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CONCEPTUAL APPROACHES BETWEEN INFORMATION, TECHNOLOGY AND INNOVATION IN THE STARTUP CONTEXT: INTERDISCIPLINARY CHALLENGES FORINFORMATION SCIENCE

APROXIMAÇÕES CONCEITUAIS ENTRE INFORMAÇÃO, TECNOLOGIA E INOVAÇÃO NO CONTEXTO DAS STARTUPS: DESAFIOS INTERDISCIPLINARES PARA CIÊNCIA DA INFORMAÇÃO

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ABSTRACT
The objective of this study is to present conceptual approaches that associate information, technology, entrepreneurship and innovation with the potential to promote interdisciplinary scientific development. It is justified by the demands of the environment of the startups involved in activities directly related to the flow of internal and external information. The study is characterized as an exploratory, descriptive and analytical research using the SystematicSearchFlow (SSF) method and the search conducted in the Web of Science and Scopus, in may 2017. As a result, a relevant portfolio of 20 articles categorized according to dominant models of information study proposed by Araújo (2014). It was verified that the conceptual interweaving of the theme "information, technology and innovation" is also present in other areas of knowledge, which allows the expansion of knowledge about the subject. It is considered that future studies will may address how and how much the paradigms describe and are or no sufficient in information production and management in the new environments characterized by startups in specific environments as well as in the gray literature.

KEYWORDS
Interdisciplinarity. Information Science. Startups. Epistemology in Information Science.

RESUMO
Objetiva-se neste estudo evidenciar aproximações conceituais de abordagens que associem informação, tecnologia, empreendedorismo e inovação com potencial de promover o desenvolvimento científico interdisciplinar. Justifica-se pelas demandas do ambiente das startups envolvidas em atividades diretamente relacionadas ao fluxo de informações internas e externas. Caracteriza-se o estudo como uma pesquisa exploratória, descritiva e analítica, com uso do método SystematicSearchFlow (SSF) e busca realizada na Web of Science e Scopus, em maio de 2018. Como resultado obteve-se um portfólio relevante de 20 artigos categorizados à luz dos modelos dominantes de estudo da informação propostos por Araújo (2014). Verificou-se que o entrelaçamento conceitual do tema “informação, tecnologia e inovação” encontra-se presente também em outras áreas do conhecimento, o que permite a expansão do conhecimento sobre o assunto. Considera-se que futuros estudos poderão abordar como e quanto os paradigmas descrevem, e são ou não suficientes na produção e gestão da informação nos novos ambientes caracterizados pelas startups em ambientes específicos, bem como na literatura cinzenta.

PALAVRAS-CHAVE
Interdisciplinaridade. Ciência da Informação. Startups. Epistemologia em Ciência da Informação.

1 INTRODUCTION

Information Science is challenged to expand its contributions to scientific approaches that involve information, technology, and innovation on issues arising from these interactions, and do not always emerge or are only being developed within the traditional field of research.

In these new socioeconomic contexts and in order to respond to these challenges, it is necessary to establish broad and disciplined processes for the development of interdisciplinary conceptual interfaces, from which it can contribute and receive contributions from other areas that address the aforementioned terms.

Contemporary society demands a science allied with technology capable of promoting innovation, and the conceptual proposal of Information Science presented by Saracevic (1996) meets the current demand when he says that the field is dedicated to scientific research and professional practice. It addresses the problems of knowledge registration and its effective communication between human beings, in the context of social, institutional and/or individual information use and needs. Scientific research involves the components, elements and structures related to the uses and need of information.

Goulart (2004) argues that information is the key to survival in our computerized society, and understanding its nature and meaning is the first step in order to control it and use it for social and individual progress. According to Francelin and Pellegatti (2004, p.124), in a formal provision, the phenomenon of information is studied in diverse disciplines, thus confirming the complex interdisciplinary ramifications and manifestations associated with it.

In this sense, it is necessary to delimit and to explain in the studies in Information Science and for the purpose of an effective interdisciplinarity, that disciplines and concepts are being used in a determined investigation in order to reduce the noises, to favor the science and an adequate theoretical foundation of the studies.

Therefore, this study aims to demonstrate conceptual approaches of that associate information, technology and innovation with the potential to promote interdisciplinary scientific development.

It is assumed that the Philosophy of Technology and Administration have fundamental contributions to interdisciplinary approaches that involve entrepreneurship and innovation, since they are fields traditionally associated with Information Science.

