect in mind when interpreting the results.

First of all, we therefore met the 15 fashion designers who wish to launch and/or reposition their own brand on the market, and this with a view to the next 5 years. For the experiment, we joined a group of three experts in illustration, design, pattern, tailoring, production and marketing/distribution in order to validate with them the various value-creating activities. The goal was to assess which steps were important for them, or even critical in the implementation to market a collection, and if there were any constraints and/or impediments on the development of their concepts. We found that one of the first problems (i.e. bottlenecks) at the start was with the design and the consistency in the development of a collection for a specific market. The implementation time was tedious and in some cases it became really difficult to make decisions in the stage of styling, selection and modification of models. We therefore focused on knowing and thus better understanding their vision of this issue. And it is in this context that we applied a heuristic perspective in order to better understand their product development and marketing process.

2. HEURISTIC APPROACH IN THE PROCESSES

The heuristic perspective applies to fashion designers because it is directly related to the art of inventing, of making discoveries while solving problems. An analytical approach that makes it possible to quickly reach conclusions in a context where companies must, more than ever, be as competitive as possible. The pressure is strong and is felt among designers, because the goal is more and more difficult to reach (through reduction of costs, distribution of work, management of the value chain and the supply chain, etc.) and all this must go through constant innovation (of the product, but also operational, managerial, marketing - commercial). This is how innovation therefore becomes an important pillar of the competitiveness of young companies. And it is in this approach that the concepts of cognitive maps, concept maps, and mind maps are diagramming techniques that comply with this perspective.
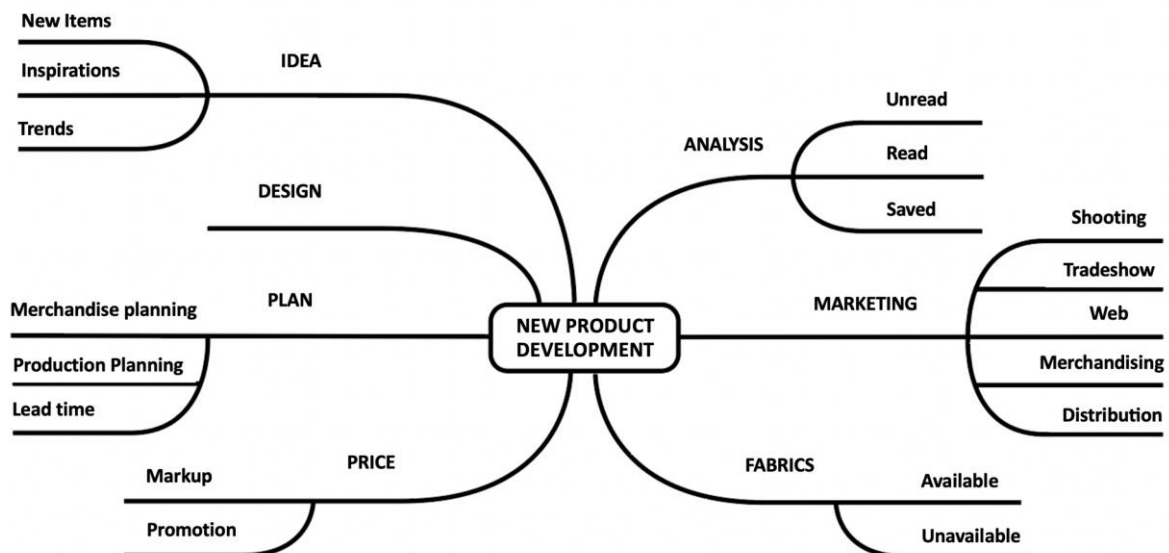
Fig. 1. *Heuristic mind mapping approach for a new product development*

As shown in Figure 1, a heuristic and innovation perspective allowing idea managers to develop new working methods, but above all an openness to new ways of thinking in order to be ever more innovative and therefore competitive. Remember that the concept of innovation is not

synonymous with technical or technological innovation in this approach. Indeed, innovation is the introduction of a new idea, the conception of a heuristic element that fits into this model by applying it to projects of great diversity.

