

THE INFLUENCE OF STRUCTURAL CAPITAL IN THE CREATIVE PROCESS IN THE JEWELRY DESIGN SECTOR

A INFLUÊNCIA DO CAPITAL ESTRUTURAL NO PROCESSO CRIATIVO NO SETOR DE DESIGN DE JÓIAS

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ABSTRACT

Purpose – The purpose of the study is to analyze relations between the structural capital and the creativity in the jewelry sector.

Design/methodology/approach – The method is multiple case study of 15 enterprises that develop jewelry design in the South and Southeast region of Brazil through semi structured interviews and self-filled questionnaires.

Findings – The main results of the research were the perception of the strong influence of structural capital on the creative process of jewelry design, both positively and negatively.

Research limitations/implications – The research limitation is the difficulty of generalization of the results obtained in the research, even being a study of multiple case, the answers were obtained only in the South and Southeast region of the country.

Originality/value – As study's main contributions we suggest that the internal structure eases the creative process in the ateliers, since the designers search to act in environments where they feel comfortable and provide the essential technologies that help them in both researches about tendencies and the development of the creative process.

Keywords - Structural Capital. Creativity. Jewelry design.

RESUMO

Objetivo - O objetivo do estudo é analisar as relações entre o capital estrutural e a criatividade no setor joalheiro.

Design / metodologia / abordagem - O método é um estudo de caso múltiplo em 15 empresas que desenvolvem design de joias nas regiões Sul e Sudeste do Brasil por meio de entrevistas semiestruturadas e questionários autoperenchidos.

Resultados - Os principais resultados da pesquisa foram a percepção da forte influência do capital estrutural no processo criativo do design de joias, tanto positiva quanto negativa.

Limitações/implicações da pesquisa - A limitação da pesquisa é a dificuldade de generalização dos resultados obtidos na pesquisa, mesmo sendo um estudo de caso múltiplo, além de que as respostas foram obtidas apenas nas regiões Sul e Sudeste do país.

Originalidade/valor - Como principais contribuições do estudo sugerimos a constatação de que a estrutura interna facilita o processo criativo nos ateliês, uma vez que os designers buscam atuar em ambientes onde se sintam confortáveis e fornecer as tecnologias essenciais que os auxiliem nas duas pesquisas sobre tendências e o desenvolvimento do processo criativo.

Palavras-chave - Capital Estrutural. Criatividade. Design de joias.

1 INTRODUCTION

At enterprises, Structural Capital contains the tools and the architecture that an organization offers for the retention and transference of knowledge along the business activities (Do Rosário Cabrita & Bontis, 2008). It holds the organizational culture, values and attitudes, the use of information technology as elements, together with the diffusion and transference of knowledge and all the organizational structure, which is referred to the physical structure of the enterprise (Delgado-Verde et al., 2016; Hsu & Fang, 2009; Martín-de-Castro et al., 2011)

On the other hand, creativity is an important factor for the development of the organizations in the competitive scenario where it is observed that its development may be influenced by the environment where the creations happen (Fernandes, 2013), referring to the elements that form the SC.

In this context, it is possible to identify the importance of the design in different organizational levels, overcoming a previous approach in which its acting was limited only to the operational level in the implementation of the projects and adding a more tactical and strategical value in its position in the organization (Gomez et al., 2017). Therefore, it is understood that the design has a strategical role of mediator between the consumption, the production and the sharing of knowledge inside the organizations (Silva, 2015)

The design sector represents the environment where the creations underlying to the process of development and the launch of new products happen. The jewelry market it is considered wide and profitable in Brazil with growing expectations (Jornal Correio Eletrônico., 2016). Nowadays, jewelry is exported to some of the greatest consumers of the world such as India, Canada and Israel. Research developed by the Brazilian Institute of Gems and Precious metals announced that until 2015 Brazil was the greatest producer of jewelry in South America (Ibmg, 2015). Therefore, the referred relevance of this sector, motivated the authors to perform an in-depth study about the relations between the structural capital and the creativity in the jewelry sector, observing that this market is growing.

