

Analysis of Project Management Practices Within the Textile and Clothing Industry

Brenda SILVA
brendafms@gmail.com

Anabela TERESO
anabelat@dps.uminho.pt

António AMARAL
antonio.amaral@dps.uminho.pt

Department of Production and Systems / Centre ALGORITMI
University of Minho, Guimarães, Portugal

Abstract

The common challenges faced by companies/industries are often related to the ‘iron triangle’ categories, namely: deadlines, budget, scope and quality. The Project Management knowledge area proposes a systematic approach to overcome these difficulties, with the purpose of acquiring new knowledge and skills, as well as by implementing methodologies, tools, processes and techniques. The textile and clothing industry, or fashion industry, is not immune to the same type of challenges. The products of the fashion chain are collections, which are developed according to market specifications, trends and market profiles. These specifications evolve very rapidly and, therefore, have their main objective in the development of new and/or innovative products. To deliver a new collection, the whole process of elaborating these products is executed based on a per project approach. Each collection is unique, having a well-defined beginning and end. The development of a fashion collection should consider the processes that, at the industrial level, will originate the final product, thus requiring a methodology that integrates the development of the project from the initial phase – conception of the product idea – until the final stage – start of production / launch to the market. By trying to identify project management approaches in the Portuguese textile and clothing industry, this study allowed us to conclude that, despite of these organizations considering as being developing or involved in projects, the approaches followed are not formal, structured and systematic. Furthermore, there is still no complete application of any of the known project management methodologies.

Keywords: Project management, textile and clothing industry, tools and techniques, fashion

Introduction

In a world in constant transformation, changes are frequent and often produce multiple impacts of widespread types. In the business and industrial context, this reality is no different. This challenge that arises from the global market arena, requires companies to seek to embrace new skills towards becoming more competitive and thus attain the desired success. Project Management (PM) practices can contribute to achieve the project objectives, in total harmony and alignment with the organizational objectives, by suggesting a set of procedures and activities that can increase the likelihood of success and the customer’s satisfaction, in addition to improving performance in terms of cost and time (ISO, 2012; Zandhuis, Anton; Stellingwerf, 2013). PM knowledge, skills, tools and techniques aim to fulfill the clients’ requirements and at the same time effectively manage the project cost, schedule, resources, risk, scope,

quality, etc. (PMI, 2017b). The PM processes are applied in activities such as planning, execution and monitoring, to ensure the right application of resources and work to attain specific project goals (CoEPM², 2016).

There is a growing tendency to no longer separate PM from business thinking. PM is becoming a mandatory methodology for the survival of companies, making business activities more commonly being managed through projects (Kerzner, 2017). The transformation of fashion projects into products occurs through operations, but each fashion collection is unique, and its pieces may not always have the same processes incorporated to generate added value (stamping, dyeing, embroidery, types sewing, etc.). The development of new products represents a central activity of the fashion industry, or Textile and Clothing Industry (TCI), which is formed by a set of knowledge intensive activities, combined and integrated towards increasing the competitive advantage of companies (D'Avolio et al., 2015). The adoption of the right methodology depends on the projects' characteristics; can follow different PM approaches; and should be personalized within the organizational context (Špundak, 2014; Patah and Carvalho, 2016). Generic PM approaches may need to be adapted bearing in mind that: different projects may have different relevant processes or areas of knowledge; customers may not always be the same; and products may not always have the same specifications (Cabanis-Brewin and Dinsmore, 2014). Besner and Hobbs (2013) suggest that there is not much research available dedicated to identifying the multiple specificities of PM in different contexts and industries. Given the difficulty in standardizing and controlling processes in an industry with a high volume of uncertainties and change dynamics, this study aimed to analyze if PM approaches could be useful for the TCI context. Considering these facts, this paper reports a research aimed to answering the following questions: Q1 - What are the specific characteristics and needs of the TCI and its projects? Q2 - What possible PM practices are applicable or applied at the TCI in Portugal? Q3 - How useful and adaptive is the approach of PM to the fashion industry?

