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COMPETITIVE INTELLIGENCE HELPING ESTABLISHED ORGANIZATIONS ANTIPICATE AND MANAGE DISRUPTIVE INNOVATIONS

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1. INTRODUCTION

There are two sides of the debate regarding innovations: one that *"vehemently argues the merits of innovating vis-à-vis customer feedback"* and other that *"argues that true innovation is created by singularly gifted visionaries who ignore customer input and instead manufacture innovation based solely on their prophetic vision for a better future"* (Vlaskovits, 2011, p.1). This second view may be exemplified by famous management anecdotes such as the Henry Ford allegedly (but never confirmed) quote *"If I had asked people what they wanted, they would have said faster horses",* or Steve Jobs famous Businessweek interview where he stated, *"it's really hard to design products by focus groups. A lot of times, people don't know what they want until you show it to them"* (Reinhardt, 1998).

Even though these two classical examples of innovations (mechanic cars and Apple products) are good examples of radical innovations they cannot necessarily be considered as disruptive ones. Disruptive innovations are originated in low-end or new market foothold overlooked by established firms and change the value proposition in a market and sometimes have the power to supplant older technologies. As a consequence, many successful established businesses end up failing. Christensen (1997, loc.123/4215) believes that *"good management was the most powerful reason they failed to stay atop of their industries – precisely because these firms listened to their customers, invested aggressively in new technologies that would provide their customers more and better products of the sort they wanted, and because they carefully studied market trends and systematically allocated investment capital to innovations that promised the best returns, they lost their positions of leadership".* Indeed, there are times when the wisest thing is not to listen to customers or to use internal information for decision-making. But, that does not mean that organizations should not use Intelligence to help them anticipate and manage disruptive innovations.

As stated by (Paap & Katz, 2004) disruptive technologies do not need to disrupt the success of a business as even though one *"cannot be predict the future, you can anticipate change and prepare for it by focusing on the drivers of technology".* Competitive Intelligence, as pointed by (Sharp, 2009, p. 17) takes a broad, objective and accurate view of *"what business faces and what can derail or challenge your company… it considers all the elements that impact the company's success—customers, suppliers, distributors, substitutes, regulations, technology, the economy, other industries, demographics, culture/societal issues—and competitors*".

We believe that Competitive Intelligence used as a dynamic strategy and an effective process to collect and analyze information, predict market movements and technology changes and provide early warnings to organizations can help them better manage innovations including disruptive ones.

1.1. Justification for Research

Even though the use of CI is not new in the management field, it needs to increase its relevance both in the academic and practitioners´ world. A recent study by Benjamin Gilad & Fuld (2016) claims that only half of the companies actually use the Competitive Intelligence they collect. This becomes more critical as business environment evolves as more dynamic, uncertain and complex fostering organizations to develop more capabilities on how to gather,

process and use relevant information on the competitive environment for the decision-making processes. Because of their nature, disruptive innovations are difficult to understand and manage. On the beginning, they may not seem like a real threat and may be overlook by managers. Disruptive products and services start with a worse performance than established ones and are appealing only to small pieces of the market. However, if the right information regarding this new technology is not being analyzed by the established organizations, there is an increased risk of blindness regarding the possibility of disruption.

The new value proposition brought by entrants to the market may seem harmless to start with but situation changes as technology and market evolves. Both fields of Competitive Intelligence and disruptive innovations have been individually widely researched. However, little has been studied on the connection between the two fields. This article aims to put some light on this gap and, at the same time, tries to address how CI can be incorporated by organizations as an ongoing and dynamic strategy to help them manage potential disruptive technological changes that can dramatically influence their businesses.

We believe that common sense has played a negative bias on spreading the notion that disruptive innovations are mainly based on intuition and on the influential role of visionary leaders and are forged to entrepreneurial startups that are fast and aggressive to dispute established large organizations. We think that Intelligence (and more broadly CI) can be an important tool helping managers to efficient anticipate and manage potential changes that disruptive innovations can represent to their markets. These discussions may benefit not only academics and managers of CI and innovation but also professionals of related fields who are working to better understand the current ever-changing business landscape.