With a search in the portals Capes Journals, Scopus and Scielo, it is possible to verify the limitation of the researches that relate the terms “structural capital”, “creative ability” and “jewelry design”, justifying, therefore, the research. This paper aimed at analyzing if the structural capital (SC) influences the creativity in the organizations that develop jewelry design through a multiple case study, providing greater coverage to the research. Data from 15 enterprises that develop jewelry design in the South and Southeast region of Brazil were collected through semi structured interviews



and self-filled questionnaires. In a complementary nature, the researchers analyzed the contents of the interviews that were performed with the managers of the two associations related to the design sector in the segment of jewelry.

Besides the abstract and introduction already developed, this research includes a theoretical review about the creativity in the sector of jewelry design and the SC and its influence on the organizational environment. Following, the methodological procedures of the study were presented, as well as the results and analysis. Lastly, the final considerations were described.

2 CREATIVE PROCESS AND DESIGN

The creativity is an important factor for the sustainability of the organizations (Parolin, 2003; Soriano De Alencar, 1998). Then, the conceptual definition of this term clarifies that creativity is the result of the human intellect being possible to be expressed in several ways, among them, with new processes or products in the organizational context. In the case of the product, it becomes necessary to conceptualize the product and its relation with creativity, since all the products pass through a creation process, but not all of them are creative (Brem et al., 2016). In this research, the focus develops by the influence of the internal structure (structure capital) on the development of the creativity in the jewelry design, being important, initially, to conceptualize the relation between creativity and jewelry design.

The need for innovation in the consumer market is constantly growing, driven by demand mainly by the demand for new products. To help designers meet this need, we must first understand the creative process in design (Bonnardel et al., 2018).

For the authors Fonseca and Bastos (2004) being creative is to realize the things of the same way as other people, but being able to think different about them. Then, creativity is considered a critical skill for the success of the organizations (Anderson et al., 2014). It is described as something immaterial, intangible and subjective (Frederico & Amorim, 2008). Creativity is an initial stage of the innovation process, that has several other stages (Engelman & Gonçalves, 2016). In this perspective it is possible to highlight that creativity is connected to the stage of creation of ideas, in other words, of the invention and, the innovation is related to the implementation of ideas evaluated with good potential of enabling a financial return or in process (Botelho et al., 2009).

Since the creativity is strongly influenced by the environment, it is possible to say that there is a process of interaction between the individual reasoning, personality features (individual or group) and the variables of the environment that results in creativity (Fernandes, 2013). However, it becomes very difficult to establish criteria about what must be considered creativity or not (De & Nakano, 2003). However, it employs a set of steps that promote different strategies to mix consciousness and subconscious thinking. Therefore, to stimulate creativity is considered relevant (Chandrasekera & Yoon, 2018).

In the literature, there are few authors (Fernandes, 2013; Malins et al., 2014) that seek to conceptualize the creative process, since their intangible characteristics are extremely complex to identify. In this research, the creative process is identified in the following stages: (a) questioning and detection of the reality – acquire and select knowledge, (b) elaboration of an idea to solve a problem – organize and structure the knowledge, in order to generate the unexpected, known as insight to generate the removal of the problem, (c) exposure/execute – present the creative value of certain idea, in order to identify possible adaptations for, later aggregate value to the business (Fernandes, 2013).

There are characteristics that ease the creative process of the individuals, which are: easiness in generating solutions, flexibility and diversity in the category of generated ideas and orig-



inality/singularity in what is produced (Zhou, J & Su, 2010). Creativity is the association between elements that satisfy certain specific requirements and becomes useful, somehow, through the creation of something new and unexpected, very similar to the design, since its utility is difficult to identify and measure. In the sector of design, it is complex to associate elements and judge objectively the degree of value that results its practical applicability (Gero & Maher, 1993).

Design seeks solutions for new organizational demands, acting with several areas of knowledge. Nowadays, the definition of design has expanded very significantly, and its attributions are beyond developing new products only, requiring a systemic view of all the creation, development and production process of the product from the design professional (Silva, 2015) compiling with the idea of (Galina & Bernardes, 2012) that design emerges as a way of adding value to the product. The contemporary practice of creative design is user-centered, developing, articulating and refining concepts, right up to the product definition (Markopoulos et al., 2016).