Philosophy in studying technology subsidizes the understanding of the evolution of artifacts used for communication from the earliest days of humanity and critically allows a look beyond economic pragmatism. And in the Administration, the study of innovation subsidizes the understanding of the occurrence of this as a field for entrepreneurship and intra-entrepreneurship.

In view of the above, the proposed epistemological analysis may subsidize the Information Science to meet the area of Philosophy relating it to concepts of technology, and Administration relating it to concepts of innovation, according to Chart 1.

Áreas	**Subareas**	**Concepts**
information Science	Arquivologia Biblioteconomy information Science	Information
Philosophy	Technology	Philosophy of Technology
Administration	entrepreneurship	Innovation

Chart 1. Areas, subareas and research concepts Source: Elaborated by the authors, 2018.

Through Chart 1 it is possible to visualize the correlations of each area for the proposed concepts. It is important to note that, according to Paim et. al.. (2001, p. 19):

> [...]The use of concepts imported from other domains of knowledge occurs very frequently in the science of information, but appropriations are mostly made in an uncritical, superficial, inadequate way, constituting mere mechanical extrapolations and often arising of passing fads. As a consequence, there are constant misrepresentations of original concepts (terms, notions, categories, metaphors), lack of conceptual organization, consistency and pertinence.

It is in the sense of a conceptual convergence of the term information that this article will seek to analyze the interfaces in the scientific literature found in the Web of Science and Scopus databases in the light of the dominant models of information study proposed by Araújo (2014). It is emphasized that both bases are interdisciplinary and represent the elite of the world science, being the second one of greater coverage of the scientific production.

2 METHODOLOGICAL PROCEDURES

This study is characterized as exploratory, descriptive and analytical research. Exploratory because it establishes the proposed correlations with the goal of looking for associated patterns and ideas between the terms in the cited bases. Descriptive, because it seeks to explain the behavior of phenomena to identify and obtain information about the

characteristics of the question. And analytical because it is a continuation of descriptive research when analyzing and explaining how the facts are happening. (COLLIS; HUSSEY, 2005).

From the terms presented, it was tried to establish search criteria in the selected databases mentioned in the introduction. In order to systematize the search, the SystematicSearchFlow (SSF) method of Ferenhof and Fernandes (2016 p. 556) was used, which consists of a systematization of the search process based on scientific data "in order to guarantee repeatability and avoid bias researcher. "(Image 1). Thus, this method can be used for a literature review that subsidizes the identification of relevant scientific production.

Image 1. SSF Method – *SystematicSearchFlow*
Source: Ferenhof and Fernandes (2016, p. 556)

Following the 4 phases (Research protocol, Analysis, Synthesis and Writing) and 8 activities established by the SSF method according to image 1, the search protocol was defined in phase 1. Regarding activity 1, the search strategy used was the definition of the logical operator "AND" to retrieve documents that contained the terms established in the research, and the use of the "quotation marks" to retrieve the exact terms.

Regarding activity 2, the research was carried out in May 2018 by articles published in the 5-year delimitation (2012-2016), using the keywords information AND startup AND technology AND innovation, at the Scopus bases where it recovered 14 documents, and Web

of Science with 24 documents retrieved. The total number of documents in this activity was 38.

Regarding activity 3, the bibliographic organizer software used was EndNote®. In this activity, duplicate documents were eliminated, with unavailable links and attachments, which did not refer to articles (reference to books, for example), since the intention was to retrieve scientific articles published in periodicals and events in the period from 2012 to 2016.

Regarding activity 4, standardization of the selection of retrieved articles, the titles, abstracts and keywords of each article were read.

Regarding activity 5, the portfolio of selected articles was 20 articles to be read and analyzed in full, which are presented in detail according to activities 6, 7 and 8 of the SSF method in section 4, corresponding to the results.

3 TECHNOLOGY, INFORMATION AND INNOVATION

The development and use of technologies and techniques for recording information and communication accompany changes in civilizations and living in society, being constantly improved (BLATTMANN; FRAGOSO, 2003).

However the technologies and techniques of a society are more than just objects of record (palpable artifact), they are a result or final state of processes that are often continuous and even imperceptible.

Cupani (2013) mentions that technology presents itself not only in the form of objects and sets of goals, but also as systems, as processes, ways of proceeding and even as a certain mentality.

And Ihde (1990) presents the man-technology relationship in the sense of continuous integration. The author means a relation of incorporation I - technology - world, when he affirms that the technology becomes practically imperceptible, for example, in the case of the individual that uses contact lenses or owns brand step, obturation and; of a hermeneutic relation in I - technology - world, when the technology is more noticeable, for example, in the case of the individual who performs the reading of a text, obtaining the information by the written record, but in counterpart perceiving the limitations established in the perspectives addressed.