Literature Review

Textile and Clothing Industry

The fashion industry has a major influence on people's consumption habits (Riello, 2012). It needs to be constantly innovating, incorporating new styles and ways to attract new customers. For that reason, forecast studies are useful to try to predict customer wishes and needs and might directly influence creative success and its financial return (Dillon, 2012). An erroneous forecast could be extremely harmful to a company. It can cause a low-sale product to have its price reduced and, therefore, to generate less profit for the company (Shaw and Koumbis, 2014). For this reason, the identification and study of trends for new clothing products should be made towards reducing the risk of being rejected by the market. Furthermore, the trends tend to change regularly and cannot be viewed in a cumulative way, because it does not add new elements to past changes: it replaces them. That is why the production of clothing takes place at constant and almost always short intervals (Godart, 2010). In this way, it presents a high level of change in specifications, where creativity is one of the most important elements. In this type of volatile contexts, one should study and plan the duration of a trend, in order to predict the introduction of new products into the market with great precision (Garcia and Miranda, 2005).

But the competitiveness of this industry is not only based on product and material innovation. There is also a clear necessity of reducing delivery time and increasing product quality (D'Avolio et al., 2015). It is a fast paced industry, therefore the product development cycle should be shortened (Libânio and Amaral, 2017). Considering the short and quick fashion changeover time, the research time, confection and distribution is also short. In this way, the faster the commodity reaches the market, the greater is the likelihood of achieving the planned sales targets (Shaw and Koumbis, 2014). The TCI must also innovate in the adoption of technologies, industrial processes and business models (CITEVE, 2012). This constant dynamic of change, in the fashion industry, requires a great deal of flexibility in planning and defining

strategies to lower costs and to increase profits (Bhardwaj and Fairhurst, 2010). The textile industry generally seeks more effective delivery solutions to address competitiveness on the globalized market, but at the same time requires them to control their main processes of portfolio management, project management, production planning, etc., by adopting appropriate and personalized methodologies and tools (Vezzetti et al., 2015).

Project Management in The Fashion Industry

The PMBOK (PMI, 2017b) highlights the temporary and uniqueness concepts as key attributes of projects, with a well-defined start and closure. According to PM² (CoEPM², 2016), a project is a transformational process because it aims to transform an idea into reality, to introduce a new product or service, or to change an existing one, with the goal of generating benefits for organizations. ISO 21500 (2012) defines project as being a unique set of processes, consisting of coordinated and controlled activities designed to achieve specific project objectives with specified requirements (scope, time, cost and quality). The same happens with the creation of a fashion collection: TCI projects have a well-defined beginning and end by its creator (Garcia and Miranda, 2005). The fashion collection output is something new, unique and temporary, so new methods are required for responding to the strategic objectives of the fashion industry (Morigi and Domingues, 2015).

The skills of fashion professionals are generally focused on arts, not management, which means they lack knowledge and experience of production, industrial and project management (Marcella and Rowley, 2015). The TCI requires skills ranging from design to business and is currently attracting new types of professionals with interdisciplinary backgrounds and technical skills, required to respond to the demand of sensitive/demanding consumers (Dillon, 2012). A study by Libânio and Amaral (2017) in the Brazilian apparel industry pointed out the need of adopting a strategic management approach and highlight design management as a strategic element in the fashion industry. They argued that the fashion professionals skills are usually focused on social sciences and creativity, but that they should also have the necessary skills (individual, collective and organizational) for the articulation of the design processes and organizational strategies: fashion designers should be able to promote the integration of processes, agents, knowledge and information involved in fashion projects, since they are present in all stages of the development process, from the definition of the strategies to the acceptance of a collection in the market. The authors also emphasized the objective of having a higher level of control of the production management process, as well as the right amount of agility in the product development process, given the large number of stakeholders involved in the production system.

A similar point of view is defended by Montemezzo (2003) who identifies the necessity of teaching a design methodology in fashion courses at the Brazilian academic field. The author developed a research based on the identification of a suitable structure for the development process of fashion products. She proposed a flexible systematization in the design process that ensures an objective and an integrate management of the creative process aligned with the production process and sales, always maintaining a focus on the market; a structure based on the project theories and methodologies, to organize the creative process with a project approach. She defends that the students need to know how to structure the activities they will develop as professionals, as well as how to manage the factors that influence the creation and development of fashion apparel, factors such as its market operation, speed and dynamism in the interaction of the innumerable information of the textile chain. The structure she proposed aims to prevent fashion professionals from letting themselves be guided solely by their personal inspiration during the creative process. She claims that design involves the product, management and control of production processes, as well as the market and consumer interaction with the product. Montemezzo (2003) noted the scarcity of research available about the process of creating fashion products, thus being rather unexplored but very relevant, given the great industrial competition and the existence of increasingly informed and demanding consumers. Morigi and Domingues (2015) identified the similarities between the project

methodology for the development of fashion collections proposed by Montemezzo (2003) and the PMBOK-based theories. They compared the project phases of both areas, found small differences in the project lifecycle presented by PMBOK (and in the terminology used) and concluded that they are virtually identical. Therefore, the authors stated that PM concepts can support fashion professionals in successfully completing the fashion project lifecycle by bringing innovation and competitiveness.