Define design as that activity that is related to the configuration, with the purpose of giving shape: being to certain object, a brand or even to a service (Corrêa & Rossi, 2016). In the organizational context, according to Gomez et al., (2017) design is a decisive element in the competitive scenario of the organizations, adding not only aesthetic factors, but also, developing meanings, values and methodology to their products, becoming a strategy of organizational strengthening. About that, in the global and current highly competitive scenario, design is an element that enables the product differentiation, increasing its life cycle and the success of the business (Ferreira & Ferreira, 2015).

It is for the design to seek and analyze the raw materials, the techniques and the processes of manufacture that better adapt to the product, focusing on its purpose, the aesthetic, the comfort and, in some cases, the sustainability, making the final product able to meet the expectations, needs and desires of the consumer (Riegel & Zuchetti, 2011), supporting the perspective of the professionals that make jewelry, meeting the wishes of the consumers with creative solutions, considering the season, culture and social context of the population (Ferreira & Ferreira, 2015; Straliotto, 2009). Therefore, the theme “create jewelry” is identified as product design (Ferreira & Ferreira, 2015). In Board 1 the categories of analysis of creativity and jewelry design are presented.

Board 1 – Categories of analysis of creativity and jewelry design

Element	Categories of analysis	References
Creativity	(1) The personality influences the creative profile (2) Creativity has great importance on the product ideation. (3) The stages of the creative process influence the success of the product.	(Anderson et al., 2014; Council, 2017; Fernandes, 2013)
Jewelry Design	(4) There are techniques and tools of design that influence the creative process. (5) Design is fundamental on the development of the product.	Riegell & Zuchetti, 2011; Gomez et al., 2017; Silva, 2015.

Source: Created by the authors (2018)

In Board 1 the categories of analysis related to the elements, creativity and jewelry design are discriminated. With that, it is possible to see that for the creation of jewelry, the creative process is used, relating with the design techniques, in the following steps: research, analysis, synthesis and project. Acknowledging a relation between the design and creative process, which seeks innovative solutions to become a more attractive product to the market (Straliotto, 2009). This process is, most of the cases, developed manually, even though there are machines that help the innovation of the sector (Daloz, 2013). This way, both design and creativity contribute directly to the quality and the improvement of a final product (Lisbôa et al., 2009).



3 STRUCTURAL CAPITAL

Structural Capital includes the tools and the architecture that an organization provides for the retention and transference of knowledge along the business activities (Do Rosário Cabrita & Bon-tis, 2008). (Edvinsson & Malone, 1998) complement that the structural capital is the infrastructure of support so that people deliver their best results. That capital is supported by the elements of the organizational culture, values and attitudes; the use of information technologies and telecommunications to ensure the storing, disseminate, absorb, transfer and refine the useful information and knowledge in all the enterprise; and the organizational structure, that is referred to the physical structure of the enterprise (Delgado-Verde et al., 2016; Martín-de-Castro et al., 2011). Thus, structural capital is the component of the organization that can be described as infrastructure and organizational processes (Gogan et al., 2016).

The structural capital includes structural properties (technologies) that provide the opportunity of combining knowledges, members of the networks and cognitive elements that allow adding value to the ability of combining information increasing the motivation to exchange knowledges (Kwan & Chiu, 2015)

Therefore, the organizations that have sustained structural capital, need to be stable, controlled and conservative in its strategical identity, however, keep open for constant changes. In other words, oriented by the factors that influence the success in its acting market, but diversifying the areas to seek new opportunities. Besides that, it becomes necessary to internalize the best practices and be prepared to take on risks (Davila et al., 2007). Board 2 highlights the categories of analysis of the structural capital.

Board 2 – Categories of analysis of the structural capital

Element	Categories of Analysis	References
Internal Structure	(1) Use of resources of the enterprise in order to develop creativity. (2) Improve the technical skills of the processes and the creation of new products. (3) The Technologies that ease the accumulation of knowledge.	(Cassol et al., 2016; Costa et al., 2014; Delgado-Verde et al., 2016; Kamukama et al., 2011)
Organizational Capital	(4) The creativity is in the goals of the enterprise. (5) Search for external partnerships to develop solutions for the internal environment. (6) Appreciation of the diffusion of knowledge and the exchange of information.	(Costa et al., 2014; Engelman et al., 2017)

Source: Created by the authors (2018)

In Board 2 the categories of analysis of elements, internal structure and organizational capital are highlighted. With that, it is noticed that more and more the structural intellectual capital has become a strategical resource of the organizations, through the potentiation of the creative skill of the internal structure, in order to stimulate innovations to develop new products and improve already existent processes and techniques (Cassol et al., 2016). Technologies available in the organization favor the acquisition, storing and use of knowledge, strengthening a competitive position and better profitability of the business (Delgado-Verde et al., 2016). Then, the internal structure for the acquisition of knowledge supply that is effectively property of the enterprise (Kamukama et al., 2011).