Remember that cognitive mapping, mind mapping and conceptual mapping are three powerful visual mapping strategies for organizing, communicating and retaining knowledge in order to standardize the development process of the fashion product. They help us to present complex ideas and processes and recognize patterns and relationships, which could, in the first place, make it easier to tailor and SEO the brand DNA for a fashion designer, whereas cognitive maps, mind maps and concept maps look and feel similar. This similarity could sometimes even be a source of confusion. Indeed, there are several different ways to visualize a mental model. So we focused on the cognitive maps that could be very relevant in management within the industrial and creative sector of the fashion industry.

3. LITERATURE

The scientific reviews show that visual representations improve the learning process [1]. As a matter of fact, they make it possible to create a shortcut between the processing of information by the brain and real information [2]. In other words, visual representations demonstrate what one should mentally construct for oneself so that the brain does not have to create its own perception. Moreover, the latter can be easily biased or perceived in a different way by various individuals and this is why visual representation helps to avoid these interpretive biases. There are several visual tools such as photos, drawings, graphics and more. Another tool that helps facilitate learning and understanding is the mind map. How then should we properly apply the use of this tool for people who already have a creative approach, without hampering them too much?

It should be understood that a mind map is a flowchart-type representation that allows thinking to be reproduced through hierarchical links between different ideas [3]. The first works of Buzan, in 1970, make it possible to understand his observations on the functioning of the brain which works by association and visualization. The concept is to facilitate learning and understanding by representing the links between ideas [4]. This later becomes a very useful review tool [5]. Indeed, a study among students shows that the map is for 38.73% a predictor of learning [6]. It has many benefits, as it allows reflection, memory, and knowledge to be expressed and it allows creativity to be stimulated [5]. It is an excellent tool for diagramming, revision, learning, and it allows a better understanding and appropriation of the material under study [3]. It might be normal to confuse the concept of a mind map with that of Brainstorming, which is often used in industry. It is important to note the difference between the two however. Brainstorming is divergent, that is, it is used for the purpose of launching new, creative and random ideas on a central theme [7]. Brainstorming is often presented in the form of a list and can be imagined as a funnel that widens as more and more ideas are generated. Furthermore, the mind map is based on convergent thinking, where the attempt is more to give an answer, to provoke reflections and to establish connections between the previously suggested concepts, much more than to emit new ideas. It should be remembered that the mind map is a working tool that does not have a priority idea and neither does it have a vertex, because it is possible to create links between the concepts indefinitely [8]. As it is limitless it should be easier to integrate it into the concept of fashion product development in a distinctive design context.

4. DISTINCTIVE DESIGN

The fashion designer operates in an environment that is increasingly competitive and where it becomes difficult to source in smaller quantities, which seems to hamper product development.

Companies in the fashion and clothing industry face increasingly intense and efficient competition. The life cycle of products is shortening, the choice for consumers in terms of products and services continues to widen and companies are, therefore, constantly forced to innovate in order to position their leadership or to achieve profitability. The entry into the market of a global retail giant tilts the balance of power in the market for both luxury and fast fashion products. For the designer, adapting to this reality requires significant resources. The personalized and distinctive design apparel market which is beginning to take hold and structure itself by offering quality products at half the price in comparison with its direct competitors is a concrete example of this competition. Pressure from new entrants is a constant threat and also forces fashion designers to innovate constantly and efficiently and effectively. From this observation, we were interested in the use of the mind map to carry out our tests with our participants.

4.1 Conceptual experiments and applications

As part of the study we proceeded therefore with different applications such as MindManager, MindMeister, Wise mapping, Cmap Tools. The method of using the mind map was the same for everyone. Our goal was to have a simple and easily applicable method. The use of the mind maps was validated over a period of two months. It was also possible in some cases to do it on paper or online using applications such as Coggle, Mind 42. Figure 2 below shows some results.

Fig. 2. *Creative thinking workshop and mind mapping experience within a quality approach*

They all had to work on a horizontal plane in order to have the larger view rather than the high view. Then everyone had the choice to connect the secondary ideas, the tertiary ideas, and so on. These had to be hierarchical and classified by colour code or symbols of choice and mainly expressed in the form of keywords. Word choice was not evaluated in our case. Only the overview and connections of the mind map were evaluated as well as the means used to find solutions to solve their problems. Today's reality shows that fashion designers now face more complex challenges than ever before. Over the years companies have therefore had to equip themselves with better technological tools. These mainly consist of dealing with a much faster pace of work, a greater workload as well as a greater need for creativity than before.