A case study by Marcella and Rowley (2015) on the use of PM tools and techniques, in the creative industries, has been applied in Small and Medium Enterprises (SMEs) of fashion industry in the northeastern Scotland. The authors argue that, despite of being applicable in any context, much of the existing PM research is focused on large organizations (engineering, information technology, construction, etc.), with the fashion industry being mostly SMEs and endowed with great uncertainty and constant change. Hence, its management must be flexible and responsive. It is, therefore, important to focus on areas like Marketing, Supply Chain Management, Brand Management and Retail Management. It was concluded that, even unconsciously and without a structured approach, some PM tools and techniques were used by most of the interviewees. However, given the characteristics of the fashion industry, the systematic application of PM required agile management that would enable rapid responsiveness to change. In addition, it was concluded from the survey applied to fashion managers that they recognize and are aware of the potential of implementing PM tools and techniques, but that they need to see the demonstrable/tangible benefits towards willing to adopt them.

D'Avolio et al. (2015) argued that Product Lifecycle Management (PLM) is a knowledge management system that represents a strategic approach to complex industries such as TCI, where most product development is characterized by functional dependency in which each participant contributes sequentially to the process, resulting in excessive costs, rework, and longer lead times. Given these facts, the authors argue that the development of new products represents a main area of improvement and that the PLM requests an integrated information system that offers a set of tools and technologies in a shared platform for better collaboration between multidisciplinary project teams. PLM tools are successfully adopted in the automotive and aerospace sectors. In addition to other recent markets, they can also be adopted in the process of developing new products in the fashion industry, allowing product data to be shared among the various stakeholders and processes at different stages of the product lifecycle. By providing modules that support the main processes in the fashion industry (design, production, planning and controlling), it is possible to better support planning and development of collections, creation and sharing of technical sheets, and sourcing. This will help reducing product development time and hence its lead time and time to market, plus the inventory reduction. In addition, the PLM technologies support PM with the creation of WBS (Work Breakdown Structure), the management of resources and tasks. Although D'Avolio et al. (2015) argue that to increase a company's competitive advantage, product development and introduction processes need to be improved, they also admit the difficulty of achieving standardization in PM processes for fashion industry, since it is difficult to structure the creativity and ideas of fashion designers.

Segonds et al. (2014) and Vezzetti et al. (2015) also advocate the PLM in the fashion industry context, such as a business strategy and an information system, enabling the exchange of product information between the various members and processes, offering advantages in terms of reducing project time and cost and improving the product quality. The authors emphasize the need for collaborative functions in the definition and development phases of the product, which requires more time and financial resources. The PM, coupled with an information technology solution, allows to provide project status information to all involved through reports and dashboards. It also allows planning, executing, monitoring and controlling the development of complex processes for globally distributed project teams, products and technologies (Vezzetti et al., 2015).

Research Methodology

The strategy used to conduct the research was the Survey, since it allows the collection of data from several organizations (Saunders et al., 2009). It was an exploratory research since the established objectives were based on analyzing the problem, through literature research and interviews with specialists, to obtain new understandings (Saunders et al., 2009). A qualitative mono method type was used through the technique of semi-structured interviews applied to representatives of the TCI organizations, for a restricted period of time. The semi-structured interviews include a list of topics and issues that can be adapted according to the organizational context, and may include additional questions that may arise during the interview (Saunders et al., 2009).

Two interview scripts were designed, one aimed to organizations, and another more detailed, to support the interviewer (researcher). They contained information regarding the subject of the study, the objectives and the respective issues. The questions were divided into characterization of the respondent, organization and projects, and identification of the PM tools and techniques used, difficulties, key-performance indicators (KPIs), agile methodologies, and, finally, a question about the respondent's perception regarding the topic under study.

The selection of interviewees covered Portuguese companies of different sizes in the TCI. Given the lack of literature directly linked to the topic, it was also necessary to contact other TCI stakeholders. Twenty-three organizations were selected, which were contacted through their representatives, by telephone and email, for which a request for collaboration in the study was sent along with the interview guide. After confirmation and scheduling, the interviews were carried out. It was possible to interview five representatives of active companies, plus a former collaborator of one of the companies, and a scientific entity that acts in the development of Portuguese TCI. In total, seven interviews were carried out (Table 1). Interviewees who volunteered to collaborate in the interviews had very distinct positions. Only one respondent had training in PM (PMP certification) and the rest of the respondents had the learning gained from years of background experience.