The organization capital is related to the attributes of the organizational culture, expressed by the values, objectives and attitudes internalized and disseminated by the organization (Engelman et al., 2017; Pospichil et al., 2018). That position in strategic manner includes attitudes that value the exchange of knowledge, acceptance of new ideas, autonomy, entrepreneurship, change and



consequently, deal with the risk (Costa et al., 2014). For that matter, the characteristics of SC may contribute to promote the creativity or inhibit the expression (Soriano De Alencar, 1998). Having in mind the strong connection between the people and the organizational performance, developing a participative internal environment, where members share knowledge and develop an effective creative process has as main focus the people to achieve the desired results (Donaire, 1999).

On the other hand, the organizations can not only introduce new equipment and method of work, aiming at achieving an innovation. This principle depends on the ability of development of human resources oriented to innovation, developing confidence and shared view and generating voluntary flow of information, improving, this way, the discussions and creation of ideas (Akram et al., 2017). Then, there are positive interrelations between the structural capital and the innovative processes, clearly influenced by the members of the organization (Engelman et al., 2017). In short, structural capital supports innovation, providing a (collective) infrastructure for the development of activities that support knowledge management within the organization (Kianto et al., 2017).

The structure, the people and the groups of work have effect on the organizational behavior seeking results, and they are directed by the organizational culture (Robbins, 2005). With that, cultures with characteristics of homogeneity and accommodation inhibit the ability of the enterprises in following the pace of changes around them (Davila et al., 2007)

The creative culture cannot be static, it must keep in constant evolution. The systems and processes, likewise the symbols and organizational values need to be redesigned with the purpose of promoting the evolution of the culture (Davila et al., 2007). In this line, it becomes necessary to analyze the organizational culture, since it allows the increase of the competitiveness of the organizations, through the cohesion in keeping the employees committed in achieving a common goal. Strategies, goals, operation mode and the behavior of the people are influenced by cultural elements (Souza, 2014).

4 METHODOLOGICAL PROCEDURES

This research has exploratory nature and used the orientations of (Yin, 2015) for the execution. Led through a study of multiple case, a comparison of the results of several realities was developed, providing greater coverage of the researched sector. In this case, the main goal was to analyze if the structural capital (SC) influences the creativity in the sector of jewelry design. A qualitative approach was also used to achieve means of knowledge relevant to the subject and the sector (Gil, 2008).

The identification of the enterprises happened the following manner: (a) researches in digital media, such as Instagram, Blogs and websites of the own designers; (b) contacts with associations related to the sector (Ajorsul, Association of the Design Professionals of Rio Grande do Sul; Association of the Design Professionals of São Paulo); (c) indication of respondents, through non-probabilistic sampling, in which the participants of the research indicate new participants of their network of contacts (Baldin & Munhoz, 2011). The research was performed in the South and Southeast regions because of the representativeness of the economic movement.

In the following step, 42 enterprises were contacted by email and, 15 of them showed interest in contributing to the research. From the 15 participant enterprises, 8 opted to answer a script by email and 7 opted to participate of an interview (2 face-to-face, 4 by phone and 1 by Skype). The script was developed based on the categories presented in the theoretical referential, according to the authors Design Council (2007), Kamukama, Ahiauzu & Ntayi (2011), Riegell & Zuchetti, (2011), Fernandes (2013), Costa, Fernández-Jardón & Figueroa Dorrego (2014), Cassol et al., (2016), Delgado-Verde et al., (2016), Silva (2015), Engelman et al., (2016-2017), Gomez et al., (2017). Its structure



is composed by twenty questions, being ten about creativity, nine about structural capital and one question about the technique used in the study.