5. DISCUSSION AND FINDINGS

Our study confirms that a large majority, or 70% of the designers, suggest using the mind map because it is a simple, quick and inexpensive way to set up. After a month of use and to our great surprise, we found in most of the mind maps characteristics such as price, assortment, range, type of distribution, not to mention the specific attributes that were related to the product, such as the material, colours and sizes offered.

80% of them confirm that the tool visually represents well the ideas, tasks and concepts related to their main subject. More than 30% of the designers confirm that the tool allows them in particular to standardize and clarify thinking in order to implement projects that can often turn out to be very complex, such as technical clothing. More than 40% of the participants affirm that the mind map is a way of considering all the possible solutions to a problem and allows them to develop a more objective point of view on situations which must sometimes be seen from different angles, as in the application of the implementation of a circular economy of responsible and ethical consumption.

Moreover, it seems to be uncontested that the mind map allows designers, among other things, to better collect, filter and organize information, to prioritize, to make more good decisions, to structure, to synthesize ideas and to work on several projects simultaneously. The study confirms that this allows them to develop their problem-solving skills while remaining significantly innovative and anticipating solutions to potential problems. Here is a list of advantages and inconveniences raised during our meetings.

Table 1. Observations and perceptions of the tool by the participants

Advantages and observations	Inconveniences and perceptions
➢ Improves employees' creativity. ➢ Transdisciplinary and collaborative approach (improves the productivity and efficiency of the work team). ➢ Human-focused (meets the real needs of customers and users). ➢ Experimental method (iterative) ➢ Reduces risk when launching the product or service on the market. ➢ Cost reduction through the use of models and prototypes ➢ Boosts innovation.	➢ « Catch-all » approach. ➢ It's just a fad, magical thinking. ➢ Dedicated to an elite (of designers), who would be the only ones able to apply it (appearance of many consulting firms). ➢ Difficult to apply in large companies. ➢ Scepticism/Resistance from some business leaders ➢ It's a time-consuming approach.

Almost 20% of the respondents say that efficiency, productivity and profitability in terms of development time have increased significantly since using this approach over the past year. There seems to be a consensus on this modern way of organizing information and making connections which has many advantages and very few inconveniences.

The study confirms that the mind map therefore seems to remain a rudimentary tool that is easily understandable and usable both among young people in constant learning and among older people in the company, and this even at various hierarchical levels. One respondent affirms that since it does not require technology in itself, the mind map is a return to the basics which often allows one to see the picture a little bigger and to advance a little further than before while still keeping a focus on the goals to be reached.

6. LIMITS

However, our research has certain limitations which should be emphasized and which constitute many possible avenues of future investigation. First, for the sake of parsimony, we avoided incorporating other designer-related features that might have been relevant. Moreover, the fact that our research focuses on a single category of actors and that the start of the Covid-19 pandemic occurred at the same time also has an impact on the external validity of our results. The latter cannot be generalized, especially those which do not necessarily have the same characteristics as the product selected in our study. Also, although the number of respondents was small, the proportion of participants affected is still more than satisfactory and large enough to draw interesting conclusions.

7. CONCLUSIONS

In conclusion, we can say that the approach is effective and that it applies well to the fashion, innovation and conceptualization sector. Indeed this approach has proven itself in our case. The participants confirm that the tool makes it possible to standardize and clarify thoughts and implement projects that can often be very complex, as in the case of technical or even intelligent clothing. The tools produced in workshops as part of the approach have been an asset for fashion designers and have made it possible to get the best out of employees working on the fashion collection development project. However, we realize that this approach is not perfect, because it is not necessarily applicable for industries that work in silos and that have less time to give to employees to properly carry out the steps that prepare the ground. In short, visual mapping is a simple, fast and inexpensive way to visually represent ideas, tasks, words and concepts related to the development of fashion collections.

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