1.2. Research Question and Objectives

We believe there is a positive relation between the adoption of CI strategies by organizations and their enhanced capabilities to understand and manage change and innovations. As we are interested in a particular type of innovation (i.e. disruptive innovation), we addressed the following research question**: Can Competitive Intelligence help organizations be better prepared on dealing with disruptive innovations?** Therefore, our main objective is to correlate a robust CI strategy with organizational capabilities to anticipate, manage and proactively act on a dynamic business environment influenced by technological disruptive innovations. The Specific objectives of the study are**:**

1. Evaluate if CI can help anticipating and understanding potential disruptive innovations;
2. Correlate CI with managers enhanced capabilities of dealing with disruptive innovation;
3. Propose a practical framework on the use of CI to help managers deal with disruptive innovations;

We aim to achieve these objectives through a theoretical essay including review of the relevant literature, comparison of theories and logical deduction to draw conclusions.

2. THEORETICAL REFERENCES

2.1 Disruptive Innovations

For a deep understanding of disruptive innovation, we will refer to Christensen (1997) where most of the concepts and definitions related to the theme were coined. Technology, in this context, is related to the process of transformation of inputs (i.e. labor, capital, materials and information) in outputs (i.e. products and services of greater value) and innovation refers to changes in technology. The concepts of sustaining and disruptive technologies are different from incremental versus radical ones, which are the ones more traditionally, used. Sustaining are those new technologies aimed to improve the performance of established products and services (along dimensions of performance valued by the market of mainstream customers) whereas disruptive technologies may result in worse performances in the short term but may evolve and be performance-competitive in the same market in the future.

As explained by Christensen (1997, loc 175/4215): *"disruptive technologies bring to a market a very different value proposition that had been available previously. Generally, disruptive technologies underperform established products in mainstream markets. But they have other features that a few fringe (and generally new) customers value. Products based on disruptive technologies are typically cheaper, simpler, smaller, and, frequently, more convenient to use"*.

Managers from established organizations do not have rational incentives to invest in disruptive innovations as they are dependent on established customers and firm's investors (which make them focus attention, resources and investments on sustaining technologies) and the small markets represented by disruptive innovations on the beginning will not generate the growth rates needed. These managers end up developing a system for "killing ideas" that are not aligned with their straightforward incentives. On the other hand, disruptive innovations bring to market a different value proposition (products tend to be simpler and cheaper yielding lower margins, they start being commercialized in emerging / smaller markets and main customers of leading firms do not want or need these technologies on the beginning) and thus are generally first adopted by smaller customer segments who tend to be less profitable. These characteristics make disruptive emerging markets difficult to analyze.

Managers are used to gather data, do analysis and plan in a sustaining context where information such as market size, growth rates, technology and environmental trends and needs of customers are relatively well known. Disruptive contexts and new markets, on the other hand, are much more uncertain and ambiguous with fewer information available. Recently, Christensen, Raynor, & Mcdonald (2015, p.46) called attention to the importance of getting right the concepts of disruptive innovation that according to them have been widely misunderstood: *"the problem with conflating a disruptive innovation with any breakthrough that changes an industry's competitive patterns is that different types of innovation require different strategic approaches."*

In addition, they complement stating, *"the lessons we've learned about succeeding as a disruptive innovator (or defending against a disruptive challenger) will not apply to every company in a shifting market"*. Disruption describes the process where smaller companies (entrants) challenge incumbent firms by first targeting overlooked segments and eventually moving upmarket delivering the performance that mainstream customers require and thus creating disruption (Christensen, 1997).