Table 1: Characterization of interviewees

Interviewee	Qualifications	Area	Role	Experience
Int1	Master and MBA	Textile Chemistry	Commercial Director	18 years
Int2	Graduation	Industrial Management	Production Director	10 years
Int3	Graduation and PMP qualification	Systems Engineering and Informatics	Management and Innovation Director	19 years
Int4	Graduation	Chemistry	Executive Director	± 20 years
Int5	Graduation	Engineering and Industrial Management	Managing Partner	± 10 years
Int6	Graduation	Business Management	Product Manager	4 years
Int7	Graduation and specialization	Business Management/Cost analysis in industrial projects	Ex Textile Manager	17 years

The study covered two textile companies (fabric spinning) and two manufacture companies (clothing). The technological center (Org3) addressed in the study supports companies in the TCI that do not have PM skills and know-how (Table 2). The textile stamping company (Org5) acts as subcontractor of a textile chain. The practice of subcontracting is very common in TCI where organizations often maintain responsibility for design, marketing and distribution, and subcontract the remaining processes (production, manufacture, stamping, etc.) (Godart, 2010). There is only one big company represented in the study, by one of its main productive unit (Org1). The remainder falls under the category of small

companies, which confirms the profile observed in Portuguese TCI where the majority are SMEs (ATP, 2016).

Table 2: Characterization of organizations

Organization	Activity Sector	N° of employees	Dimension
Org1	Textile	1100	Big company
Org2	Manufacture	65	Small company
Org3	R&D (technological center)	-	-
Org4	Textile	50	Small company
Org5	Textile stamping	39	Small company
Org6	Design and manufacture	41	Small company

The interviews were conducted in person, by telephone or by Skype, depending on the availability of the interviewees. Data were obtained through personal notes and recording, when allowed. Before the interviews, the recording authorization was requested. In addition, the interviews were fully anonymous. At the outset it was possible to verify the non-existence of a formally structured project culture in this specific industry. Given its characteristics and particularities, it was necessary to adapt some PM technical terms and identify possible similarities in practical terms in the TCI. After the interviews were conducted, they were transcribed in the form of summaries, containing the most relevant information. For the analysis and treatment of the data it was used the NVivo, a qualitative analysis software, through which it was possible to categorize the data by coding, and to establish relationships between them. Microsoft Excel was also used to synthesize the data obtained with NVivo through tables.

Results

Project Characterization

The technological center (Org3) was not included in this part of the study because it only provides support for PM in Portuguese TCI companies and institutions, so its performance depends very much on the company or institution, the type of project and its size. Of the five companies surveyed, four reported developing projects informally (Table 3). Org5 acts as subcontractor for the projects of its clients, who are the ones who create/develop projects at TCI (the stamping is only a subcontracted process that will add value to the final product).

Table 3: Project characterization

Organization	Org1	Org2	Org4	Org6
Sector	Textile	Manufacture	Textile	Design e manufacture
Type of projects	Product development projects and change of productive structure projects	Product development projects	Product development projects and R&D internal projects	Product development projects
N° of projects	4 to 5 in main units (1 to 2 in small units)	10 to 15	15 small projects, 4 big projects	3 to 5 internal projects, 15 to 20 external projects
Project team	2 to 5	5 to 6	4 for small projects, 7 to 10 for big projects	8 to 12
Project duration	3 to 18 months	18 months	6 to 18 months	6 to 18 months

The new products or projects collections development have as inputs the requirements of customers and/or market needs. According to Int7, investment projects in productive structures, or projects that are

highly dependent on knowledge and R&D, are projects in which a financial evaluation is necessary before its implementation decision. The number of projects is variable, and can be small or big, internal or external. The project team is also variable (2 to 12). The project duration presents a certain pattern for most of the organizations (18 months maximum).