In the face-to-face interviews, it was possible to apply them in an additional way, the non-participant observation in the own enterprises since the studied ones had direct access to the atelier of the designers. Consequently, it was possible to observe and understand the characteristics of the structural capital in each visited atelier. The data were collected in the months of August, September and October of 2017.

Besides that, in a complementary manner, a script for the associations related to the sector was sent, including macro questions about the main categories of the research: structural capital (SC), creativity and jewelry design. Three associations were contacted, two of them returned the research.

The data analysis happened through the analysis technique of content which allows the association of the collected data with the referential of the literature. According to (Zanella, 2009), this technique requires written materials, derived from texts, transcriptions of interviews and other registers. This way, the collection of primary data included interviews and registers of non-participant observation. The interviews were recorded, transcribed and tabled according to categories previously mentioned in this research. The collection of secondary data, composed by internal documents and folders was also used to complement the content analysis.

5 RESULTS

5.1 PROFILE OF THE RESPONDENTS

The research included different profile of respondents. The variation of profiles contributes to the data collection bringing a more complete view of the sector and the professionals that work at it.

Table 1 presents the profiles of the participant enterprises.

Table 1 – Profile of the Enterprises Participant in the Research

Enterprise	Region of Operation	Time of Operation
Enterprise A	Planalto Médio – RS	16 years
Enterprise B	São Paulo e Rio de Janeiro	30 years
Enterprise C	Curitiba – PR	18 years
Enterprise D	São Paulo – SP	17 years
Enterprise E	Recanto Maestro – RS	25 years
Enterprise F	Porto Alegre – RS	5 years
Enterprise G	Porto Alegre – RS	17 years
Enterprise H	Porto Alegre – RS	46 years
Enterprise I	Novo Hamburgo – RS	16 years
Enterprise J	São Paulo – SP	6 years
Enterprise K	São Paulo – SP	6 years
Enterprise L	Curitiba – PR	38 years
Enterprise M	São Paulo – SP	10 years
Enterprise N	Porto Alegre – RS	1 years
Enterprise O	Curitiba – PR	20 years

Source: Created by the authors (2018)

According to Table 1, the research includes enterprises that operate in the cities of Porto Alegre - RS, São Paulo - SP, Curitiba - PR, Novo Hamburgo - RS, Rio de Janeiro - RJ, Recanto Maestro - RS e Planalto Médio - RS (South and Southeast regions of Brazil). The cities of Porto Alegre, São Paulo and Curitiba are highlighted because they presented the highest number of respondents as a possible result of the population concentration in those cities, associated to the perspective of development of the business. Besides that, the contacted enterprises were only enterprises indicated by the associations of jewelry or because they have their work well acknowledged on the digital medias.

Based on the data collection and considering the profile of the enterprises in this research, the next subchapter writes about the results referred to the study of the creative process of the jewelry design.

5.2 CREATIVE PROCESS OF THE JEWELRY DESIGN

From the relation between the analysis category and the perception of the respondents, it is noticed that the respondents consider creativity as a way of searching for innovative solutions in jewelry design, influenced by the cultural baggage of the designer and fashion tendencies. They search, however, for the tangibility of an idea, many times based on the reinterpretation of already existent materials in other areas of knowledge and applied to the jewelry store. This way, the creativity is associated to “experiment, try, risk, search for new limits and innovate” (Enterprise D, 2017). The findings support the definitions presented by Fonseca & Bastos (2003), that creativity involves thinking differently about the situations or objects that it is in contact with.

The process of jewelry creation stems from distinct concepts, varying, especially, according to the profile of the designer that is creating the jewels. Usually, the ideas come from the reinterpretation of objects, articles and architecture, which bring insights to the designers. Complementarily, they follow the tendencies of fashion on the internet, taking part in fairs and fashion shows. From that, with their life baggage previously acquired and the acquisition of external knowledges, the creation of new ideas of products happen by the designers. Fact that is related to the stages of acquiring and selecting the knowledge, as well as, organizing and structuring the knowledge in order to generate new ideas (Fernandes, 2013). This way, the acquisition of knowledge and external information become fundamental, so that, the professional can organize them and relate them with their cultural baggage, in order to structure the idea of a new jewel.