2.2 Competitive Intelligence and Weak Signals

Brody (2008, p.13) believes that being Competitive Intelligence (CI) a developing field, it still lacks semantic stability for a solid terminology definition but that most definitions or descriptions indicate that CI is a process mutable over time (suggesting a boundary-spanning field). This is in line with Calof & Wright (2008) who, instead of trying to find a definition for CI, they explore the concept of CI from three different perspectives: the practitioner view, the academic view and the interdisciplinary view concluding that CI *"involves the collection of information, internal, external and from competitors, but also from customers, suppliers, technologies, environments, and potential business relations"* (Calof & Wright, 2008, p.723).

On the other hand, Sharp (2009, p.37) takes a more definite position by actually defining CI as *"knowledge and foreknowledge about the entire business environment that results in action".* For Sharp, knowledge refers to understanding the past and connecting to new information, foreknowledge (insights that encompasses market changes, indications, predictions, forecasts, and estimates for what is to come) and the awareness of a full range of components or factors that can affect the success of a business. Her proposed *"Competitive Environment"* puzzle encompass twelve different dimensions to assess the competitive landscape:

1. Customers: the most important component of any strategy,
2. Prospects: potential (not current) customers,
3. Suppliers: good source of information for trends and threats,
4. Distributors: are knowledgeable on customers wants and needs and on what works on the marketplace and potential barriers to market entry,
5. Competition: direct (similar products sold to similar customers), indirect (related industries selling similar products) and substitute competitors (different industries offering similar products),
6. Substitutes: any offering that your customers see as alternatives to your products or services,
7. Technology: often introduces new and unexpected competitors,
8. Demographics: changing demographics can and will affect business landscape,
9. Culture: wide range of microsegments including society, lifestyles and attitudes,
10. Economy: understand change times and adjust products to serve changed marketplace for the current economic climate,
11 . Industry and Government Relations: increasingly shapes the structure and conduct of industries,
12. Other industries: neighbor industries that are indirectly related.

Ansoff (1975) calls for the need of anticipatory information on opportunities and threats – i.e. weak signals (vague pieces of information that are different from historical information used to extrapolate future scenarios based on the past). Blanco, Caron-Fasan, & Lesca (2003, p.82) details the nature of these weak signals: anticipatory (potential future events that may affect the organization), qualitative (do not consist of quantitative or factual data), ambiguous (not certainties but clues and traces), fragmentary (fragments gathered by

various environment scanners that taken separately are insignificant) and of various presentations (not homogeneous and taken from different sources).

Ansoff (1975, p.22) believes that being able to respond to weak signals is paramount to deal with strategic surprises: *"sudden, urgent, unfamiliar changes in the firm's perspective which threaten either a major profit reversal or loss of a major opportunity"* and manage market discontinuities. Nevertheless, he believes that traditional planning and forecasting processes and systems are not able to deal with strategic surprises as they overly need the input of information that is available early enough (to plan in advance) and be adequate to estimate impact to the firm.

But when a surprise originates in alien technology, unknown competition, new political coalition or new economic phenomenon, simple extrapolation will not suffice and managers will need to choose between working with more vague information (imperfect knowledge) or wait for information to become more specific (but risking being too late on the decision making process). He calls for a *graduated response through amplification and response to weak signals* whereas firms´ responses should be unfocused when information is still vague to increase strategic flexibility and to prepare the company for a direct attack of the opportunity or threat once the information becomes more precise. Firms have two options: the capability for after-the-fact responsiveness (crisis management) or acting before the fact, minimizing thus the probability of strategic surprises.

Gilad (2004, loc. 94/2904) follows Ansoff in that *"surprise plays a significant role in decision processes".* He believes that managers tend to ignore early signs related to surprise creating "blind spots" – which become critical sources of failures in the judgement and decision and a major reason why organizations are surprised. It is not easy and clear (especially on the beginning) to identify surprises and this may be responsible for creating "*industry dissonance"* (when a company strategy no longer fits market reality). He claims that companies need to think about risks systematically as risk is created by uncertainty and uncertainty is created by change.