Tools and Techniques

Most of the organizations covered were small enterprises. Silva and Matamoros (2010) claim that, although PM as a strategic tool for small companies, is subject of great prejudice, it is easy to identify PM principles in their daily practice. From a list of 79 PM tools and techniques used by Portuguese private organizations (Ferreira *et al.*, 2013), the 20 most used were a reference for this study, in which 15 of them are present in the top 20 of Besner and Hobbs (2006), varying only in the frequency of use ranking. Through the study it was possible to verify that the tools and techniques were used informally, and were highly dependent on the type of project, the clients and the responsible for the project and his mastery of PM methods. In total, 14 PM tools and techniques were used. These tools and techniques are organized by the number of responses obtained (number of respondents who reported using them) through a NVivo chart (Fig. 1). In general, the most used were progress report, follow-up meeting, Gantt chart and kick-off meeting.

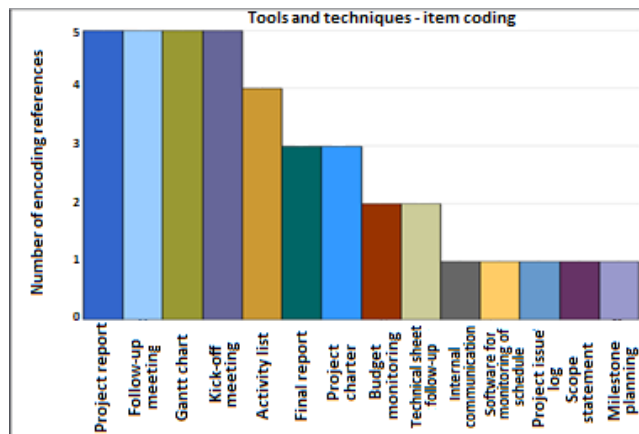


Figure 1: Tools and techniques used in Portuguese TCI

The schedules or Gantt chartt are defined in different ways by the organizations: through specific software, or with the name of time actions/timeline/timings, manually made in Excel. The contract was mentioned by Int3 and can be the scope statement, which shows what deliverables are expected, what will be done, etc. The record of problems that occur during execution of work was mentioned only by Org5, the subcontractor. For the monitoring and control of projects, 5 organizations highlighted the practice of follow-up meetings. The same was evidenced in the progress reports, mostly done with the use of Office (Word and Excel templates), except for Int2 which mentioned the use of a specific software the Org2 was developing to follow-up the projects. Int 1 mentioned the use of meeting minutes which can be seen in this case as progress reports. Off the organizations covered, 3 issue final reports considered the project closing documents, and only Int1 referred to issue an internal communication when necessary, which can be a formal document for closing the project.

Difficulties in PM

The difficulties were analyzed in the PMBOK (PMI, 2017b) knowledge areas. It was possible to contextualize the difficulties found in three vectors (knowledge areas): time, cost and communication management. However, some operational difficulties were mentioned too (Fig. 2). Those are related to failures or even to setups, when the preparation time of the machine is longer than the production time, which can impact on their productive efficiency and consequently on their profitability.

Most of the difficulties identified are included in schedule management, mainly related to delays, since they require schedule updating: Int5 stresses the difficulty in managing day-by-day operations regarding the delays in the delivery of fabrics to be stamped. These delays generate production overlap, and it is necessary to extend the shift because the deadline remains. Int1 explains that, given the fact that there are several projects being done at the same time, those cannot always meet timelines. There may be projects that overlap with others, in which sometimes timelines and milestones must be adjusted according to its own reality and level of priority.

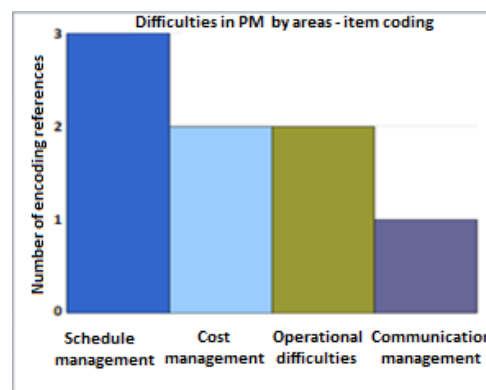


Figure 2: PM difficulties

Schedule and milestones management is a key process to keep all activities for introducing new products under control. The activity schedule or collection calendar is defined based on the season or product type and schedule management allows to identify tasks that are following the scheduled, tasks that can delay, or that can progress, through a control of completion percentage that must be mapped and reported (Vezzetti et al., 2015).

Cost management was mentioned by two organizations as relevant, especially the difficulty of creating a new budget to the innovative projects, when in the end they turn out to be not economically viable. Budget is also a key resource which considers the target cost and the margins and it is therefore very important that a good cost management is done (Vezzetti et al., 2015).