According to (Fernandes, 2013), the last stage is to attribute value to the creative process of the jewel. About that, the respondents believe that, the most valued by the clients (consumers/store owners) in relation to the pieces is the quality and the innovation of the product, followed by the price. In this regard, most of the ateliers identify the creativity as fundamental characteristic to achieve the consuming market.

In relation to techniques attributed to the jewelry creation, it is noticed that the organizations use different techniques of development during the creative process. Among them, the most mentioned is brainstorming in which stems from “words, terms, colors, shapes” (Enterprise G, 2017) to stimulate the creation process, however, for the designers, in coherence with (Gero & Maher, 1993) in practice it is extremely complex to associate elements and judge objectively the degree of value that results in practical applicability.

About the way preferably used in the creation of jewelry, half of the respondents work only with the technique of hand drawing and the other half uses, besides the technique of hand drawing, software of creation to guarantee better view of the piece. One of the respondents states “I feel more comfortable, more untied with graphite and a paper, a pencil and a paper, but, when I want



to go to a core complex process defining weight, and so on, I use design software” (Enterprise L, 2017), about that (Kwan & Chiu, 2015) state that technologies give opportunity to the combination of knowledge, allowing the adding of value to the capacity of combining information. Besides that, they favor the achievement of more assertive indexes related to the product created.

Great part of the designers prefers testing the materials, shapes, textures, lapidation and colors before finalizing the creative process of the jewelry, supporting the theorists (Riegel & Zuchetti, 2011) that state the it is up to the design to search and analyze the raw materials, the techniques and the processes of fabrication that better adapt to the product. In other words, to guarantee the assertiveness, it is fundamental to perform the testing of the material, minimizing the mistakes and increasing the quality achievement.

It is noticeable that great part of the ateliers is dedicated to the development of exclusive jewels, prioritizing the creation of pieces without the primary influence of the tendencies, on the other hand, with great influence of the target public. About that (Zhou, J & Su, 2010) state that characteristics as originality and singularity, related in this research to the exclusive jewelry developed by the designers, ease the creative act.

In Board 3, the synthesis of the findings of the research referring to the creativity and to the jewelry design is presented.

Board 3 – Elements of Creativity and Jewelry Design

Elements of Creativity and Jewelry Design	Empirical Elements studied
<p>Authors: Fernandes, 2013; 2014; Design Council 2007. Riegell & Zuchetti, 2011; Gomez et al., 2017; Silva, 2015.</p>	
<p>(1) The personality influences the creative profile.</p>	<p>1.1 Designers provided with the cultural characteristic and the baggage of knowledge previously acquired perform the creation of the pieces. 1.2 Creative process is also performed in the reinterpretation of objects, architecture and fashion tendencies.</p>
<p>(2) The creativity is of great importance in the product ideation.</p>	<p>2.1 In the designers’ views, the tangibility of ideas is directly related to the creativity. 2.2 Creativity is associated to: experimenting, trying, risking, searching for new limits and innovating.</p>
<p>(3) The stages of creative process influence the success of the product.</p>	<p>3.1 According to the respondents, the clients see the creativity as a fundamental feature to achieve the consuming market. 3.2 The clients also give a lot of importance to the quality and innovation of the products, followed by the price.</p>



<p>(4) There are techniques and tools of design that influence the creative process.</p>	<p>4.1 The organizations use several techniques of development during the creative process. Among them, the most mentioned was brainstorming.</p> <p>4.2 Half of the respondents prefer to use techniques of hand drawing and the other half uses management software</p> <p>4.3 Most of the designers prefers testing the materials, shapes, textures, lapidation and colors before finalizing the creative process of the store.</p>
<p>(5) Design is fundamental on the product development.</p>	<p>5.1 In the view of the organizations, a different and innovative design is important for the development of the product.</p> <p>5.2 Designers are dedicated to the development of exclusive jewelry, prioritizing the creation of pieces without the primary influence of tendencies and with great influence of the target public.</p>

Source: Created by the authors (2018)

In the next section, the analysis about the elements of the structural capital relating to the literature review is presented.