Therefore, identification of change is at the core of the assessment of potential risks and he calls for identifying change drives (events or variables that drive the evolution of industries). Even though change drivers differ from industry to industry, he cites four main classes: (1) new technology or science (2) new regulations or other governmental / political action (3) new social / demographic trends (4) new competitive behavior. He calls for the implementation of early warning systems to prevent surprises.

As depicted in figure 1, this is an ongoing process of identification of risks that furnishes indicators to the intelligence monitoring systems who should be able to alert managers to take action and provide feedback. Ben Gilad (2004) believes that the monitoring of risks should be a collective (not individual) process, coordinated among different people, planned by the organization and integrated in the planning process – and calls for a monitoring network (using internal and external resources).

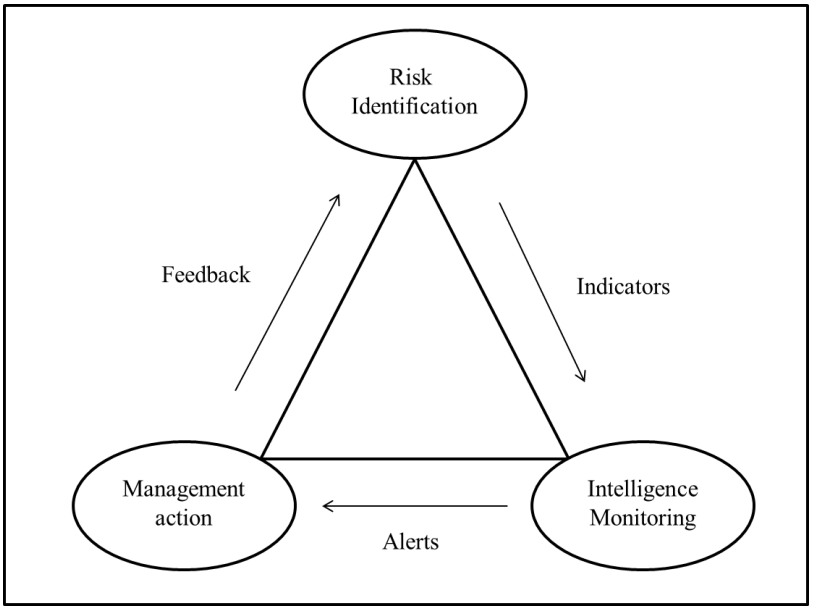

Figure 1: Using "Early Warning" to Monitor Risks

Source: Adapted from (Ben Gilad, 2004)

Agarwal (2006, pp. 309-310) believes that CI is a type of Knowledge Asset (KA) "*knowledge regarding markets, products, technology, and organizations that a business owns or needs to own and which enable its business process to generate profits, add value, etc."* and that Knowledge Management (KM) *"process where the firm identifies, analyzes, and makes uses of its Knowledge Assets (KA)"* includes CI.

2.3 Competitive Intelligence and Disruptive Innovations

As we try to correlate a CI strategy with superior capabilities of managing disruptive innovations, we follow Agarwal (2006) in that CI plays an important role on organizational decision making and that the key is the process to turn raw data into valuable information, from valuable information to strategy and from strategy to action. This is in line with the results of the study conducted by Badr, Madden, & Wright (2006) with CI managers in the European pharmaceutical industry that suggests that CI is not only useful, but also crucial to the strategic decision making process. But, the main question remains: is a CI strategy important for the decision making processes and capabilities of organizations that are being faced by disruptive innovations?

According to Paap & Katz (2004, p.13) organizations in today´s hypercompetitive world *"have to understand and learn to manage the dynamics of innovation that underlie both disruptive and sustaining innovations"*. Even though they acknowledge it is difficult to recognize new technologies that can be disruptive, they elaborate on different strategies that may be used:

- Understand when and how technologies are adopted can help anticipate future technology introductions.
- Understand the dynamic of innovation and substitution and the reasons that new technologies emerge to attend unmet needs.