It also presents a third relation in which technology stands out from the world and the subject that makes its use, it becomes almost autonomous, for example, in the case of artificial intelligence, in which the computer is perceived as equivalent to the human being.

Ferré (1995) distinguishes practical intelligence and theoretical intelligence, differentiating them and exemplifying that the former encompasses the intelligence present in the daily life of human beings and animals in general, and the second as intelligence that goes beyond everyday life, being the concern about what is being done. It can be inferred that through the combination of Practical and Theoretical Intelligence, man improves the ways of communicating and recording ideas.

It is considered that in the organization and systematization of the information of these technical processes of practical and theoretical intelligence, gradually incorporated into the scientific and technological development that the need to acquire, store, process and disseminate information becomes a critical factor for success.

Information Science emerges as an area that investigates the behavior and properties of information, being linked to the set of knowledge regarding origin, collection, organization, storage, retrieval, interpretation , transmission, transformation and use of information (BORKO, 1968, ZINS, 2007).

And in turn, entrepreneurship "consists in the pleasure of realizing with synergism and innovation any personal or organizational project, in permanent challenge to the opportunities and risks" (BAGGIO, BAGGIO, 2014). In this way, the generation of new knowledge, capable of modifying something that already exists, product or service, according to the Oslo Manual (OECD, 2005), promotes innovation, that is, when there is "introduction of a good or new or significantly improved service with regard to its intended characteristics or uses. "

The initial approaches to entrepreneurship were associated with companies, but "[...] has had its meaning extended to human manifestations aimed at the realization of new organizational projects independent or linked to an already existing organization." (GIMENEZ, FERREIRA, RAMOS, 2008, p.1).

In these new environments, decision-making is focused on the entrepreneur, but is also heavily influenced by venture capital managers whenever this capital is used (NAKAMURA; FORTE; AGUIAR, 2006).

In this perspective, among the contributions of Information Science is the possibility to highlight and systematize information to promote communication processes capable of fostering scientific and technological development.

Specifically, the new organizational arrangements are directly related to the intensive use of information where the startups are organized, which are new, embryonic or still under construction, with promising projects related to research, investigation and development of innovative ideas and entrepreneurship.

Startup is a term used for new companies, even embryonic or still in the process of being set up, which count on promising projects, linked to the research, research and development of innovative ideas with low initial costs, being highly scalable, that is, having an expectation of very big growth when they work out. Some companies directly linked to information and communication such as Google and Yahoo are considered startups.

Gihaty (2016) claims that term emerged during the so-called "Internet bubble" between 1996 and 2001 and defines a Startup as a replicable and scalable business model created by people to work in conditions of extreme uncertainty.

For Ries (2012) startups are companies or human institutions that are built in the most diverse branches, emerging spontaneously in risk and uncertainty and having in essence the innovation to create products and services which intend to revolutionize the market.

The startup environment involves activities directly related to the exchange of internal and external information available in several formats, many of which simultaneously, which has been little discussed in the literature on Information Science.

Dynamic, the environment involves intense volume of data used in informational interactions, which raises the need for environmental monitoring studies on the flow of information relevant to companies from the relevant sources and suitable for access and use in a timely manner.

To that end, it is fundamental to understand how the scientific literature of various areas categorizes or gathers production around the current paradigms in Information Science, which helps reduce communication noises and obtain standards that, according to Jannuzzi (1999, 24) occur due to the diversity of applications of concepts and terms.

Araújo (2014), referring to the systematizations of the information concept of Miguel Ángel Rendón Rojas, Tefko Saracevi, Anders Orom, Jan Carolos Fernández Molina and Félix de Moya Anegón, Jesse Shera, Armando Malheiro da Silva and Fernanda Dias Ribeiro, Rafael Capurro, Jean -Michel Salaün and Clément Arsenaut, proposed a categorization in three dominant models of information study:

Physical Model (positivist) – Referring to the physical paradigm of information, to the study of documents, of physically tangible informational items. Involving little or no cognitive processing.

Semantic model (cognitive) – Regarding the cognitive paradigm, the study of what changes an initial knowledge in the subject's mind. Result of interaction between two cognitive structures.

Pragmatic (sociological) model – Regarding the social paradigm, to the study and valuation of the context of registered knowledge. The information exists in a context.