The difficulty felt in integrating changes throughout the project, due to communications failures, was mentioned by a single organization. The nature of the fashion market forces companies to adapt their ideas and even change production any time. Those involved should be constantly updated about ongoing activities and changes. Therefore, communication and change management plays a key role because of the need to manage different scenarios in a short time period (Vezzetti et al., 2015).

Critical Success Factors

It was possible to identify 6 critical success factors varying in their degree of importance to the different organizations (Fig. 3). The most outstanding one was the deadline with the mandatory need to meet the deadlines established or the delivery dates. The release date of a collection is a fixed date and therefore is a constraint of a fashion project, which makes time to market a critical factor considering the delivery dates of the product (lead time) (Vezzetti et al., 2015).

Factors such as final quality and adjusted price were considered of equal importance. The budget influences the quality level of the products, taking into account the costs and the sales price (Vezzetti et al., 2015). These three first factors – deadline, quality and price – are known as the Iron Triangle, a representation of the 3 basic criteria for PM success (Atkinson, 1999).

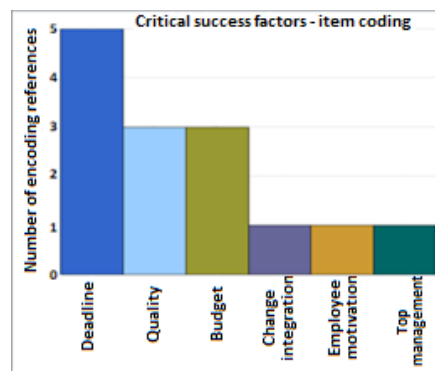


Figure 3: Critical success factors

Some of the interviewees gave greater importance to the human factor, namely the motivation of employees and the level of top management involvement. The role of leadership as a source of motivation and better team collaboration is crucial to the success of the project (Schwaber, 2004; PMI, 2017a, 2017b).

KPIs

It was verified that performance of the project is evaluated at the level of machine's and equipment's performance (production), as well as the volume of sales made (commercial). For most of the companies studied, the financial return of the projects in terms of sales made or profit generated is the main metric for evaluating project performance. This is a critical point that has been proven in Marcella and Rowley (2015) study.

Agile Approaches

Although none of the organizations approached officially adopted the agile methodologies, one can verify the existence of agile project principles: the need for agility and the rapid ability to respond quickly to change (Marcella and Rowley, 2015); flexible and adaptive planning, incremental development, fast deliveries, projects with high level of uncertainty (CoEPM², 2016); focus on people and their skills and learning from experience, also focus on execution and intended outcomes rather than how to achieve them (processes, tools and techniques) (Highsmith, 2004); daily and brief meetings for a status report and

update of the plan, used in the SCRUM methodology, which follows the principles of inspection and daily adaptation (Schwaber, 2004; Sutherland, 2016; PMI, 2017a).

Perception of The Interviewees

All the interviewees agreed that PM might be useful for process planning and control, but its application cannot be too bureaucratic or rigid. Int4 argues that TCI PM should be focused on execution and intended outcomes, rather than focusing on processes, tools and techniques. Plus, Int3 refers that: *“TCI companies do not understand the added value of being organized and managed as projects. If they see value in some processes, they implement them! The textile fortunately is the most advanced industrial sectors in terms of innovation (machines, processes), it is enough to see that they export 90% of all production. What the companies want is to sell! Being able to implement new processes... maybe they start asking: how much will I earn from this? ... to make use of PM we must have professionals, which will have associated costs!”*. This point of view is also noted by Marcella and Rowley (2015) in their study.

Conclusion

One of the main limitations of the study deals with the lack of research on the proposed theme. Another limitative aspect was the size of the sample. There were tangible difficulties in obtaining a larger sample due to lack of availability of the companies contacted and their willingness to collaborate in the study.

Regarding the results obtained, the tools and techniques most used to manage the TCI projects are related to alignment, team commitment and project follow-up, project time planning, and evidence of work execution. Through the life cycle, the tools and techniques are more applied in the monitoring and control phase. However, it is important that there are formal processes of change management, since this sector is very dynamic and volatile and therefore the impacts of the changes will have to be reflected in the organizational strategy, in the planning and organizational dimension of the project teams, as well as the type of deliverables and the requirements (scope, time, quality and cost) of the customer.

The difficulties identified during the interviews were related to delays and delivery dates (time management), project budgeting (cost management), integration of project changes (communication management), and with operational failures (machines). The majority of respondents agreed that these are the main difficulties intrinsically present in this industry, and therefore they are expected to be resolved quickly and with a high level of flexibility.