- Not ignore customers (current or potential) but do not focus only on what they ask for but on what they need;
- Not abandon old technology just because it appears mature but at the same time not focus only on how current technologies can be used to address emerging drivers;
- Implement processes that help anticipate and manage changes including collect intelligence on changing needs, technologies, customers and competitors.

According to Paap & Katz (2004, p.19) the planning process should be mainly focused on the needs of consumers: "*if technology planning is to anticipate disruptive technologies, it must not start with technology but with needs, and assess how current and future customers will evolve into different generations of drivers".* Christensen et al. (2015, p.51) believe that theory may help managers only to decide what direction to take on making decisions: *"it is rare that a technology or product is inherently sustaining or disruptive. And when new technology is developed, disruption theory does not dictate what managers should do. Instead it helps them make a strategic choice between taking a sustaining path and taking a disruptive one".*

Gilad (2004) suggests the use of scenarios tools as a risk identification method when working with change drivers of industries. After doing a list of potential change drivers managers can hypothesize about the possible directions, they will take in the future but without the necessity of mapping out all possibilities as two or three may suffice. As presented Paap & Katz (2004, p.16): *"it is important to recognize that technology substitution occurs only when there is both an unmet need in a dominant driver and the current technology is incapable of competitively addressing it".*

Christensen et al. (2015, p.51) state that *"empirical findings shows that incumbents outperformed entrants in a sustain innovation context but underperformed in a disruptive innovation context".* Two reasons are cited by the authors to explain this phenomena: (1) company´s propensity to change is profoundly affected by the interests of customers (2) the focus on existing customers becomes institutionalized making difficult for managers to shift investments to disruptive innovations.

Another important reason cited by Teece (2010, p.182) on why incumbents are reluctant to adopt an innovation is the cannibalization effect on existing sales and profits or the risk of upsetting important business relationships: *"when incumbents are constrained in this way, the pioneer of a new business model may enjoy a considerable period of limited competitive response. Notwithstanding these constraints, competition is likely to be vigorous because other new entrants, similarly unconstrained by incumbency and cannibalization anxieties, will be equally free to enter".* The reluctance to act due to the cannibalizing effect is also analyzed by Christensen (1997) as a potential reason why established firms delay the adoption of new technologies. In his opinion, the fear of cannibalization can become a self-fulfilling prophecy when these established firms wait until this technology is commercially mature to respond.

3. METHODOLOGICAL PROCEDURES

The main objective of this article is to contribute on the theories of CI and disruptive innovations by creating new discussions that can be incorporated in both and on the correlation of both fields of knowledge. But, what is theory? Svensson (2013, p.468) believes

that *"theory in behavioral sciences such as business research is about simplification of reality – i.e. inherent complexities and dynamics*". Glazier & Grover (2002, p.319) describe theory as a *"generalization that seek to explain relationships among phenomena".* Glaser & Strauss (1967) have cited different objectives for formulating theory in sociology among of them: enabling prediction and explanation of behavior, to be useful in theoretical advance and to be usable in practical applications, prediction and explanations (to give the practitioner understanding and some control of situations).

According to Torraco (2004, p.178) *"theory building can be considered as a research process to creating theory"* and historically there were three main paradigms for building theory: positivistic (more traditional approaches to knowledge creation), naturalistic (need to explicit the theoretical logic and conceptual reasoning including techniques such as phenomenology, ethnography, case study research, grounded theory and social construction research) and multiparadigm perspectives (alternative strategies including multiple paradigms for theory building). Svensson (2013, p.469) believes that *"theory building refers to a cumulative process, organizes insights and knowledge gained in a subject area from substantiations and contributions and organizes measurement and structural properties of variables and constructs*". The author characterizes studies on theory building in: original studies (differ from previous studies), replication (try to replicate previous studies) and validation (aimed to validate previous studies). Wacker (2008) proposes guidelines for "good" theory building based on the properties of theory:

- Definition: conservative (no renaming of concepts), parsimonious (short definitions) and unique (only one concept in definition)
- Domain: generalizability (concepts can be generalized for populations or other situations) and abstractness (void of time and space requirements)
- Relationships: fecundity (explain current phenomena but also offer areas for new research), internal consistency (consistent with logic), parsimony (fewest relationships and minimum statistical techniques) and substantive (simplest explanations)
- Predictions: falsifiability (logical explanations of unlikely results)

The decision to adopt a theoretical essay for this article was made, as we believe that it is the more adherent to the achievement of the proposed objectives. It was taken into account that the theoretical essay requires a methodological exposition of the themes researched and of the propositions and original conclusions reached after the study of a particular theme (Medeiros, 2014). Another characteristic of the theoretical essay is described by Alvesson & Karreman (2000) which is that it consists on the combination or union of two constructs, which had not yet been related in terms of common themes between them. According to Medeiros (2014, p.2) the essay should present aspects inherent to the "critical spirit" of the authors, as well as the originality of the subject. According to Meneghetti (2011), the essayists must make a reflection, get involved and have analytical capacity and critical skills on the construction of the relations of the theoretical essay; thus providing a dialogue between the different epistemologies, mainly due to the nature of the experimentation.

On this basis, we aimed in this article to contribute to the themes of CI and disruptive innovation on a theoretical level. We conducted a literature review and comparison of themes in the two areas with the objective of fostering new reflections and discussions regarding the relationship between this two constructs. In this we follow Webster & Watson (2002) in that a review of the relevant literature is fundamental to create a firm foundation to advance

knowledge and facilitates theory development. As this research is based only on theoretical review of the literature, it brings several limitations as the findings were not empirically tested and thus the concepts discussed in this article should be validated in a real life setting.

4. DISCUSSION / RESULTS

As we try to contribute to the theoretical fields of CI and disruptive innovations, we will discuss results related to the specific objectives of the article and thus we divided results in three main topics – i.e. conclusions drawn from the objectives:

- CI can help managers deal with Disruptive Innovations
- A solid CI strategy fosters management capabilities to deal with Disruptive Innovations
- Propose a practical framework of using CI for the management of Disruptive Innovations

4.1 CI can Help Managers Deal with Disruptive Innovations

Disruptive innovations start like many other innovations and, as stated by Christensen et al. (2015, p.50), some succeed and some don´t: *"not every disruptive path leads to a triumph, and not every triumphant newcomer follows a disruptive path"*. There is a process in which a technological innovation has the power to become a disruption and it does not happen from one day to the other. After an innovation occurs, it first needs to prove itself viable to market: i.e. it needs a value proposition (to appeal to a target of consumers) and a business model (even if it is a simple one, the entrant organization bringing the disruptive innovation needs to establish itself in the marketplace). On the beginning, disruptive innovation will lure mainly low-end consumers (target market whose needs are overlooked by established organizations) before it is able to move upmarket.

Nevertheless, industry disruption will occur only when mainstream consumers start adopting the innovation. Important also to underscore that on the beginning of the process the technology of the innovation has some inferior value features compared to mainstream products but as technology evolves, the disruptive innovation may develop and frequently incorporate enhanced features that will habilitate it to move upmarket. One of the reasons why this might eventually happen, according to Christensen (1997, loc.195/4215) is because technologies can progress faster than market demand: *"disruptive technologies that may underperform today, relative to what users in the market demand, may be fully performance-competitive in the same market tomorrow".* Figure 2 attempts to illustrate the disruptive innovation process described.