Thus, these three dominant models of the study of information by Information Science, elucidated by Araújo (2014), contribute to the understanding of how information can be categorized in the technological and innovative context of the startups ecosystem.

4 RESULTS: PRESENTATION AND DISCUSSION

It is noteworthy at this point that, after activity 4, initially described in the methodological procedures (standardization of the selection of the retrieved articles), the titles, abstracts and keywords of each article were read and then the activity 5, a portfolio of 20 articles was read and analyzed in its entirety for the accomplishment of activity 6 (data consolidation), according to Chart 2.

Author	Year	Title	Source
Hauert, S.	2016	Building an Ecosystem for Women Entrepreneurs [Industrial Activities]	IEEE Robotics and Automation Magazine
Kireyeva, A. A.	2016	The Formation of Information Technology Clusters in Kazakhstan: System and Structured Approaches	2016 International Conference on Business and Economics
Kohler, T.	2016	Corporate accelerators: Building bridges between corporations and startups	Business Horizons
Leite, M. L. G. et al.	2016	The process of product development for startups based on creative innovation	Espacios
Simon, H. and Leker, J.	2016	Using startup communication for opportunity recognition – an approach to identify future product trends	International Journal of Innovation Management
Saguy, I. S.	2015	Challenges and opportunities in food engineering: Modeling, virtualization, open innovation and social responsibility	Journal of Food Engineering
Agrawal, A. et al.	2015	Are Syndicates the Killer App of Equity Crowdfunding?	California Management Review

West, J. and Kuk, G.	2015	The complementarity of openness: How MakerBot leveraged Thingiverse in 3D printing	Technological Forecasting and Social Change
Pan, Y. et al.	2015	New entry threats, firm governance, and innovation in the U.S. IT industry	2015 International Conference on Information Systems: Exploring the Information Frontier, ICIS 2015
Ruseva, R. and Ruskov, P.	2015	The Reverse Business-Modelling Framework: A new Approach Towards Action-Oriented Entrepreneurship	Proceedings of the 10th European Conference on Innovation and Entrepreneurship
Salaverria, R.	2015	Labs as a formula for media innovation	Profesional De La Informacion
Frolund, C. et al.	2014	Study for strengthening the ICT DIY ecosystem	5th International Conference on Information and Communication Technology Convergence, ICTC 2014
Gaur, A. et al.	2014	Together we will find a 'Jugaad':Resource bricolage in the indian mobile payments sector	20th Americas Conference on Information Systems, AMCIS 2014
Gutiérrez-Cuéllar, J. and Gómez-Pérez, J. M.	2014	HAVAS 18 labs: A knowledge graph for innovation in the media industry	Industry Track at the International Semantic Web Conference 2014, ISWC-IT 2014 - co-located with the 13th International Semantic Web Conference, ISWC 2014
Yim, H. R. and Jung, W.	2014	A game theoretic simulation approach on innovative startups' decision process routine: Own marketing vs. licensing	International Journal of Software Engineering and its Applications
Cestyakara, A. et al.	2013	Social Media Adoption Model for Smart Entrepreneur	2013 International Conference on Ict for Smart Society (Iciss): Think Ecosystem Act Convergence
Choi, Y. and Kim, J.	2013	Interplay of entrepreneur, government, and industry in the development of ventures: the case of emerging IT industry in Korea	Eurasip Journal on Wireless Communications and Networking
Tung, C. M. et al.	2013	Fostering innovation commercialization at research institute and university: Strategy and policy implications	2013 Portland International Conference on Management of Engineering and Technology, PICMET 2013
Sawaryn, S. J. et al.	2012	Self-help and leveraging scale by means of the Wells' Advanced Collaborative Environment's Global Community of Practice	SPE Economics and Management

Strathman, M. and Lochmann, M. J.	2012	Intelligent energy and other industries - Lessons learned	SPE Intelligent Energy International 2012

Chart 2. Portfolio of complete articles
Source: Elaborated by the authors from the data collected in the Scopus and Web of Science databases, 2018.

Phase 2 of the SSF method corresponded to the analysis. Thus, with the portfolio defined in phase 1, the work was initiated by analyzing whether the authorship of the articles were repeated, which can be observed does not occur, according to Chart 2. Regarding the year of publication: there were more publications related to the year 2015 search, totalizing 6 publications; followed by the year 2016 with 5 publications; 2014 with 4 publications; 2013 with 3; and 2012 with 2 publications. As for journals and events, these also do not repeat themselves.