Regarding the research Questions (Q) we found the following Answers (A):

Q1: What are the specific characteristics and needs of the TCI and its projects? A1: The TCI is a fast paced industry and needs to be constantly innovating, identifying new trends and quickly creating products based on them; plus its projects present a high level of change in specifications and also a high level of risk and uncertainties (Garcia and Miranda, 2005; Godart, 2010; Dillon, 2012; Shaw and Koumbis, 2014). There is a clear need of reducing product development cycle and delivery time; this constant dynamic of change requires a great deal of flexibility in planning and defining strategies to lower costs without affecting quality (Bhardwaj and Fairhurst, 2010; D’Avolio, Bandinelli and Rinaldi, 2015; Libânio and Amaral, 2017).

Q2 - What possible PM practices are applicable or applied at the TCI in Portugal? A2: Despite of the organizations approached claiming to be involved in projects, there is no formal, structured and systematic application made of any of the well-known PM approaches. This fact was also found in the study of Marcella and Rowley (2015) where they verified the lack of PM knowledge and experience in

the fashion industry. The fact that only one respondent had training in PM (PMP certification) and the rest of the respondents had the learning gained from years of background experience, is a symptomatic factor and shows that the focus is still very centralized on the operational dimension of organizations. There is great difficulty in standardizing PM processes in the TCI (D'Avolio, Bandinelli and Rinaldi, 2015), but there is also the need for better control of its main PM processes through the adoption of the right methodologies and tools (Vezzetti, Alemanni and Macheda, 2015), as well as the need of interdisciplinary skills to better understand the growing requirement of consumers (Dillon, 2012). Although none of the organizations approached officially adopted the agile methodologies, there was some evidence of agile project principles. Conforto et al. (2014) contend that the presence of agile practices indicates opportunities to adapt the agile approach for different companies other than those in software development, and that should be explored in order to develop "hybrid" management models for different industries.

Q3 - How useful and adaptive is the approach of PM to the fashion industry? A3: All the interviewees recognized the importance of PM in generating and enhancing the level of competitiveness. However, they were unanimous in stating that they were very bureaucratic and require the application of numerous processes, which can greatly limit flexibility and ability to respond quickly. This can be critical in an industry with constant innovation and very dependent of its level of creativity. The unquestionable need for agility was also found in the study of Marcella and Rowley (2015). This also seems to indicate a need for more agile PM methodologies in this industry. This recognition supports and confirms the relevance of the research in this context, launching good perspectives and opportunities to develop PM in this industry, in the future.

Despite the difficulties and limitations, the results obtained coincide with the few factors referenced in the literature review. The lack of bibliography that address the issue more regularly is based on the lack of specific maturity and know-how in these organizations, especially related to the lack of human resources with sufficient capacities to introduce the most appropriate practices, approaches, processes, tools and techniques to create an organizational culture of PM.

References

- Atkinson, R. (1999) 'Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria', *International Journal of Project Management*, 17(6), pp. 337–342.
- ATP (2016) *A Indústria Têxtil e Vestuário Portuguesa*. Available at: <http://www.atp.pt/gca/index.php?id=18> (Accessed: 16 October 2018).
- Besner, C. and Hobbs, B. (2006) 'The perceived value and potencial contribution of project management practices to project success', *Project Management Journal*, 37(3), pp. 37–48.
- Besner, C. and Hobbs, B. (2013) 'Contextualized Project Management Practice: A Cluster Analysis of Practices and Best Practices', *Project Management Journal*, 44(1), pp. 17–34.
- Bhardwaj, V. and Fairhurst, A. (2010) 'Fast fashion: response to changes in the fashion industry', *The International Review of Retail, Distribution and Consumer Research*, 20, No. 1, pp. 165–173. doi: 10.1080/09593960903498300.
- Cabanis-Brewin, P. and Dinsmore, J. (2014) *The Ama Handbook Of Project Management*. Amacom.
- CITEVE (2012) 'Indústria Têxtil e do Vestuário: Roadmap Para a Inovação 2012-2020', *Inatec (Intelligence em Tecnologias a materiais avançados)*, p. 56.