5.3 INFLUENCE OF THE STRUCTURAL CAPITAL ON THE CREATIVE PROCESS

In relation to the element internal structure of the structural capital, a strong use of technology is noticed to support the creative process, highlighting the access to internet for trend researches and the creation software like *Rhinoceros*, *Ilustreitor*, *CorelDraw* and *Photoshop* for a better view of the developed products. According to (Kwan & Chiu, 2015) the technologies add value to the acquisition, combination and analysis of information promoting better results for the business.

Besides that, the search for improvements related to the techniques of creation and modeling, lapidation, tools and used materials is constant, aiming at the improvement of the final product and satisfaction of the client supporting the perception of (Ferreira & Ferreira, 2015; Riegel & Zuchetti, 2011) that it is necessary to be in continuous development to meet the expectations of the clients, since the changes of trends, culture and technologies that influence the quality of the product are constant.

During the non-participant observation, during the visits to the ateliers, it is perceptible that the environment characteristics (EC) are strongly related to the designer profile and the style of the products developed by them, it is specially noticed the preference by light environments with access to several information and inspirations, such as, the exposition of pieces, stones, magazine clippings, among others. Complementing, the analysis of the interviews also identified some basic characteristics in the environment, like, silence and tranquility, access to technologies and to necessary materials for the creation of the pieces, according to (Cassol et al., 2016) environment characteristics are considered strategy to optimize the creative skill.

In relation to the element organizational capital of the structural capital, it is noticed that the identity characteristics of brand are fundamental for the creative process. In relation to that, the vast majority of the respondents seek to express themselves through a concept brand of exclusive and timeless jewelry, creating quality pieces and preserving the author design. According to (Engelman et al., 2017) those attributes are part of the culture of the organizations and are related, especially, to the aspects that the enterprises and their founders value.

Consequently, most of the respondents believe that the internal environment influences on the creative process in a positive way, according to what Enterprise D (2017) states that “it is necessary to have an office or an environment that is adapted to that, that makes concentration, comfort, let the creator focused on the needs of creating”. On the other hand, some designers state that, in some cases, the internal environment may hinder or limit the creative process, being necessary to go the external places that have relation to the piece of collection to be created to search for inspirations, aiming at stimulating the creativity, about that (Soriano De Alencar, 1998) states that characteristics of the internal environment may contribute to promote the creativity and also to inhibit the expression.

About external partnerships, the interviewed designers state that they have already developed several jobs with external partners. However, most of those jobs are in commercial level, for example, the designers establish a partnership with a fashion show in which the models use their jewels. Another example is the partnership with industries of stones to develop collections. That fact can be considered a positive point, since, according to (Akram et al., 2017) the exchange of information with other professionals favor the improvement of the creative process of the individual.

In relation to that, most of the respondents believe that the creation of jewelry in team is a constructive activity, since the gathering of distinct ideas happen and the exchange of knowledge, influencing positively the creativity. However, according the Enterprise D (2017) “it is a challenge to associate two distinct ideas about jewelry for the production of a new product”, bur for (Costa et al., 2014) the exchange of knowledges, includes the acceptance of new ideas adding value during the interaction of the individuals.

Still about that, the respondents state that they perform interactions and exchanges of information with goldsmith, cutters, eventually other designers, among other professionals, because according to what was mentioned “sharing is always aggregating and adding knowledge” (Enterprise E, 2017). According to (Engelman et al., 2017) it is fundamental the appreciation of knowledge and the exchange of information with external actors to improve the internal processes. The respondents also state that the sharing becomes effective, especially on the exchange of knowledge with the final consumer as happens on the development of exclusive jewelry.

With that, it becomes perceptible the influence of the structural capital on the creative process in jewelry design, since the internal environment and the accessible technologies have great influence on the creative process of the designers. Besides that, the participative and collaborative culture also supports the achievement of the creativity.

Board 4 presents the synthesis of the findings of the elements of the structural capital identified in this research.

Board 4 – Elements of the structural Capital

Elements of the structural Capital	Empirical Elements Studied
(Cassol et al., 2016; Costa et al., 2014; Delgado-Verde et al., 2016; Engelman et al., 2017; Kamukama et al., 2011)	
(1) Use of the resources of the enterprise in order to develop creativity.	1.1 Prefer light environment, with good illumination, silent and tranquil. 1.2 Count on access to several information in the environment, like, for example, exhibit of pieces, stones, clippings, among others. 1.3 Constant use of Technologies and materials necessary for the effective creation of the pieces.
(2) Improve the technical skills of the processes and the creation of new products.	2.1 Invest in improvements related to the techniques of creation and modeling, lapidation, tools and materials, aiming at the improvement of the final product and client satisfaction.