Of the articles retrieved, only one belongs to a periodical of the area of Information Science, being Profesional de la Informacion, with the article by Salaverria (2015), entitled Labs as a formula for media innovation. At this point, a horizon of future research that encompasses contexts of entrepreneurship is emphasized, emphasizing not only the technical and entrepreneurial attributions of the information professional, but also the theoretical knowledge of the area of Information Science.

Following phase 3 of the SSF method (activity 7), Chart 3 shows the themes of the articles retrieved with the dominant Araujo information study models (2014). For a better visualization of the crisscrossing, the excerpts taken from the articles mentioning the information were graphed in gray in the specific part of relation with the model (s), and the same was done in the identification of the models.

Title	Year	Excerpts	Models
Building an Ecosystem for Women Entrepreneurs [Industrial Activities]	2016	Its mission is to provide free, high-quality information about robotics by empowering experts to become communicators.	Physical Semantic Pragmati c
The Formation of Information Technology Clusters in Kazakhstan: System and Structured Approaches	2016	Information and communication enterprises of h IT-cluster in order to enhance the competitiveness of regions. Keeping with the previous literature, the present research determined that the novelty of the problem, concerning of the creation IT clusters as drivers of new generation, i.e. a kind of platform of "startup accelerators" through the creation of previously not existing in the country high-tec industries and sectors of the economy.	Physical Semantic c Pragmati

Corporate accelerators: Building bridges between corporations and startups	2016	Also, physical corporate accelerators should establish processes for exchanging information and know-how online across teams. Techstars, among others, has online forums via which founders can share their experiences and knowledge.	Physical Semantic Pragmati c
The process of product development for startups based on creative innovation	2016	The technological advances of the last two decades have introduced information as one of the main inputs to be explored by organizations, altering the bases of competitiveness, and causing profound impacts in several sectors.	Physical Semantic Pragmati c
Using startup communication for opportunity recognition – an approach to identify future product trends	2016	However, managers still meet using social media with skepticism and it is not fully understood how to make use of this information for new product development.	Physical Semantic Pragmati c
Challenges and opportunities in food engineering: Modeling, virtualization, open innovation and social responsibility	2015	The shift from empirical to physics-based food modeling is paramount to benefit from new sensor technology, proliferation of the 'Internet of Things', and big-data information.	Physical Semantic Pragmati c
Are Syndicates the Killer App of Equity Crowdfunding?	2015	The lack of long distance angel investing is largely due to informational problems that make no-local early-stage deals costly to evaluate and monitor. Given that the internet enables the distribution of information across distance at virtually no cost, why do such informational problemas persist?	Physical Semantic Pragmatic
The complementarity of openness: How MakerBot leveraged Thingiverse in 3D printing	2015	Such communities provide a source of complementary goods, particularly for information goods such as online information (Nov, 2007), musical sounds (Jeppesen and	Physical Semantic Pragmatic
		Frederiksen, 2006) and video games (Jeppesen and Moli n, 2003).	
New entry threats, firm governance, and innovation in the U.S. IT industry	2015	In contrast, managers in diversified firms have to divide their attention across a variety of product markets, and may not be able to detect entry threats in every product market due to their limited information processing capacities.	Physical Semantic Pragmatic
	2015	information systems by	Physical

The Reverse Business-Modelling Framework: A new Approach Towards Action-Oriented Entrepreneurship		The growing adoption c ale has lead small business on a glol novation constant acceleration (Companies are cycles in almost ar vate their industry. nd business models. increasingly often requir existing products, ser	Semantic Pragmati c
Labs as a formula for media innovation	2015	A comparative study of 31 labs was performed, based on the corporate information offered on their websites and on their *Twitter* accounts.	Physical Semantic Pragmati c
Study for strengthening the ICT DIY ecosystem	2014	The study has found that to establish an effective ICT DIY community, a supportive structure for funding DIY fairs and publications should be created, information about these initiatives should be readily accessible to the public, and universities should engage in DIY IoT activities to stir an interest in its students.	Physical Semantic Pragmati c
Together we will find a 'Jugaad':Resource bricolage in the indian mobile payments sector	2014	Archival records and documents infoprovide such as key dates and events and co time periods.	Physical Semantic Pragmati c
HAVAS 18 labs: A knowledge graph for innovation in the media industry	2014	In this talk we describe the 18 Labs initiative, challenges, and business expectations and how semantic technologies are key for realizing this vision by extracting startup information from online sources, structuring and enriching it into an actionable, self-sustainable semantic dataset, and providing media businesses with strategic knowledge about the most trending innovations.	Physical Semantic Pragmati c
A game theoretic simulation approach on innovative startups' decision process routine: Own marketing vs. licensing	2014	When a startup develops a newer ubiquitous innovation through information science than incumbents' current technologies, two strategies are available. It can either take advantage of the innovation for its own sake, i. e. own marketing, by creating a new differetiated market ou can license teh innovation to an incumbent.	Physical Semantic Pragmati c
Social Media Adoption Model for Smart Entrepreneur	2013	In this paper, we propose an initial model of social media adoption for startup company who wants to smartly fitting itself to the demands of real-time information in dynamic and	Physical Semantic Pragmatic
		competitive business environment .	
	2013		Physical