- CoEPM² (2016) *The PM² Project Management Methodology Guide - Open Edition*. Luxemburg: European Commission.
- Conforto, E. C. *et al.* (2014) 'Can Agile Project Management Be Adopted by Industries Other than Software Development?', (July), pp. 21–34. doi: 10.1002/pmj.
- D'Avolio, E., Bandinelli, R. and Rinaldi, R. (2015) 'Improving new product development in the fashion industry through product lifecycle management: a descriptive analysis', *International Journal of Fashion Design, Technology and Education*, 8, No. 2, pp. 108–121. doi: 10.1080/17543266.2015.1005697.
- Dillon, S. (2012) *The Fundamentals of Fashion Management*. AVA Publishing SA.
- Ferreira, M. *et al.* (2013) 'Project Management Practices in Private Portuguese Organizations', *Procedia Technology*. Elsevier B.V., 9, pp. 608–617. doi: 10.1016/j.protcy.2013.12.067.
- Garcia, A. P. and Miranda, C. (2005) *Moda e Comunicação: experiências, memórias, vínculos*. São Paulo: Anhembi Morumbi.
- Godart, F. (2010) *Sociologia da Moda*. São Paulo: Senac SP.
- Highsmith, J. (2004) *Agile Project management: Creating Innovative Products (2nd Edition)*. Addison-Wesley Professional.
- ISO (2012) *International Standard ISO 21500*. International Organization for Standardization.
- Kerzner, H. (2017) *Gestão de Projetos: As Melhores Práticas*. 3^a ed. Bookman.
- Libânio, C. S. and Amaral, F. G. (2017) 'Framework de Gestão de Design para a Indústria do Vestuário', *BBR (Brazilian Business Review)*, 14(1), pp. 1–20.
- Marcella, M. and Rowley, S. (2015) 'An exploration of the extent to which project management tools and techniques can be applied across creative industries through a study of their application in the fashion industry in the North East of Scotland', *International Journal of Project Management*. Elsevier Ltd and APM and IPMA., 33(4), pp. 735–746. doi: 10.1016/j.ijproman.2014.12.002.
- Montemezzo, M. C. F. S. (2003) *Diretrizes metodológicas para o projeto de produtos de moda no âmbito acadêmico*. Dissertação (mestrado) - Universidade Estadual Paulista, Faculdade de Arquitetura, Artes e Comunicação.
- Morigi, K. and Domingues, M. L. (2015) 'Teorias em Gestão de Projetos e Projetos de Coleção de Moda: proximidades possíveis', *11^o Colóquio de Moda – 8^a Edição Internacional 2^o Congresso Brasileiro de Iniciação Científica em Design de Moda*.
- Patah, L. A. and Carvalho, M. M. (2016) 'Sucesso a partir de investimento em metodologias de gestão de projetos', *Production*, 26(1), pp. 129–144.
- PMI (2017a) *Agile Practice Guide*. Project Management Institute.
- PMI (2017b) *PMBOK Guide: A guide to the Project Management Body of Knowledge 6th edition*. Pennsylvania: Project Management Institute, Inc.

- Riello, G. (2012) *História da Moda: da idade Média aos nossos dias*. Lisboa: Edições Texto & Grafia.
- Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students - Fifth Edition*. Prentice Hall Financial Times.
- Schwaber, K. (2004) *Agile Project Management with Scrum*. Microsoft Press.
- Segonds, F. *et al.* (2014) 'Early stages of apparel design: how to define collaborative needs for PLM and fashion?', *International Journal of Fashion Design, Technology and Education*, 7, No. 2, pp. 105–114. doi: 10.1080/17543266.2014.893591.
- Shaw, D. and Koumbis, D. (2014) *A compra profissional de moda*. Barcelona: Gustavo Gili.
- Silva, S. A. de A. M. and Matamoros, E. P. (2010) 'Gestão de projetos como ferramenta estratégica para pequenas empresas', *Revista de Ciências Gerenciais*, 14(20), pp. 27–47.
- Špundak, M. (2014) 'Mixed agile / traditional project management methodology - reality or illusion?', *Procedia - Social and Behavioral Sciences*. Elsevier B.V., 119, pp. 939–948.
- Sutherland, J. (2016) *Scrum: A arte de fazer o dobro do trabalho em metade do tempo*. Lua de Papel.
- Vezzetti, E., Alemanni, M. and Macheda, J. (2015) 'Supporting product development in the textile industry through the use of a product lifecycle management approach: a preliminary set of guidelines', *International Journal of Advanced Manufacturing Technology*, 79, pp. 1493–1504. doi: 10.1007/s00170-015-6926-4.
- Zandhuis, Anton; Stellingwerf, R. (2013) *ISO 21500: Guidance on project management. A pocket guide*. Van Haren Publishing.