(3) The Technologies that ease the accumulation of knowledge.	3.1 Constant access to internet for trend researches. 3.2 Use software of creation like <i>Rhinoceros</i> , <i>Illustrator</i> , <i>CorelDraw</i> and <i>Photoshop</i> for better view of the products.
(4) Creativity is in the goals of the enterprise.	4.1 State that creativity is expressed on the identity of the brand. 4.2 Brand brings the concept of exclusive and timeless jewelry. 4.3 Seek the preservation of the author design in the goals of the business.
(5) Search for external partnerships to develop solutions for the internal environment.	5.1 Develop external commercial partnerships with producers of fashion shows and stone industry so that the different services complement themselves. 5.2 <i>Designers</i> believe that the team creation is a positive factor for creativity.
(6) Appreciation of the diffusion of knowledge and the Exchange of information.	6.1 Appreciate interactions and the exchange of information with master goldsmith, cutters, eventually other designers. 6.2 Appreciate the exchange of knowledge with the final consumer, especially for the creation of exclusive design.

Source: Created by the authors (2018)

In the next section the final considerations of the research will be presented.

6 FINAL CONSIDERATIONS

The aim of the research was at analyzing if the structural capital (SC) influences the creativity of the organizations that develop jewelry design. SC is represented by the dimensions: internal structure (physical structures and technologies) and organizational capital (organizational culture), it is concluded that the creative process stems from distinct concepts, since the designers have own characteristics and a cultural baggage previously acquired that directly influence the creativity. That is highlighted with the findings that show that each professional has their own distinct path and searches for their inspirations on the most varied sources of knowledge.

Consequently, through the main results, it was identified that the creativity is considered a factor of great importance on the process of jewelry development, since the perceptions of the store owners and final consumers is the effectiveness that creativity generated an innovative and attractive product to the market. To achieve good results in the creation of jewelry, the design techniques, like brainstorming, help the achievement of products insight. Besides that, the material, shapes, texture, lapidation and color tests ease the assertiveness of the jewelry development, since it enables to identify possible divergences on the piece, before the final production. Other important tools are the software of creation that can be considered source of support on the creative process, even if some professionals still do not use. That tool has great value, since it allows greater assertiveness on the lines and characteristics of the jewels that is intended to develop.

It is observed that the author's design and the search for brand identity assigning value on the representativeness of the pieces are relevant characteristics of the organizational culture in most of the researched ateliers. Besides that, it is noticeable that the internal structure eases the creative process in the ateliers, since the designers search to act in environments where they feel comfortable and provide the essential technologies that help them in both researches about tendencies and the development of the creative process. However, in some cases, it becomes necessary to untie from the internal environment to search inspirations in other environments. It is believed that in certain situations, external environments and inspirations may favor the creativity.

At last, the importance of SC is noticed in the process of jewelry design, strengthening the creative skills of the designers. As a research restrictor, it was noticed the difficulty of gener-

alization of the results obtained in the research, even being a study of multiple case, the answers were obtained only in the South and Southeast region of the country. With that, as suggestion for future studies, replicate this research in other regions of the country, to compare the results of this important sector for the economy, since the characteristics of distinct regions and target public of different profiles may enrich and complement this study. Besides that, it is suggested to perform a quantitative study to achieve a greater quantity of participants, in order to validate the categories of analysis of the study.

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1. Definition of research problem	X				
2. Development of hypotheses or research questions (empirical studies)	X		X	X	
3. Development of theoretical propositions (theoretical work)	X	X	X	X	
4. Theoretical foundation / Literature review	X	X			
5. Definition of methodological procedures	X		X		X
6. Data collection		X	X		
7. Statistical analysis					
8. Analysis and interpretation of data	X	X	X	X	X
9. Critical revision of the manuscript				X	X
10. Manuscript writing	X	X	X	X	
11. Other (please specify)					