Interplay of entrepreneur, government, and industry in the development of ventures: the case of emerging IT industry in Korea		In high growth industries, changes are impor tant as it required complex decision making an d capability of sourcing information.	Semantic Pragmati c
Fostering innovation commercialization at research institute and university: Strategy and policy implications	2013	The suggestions of this study are 1) using he f t industry information map to be the base o technology R&D investment. 2) Enhancing the early stage germination activities to make the R&D project succes s.	Physical Semantic Pragmati c
Self-help and leveraging scale by means of the Wells' Advanced Collaborative Environment's Global Community of Practice	2012	These details, together with the recommend screens and information classification, are a source of information for new ACE startups help ensure a degree of consistency, both internally between ACEs and Externally wit vendors. ed key and h the	Physical Semantic Pragmati c
Intelligent energy and other industries - Lessons learned	2012	The technical ability to move data,create s, information, collaborate across geogr ie ries departments, companies, cultures, and has been available.	Physical Semantic Pragmatic

Chart 3. List of recovered articles in the light of the dominant models of information study of Araújo (2014)
Source: Prepared by the authors from the data collected in the databases *Scopus* and *Web of Science*, 2016.

The cross-references to the term "information" in the articles found in the light of the models established by Araújo (2014) were followed, to phase 4 of the SSF method, being carried out activity 8, that is, the consolidation of results (FERENHOF, FERNANDES, 2016).

Of the 20 articles analyzed, 8 mention the term information from the perspective of the three models, physical, semantic and pragmatic; 4 from the perspective of the physical and pragmatic models; 4 from the perspective of the physical model; 2 from the perspective of the physical and semantic models; 1 from the perspective of a semantic model and; 1 from the perspective of semantic and pragmatic models.

It is noticeable that the term information more verified in the articles is from the perspective of the physical model, present in 18 articles. It can be considered comprehensible when referring to the beginning of Information Science and to the establishment of the first information concept that was "linked to its physical and physical dimension, being the phenomenon studied from a quantitative and positivist perspective. ” (ARAÚJO, 2014, p. 145).

Then the most noticeable model was the pragmatic one, consisting of 13 articles. According to Araújo (2014, p. 146), trends "imply a greater degree of complexity and

abstraction, with the insertion of information in the scope of human action and in the context of concrete sociocultural contexts." In the case of the startups ecosystem, the concept itself justifies the presence of the model, since startups are innovative companies, based on technology to serve their public (SOARES, 2016).

Although the semantic model ranked third in the cross-over analysis, it was noticeable in 12 articles. Justifiable occurrence, because in this model information is associated with the interaction between data and knowledge, "and its study related to the identification of meanings, interpretations" (ARAÚJO, 2014, p.145). In the technology and innovation segment, this process of identification and interpretation is carried out all the time to draw up a new service and / or product.

With the presentation and discussion of the results concluded, the section of the final considerations follows.

5 FINAL CONSIDERATIONS

Based on the goal of highlighting conceptual approaches that associate information, technology and innovation in the context of startups, with potential to promote interdisciplinary scientific development, it was verified that the interlacing of themes is also present in other areas of knowledge, as can be seen in the results presented in Charts 2 and 3, which allows the expansion of scientific knowledge on the subject.

The retrieved scientific output can be considered representative for the development of interdisciplinary conceptual interfaces, from which it becomes able to contribute and receive contributions from other areas that address the terms cited. Thus, Araújo (2014, p.147), after presentation of the three models of information study, was empirically and limited to the scope of this study, when he said that "they are complementary, more than exclusive".

It is noteworthy that, even if representative, the recovered scientific production is still small compared to other themes, a fact that may be related to the recent scientific approach of the theme. Future studies may address how and how much the paradigms describe and if they are or not sufficient in information production and management in new environments characterized by startups in their specificities as well as in the gray literature (theses and dissertations, reports etc.).

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