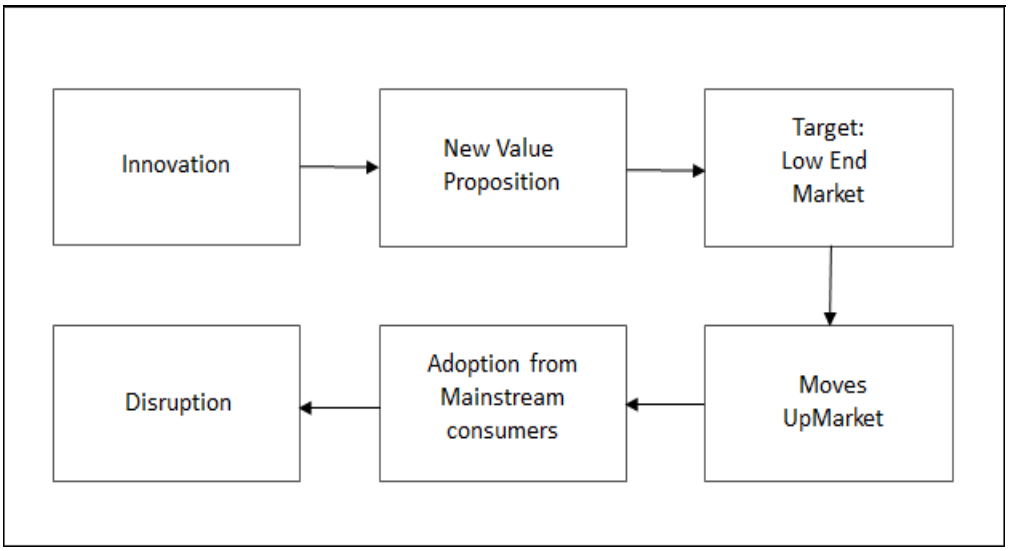

Figure 2: Process of Innovation creating a disruption
Source: Elaborated by authors based on (Christensen, 1997)

So, it is our belief that managers should be able not only to anticipate technological innovations with the potential to disrupt their industries but also, by understanding the disruption process, the should be able to manage it more properly. As presented by Gilad (2004), organizations need to identify change drivers as a way to assess risks systematically. We believe that by monitoring each stage of the process, companies can make the most appropriate and timely decisions on the best actions to take.

We follow Ansoff (1975) that, on the beginning of the process information is more vague and managers need to deal with imperfect knowledge but, as the process moves forward and the technological innovation becomes more consolidated, information becomes more specific. Therefore, organizations can minimize strategic surprises by using CI to prepare themselves before the fact (i.e. the possibility of a technological innovation becoming a disruptive one) and by fully understanding how the disruptive innovation process unfolds, they can respond appropriately.

4.2 A Solid CI strategy fosters management capabilities to deal with Disruptive Innovations

Ansoff (1975) calls for a graduated response when dealing with a surprise originated by factors such as an alien technology. This process seems to be adequate to deal with innovations that may or may not present themselves disruptive in the future. He believes that there should be an amplification of response to weak signals: i.e. unfocused when information is still vague to provide flexibility of the company and prepare it for the future and a direct attack once information becomes more precise.

To capture and analyze these weak signals organizations need to understand the dynamics of innovations and, as proposed by Paap & Katz (2004) there are different strategies that can be used to understand technology adoption and anticipate future technology introductions. These include understanding the reasons these technologies emerge (unmet needs), assessment of customer needs and implementation of processes on collecting intelligence on changing needs, technologies, customers and competitors. We believe that

having a solid CI strategy can strength management capabilities to deal with disruptive innovations for different reasons:

- Being Aware. Managers need to be aware of the risks that disruptive innovations can represent to their businesses and that if action is not taken in a timely and appropriately fashion, it may be too late when an attack is finally made. Having a CI process that helps assess risks and anticipate changes in the market landscape and, at the same time, monitor entrant movements in each stage of the innovation process should make managers more aware of the real situation being faced.
- Being Informed: It is very difficult to assess if an innovation really has the power of becoming disruptive but the only way to anticipate and manage it is to have appropriate information that provides managers real market and business inputs before it is too late. As pointed by Makadok & Barney (2001, p.1636) *"if firms do not collect the information they need to accurately assess their strategic situation, it is very unlikely that they will be able to make profit maximizing strategic choices".*
- Being Knowledgeable: Once acquired and developed, information should become organizational knowledge. As pointed by Agarwal (2006, p.310) *"an effective Knowledge Management strategy will capture the existing CI in a firm and allow for its analysis and use."* Companies are more prepared to deal with disruptive innovations, as they understand not only the market information being supplied by CI but also, how this information correlates with the disruptive innovation process and what are the risks and chances of new technologies and innovations to disrupt their businesses. This is the stage where managers should be most prepared to make difficult, but necessary, decisions and course of actions to defend their businesses. We believe that, as managers are more knowledgeable of the situation they should be able to make better decisions to act in the best interest of their organizations for the specific changes (threats and opportunities) brought by Disruptive Innovations.

4.3 Practical framework of using CI for the management of Disruptive Innovations

We follow Paap & Katz (2004) in that to anticipate disruptive technologies one must start with needs of customers and not with the technology itself. So, the first question that managers should be asking is: What is the basic need that we are meeting? For example, in the case of a telecom company, the basic needs are communication and connection and in the case of the TV business, it is the need for entertainment. When a new technology appears, managers should them ask: in which attributes is this new technology better attending the needs of consumers (or a specific segment of consumers) and in which attributes is it doing a worse job?

We should account for the fact that even though on the beginning the new technology may have attributes that appeal only to a small segment of consumers, this technology will probably evolve faster than consumer demands and will eventually meet the needs of mainstream consumers as it will incorporate other relevant attributes. Following the two examples of telecom and TV industries:

1. The basic need is the same for both fixed and mobile phones (communication and connection) but mobile phones did a better job on offering mobility to consumers even though it was very expensive and its technical quality was worse than fixed phone on the beginning.

2. The basic need attended is the same by an Open TV channel, a Pay TV operator or an on demand digital service like Netflix. However, Netflix was able to offer the additional attributes of on demand viewership and more available content than Open TV or Pay TV. On the other hand, one must acknowledge that on the beginning the offering of Netflix was more limited in terms of available titles and there were quality and connections issues due to technological and infra-structure limitations. Nevertheless, as technology evolved Netflix was able to grow and become a major player in the TV industry by challenging incumbent Open TV and Pay TV organizations.

At this point is interesting to do a check on the innovation process depicted in Figure 2 to assess in which stage of the disruption technology process the industry is:

- Is the new technology only still a technology or has it been proved viable by an entrant organization?
- Does this entrant have a business model (including a solid value proposition)?
- Was this entrant able to capture consumers? What kind of consumers (segment)?
- What is the real risk does this new technology currently presents to our business considering the current business landscape?

Managers need to be aware that, even though the new technology may not seem to be disruptive at a specific point in time, it does not mean that this will not happen in the future. So, as we move forward in our proposed framework, we keep following Paap & Katz (2004) in that we need to assess how current and future customers will evolve. We believe that this information should be correlated with the trends of how this new technology is expected to develop as well. Since it is very difficult to project future trends we propose the methodology of using scenarios to assess change drivers and we designed a bi-dimensional matrix to correlate the expected change scenarios correlating technology and consumers development. Figure 3 depicts this matrix.

		Consumers Trends	
		Scenario 1	Scenario 2
tecnology trends	Scenario 1	Potential Risks (1,1)	Potential Risks (1,2)
	Scenario 2	Potential Risks (2,1)	Potential Risks (2,2)

Figure 3: Matrix of change scenarios in technologies and consumer trends
Source: Elaborated by authors

Even though we are focusing only at the consumers and technology trends as the main change drivers, other dimensions can be used as well if they have the potential of affecting the competitive landscape being considered. We believe that Sharp´s "Competitive Environment" puzzle may be a useful framework to assess information in all twelve dimensions of competitive landscape and CI analysts and managers must be skillful to decide on which are relevant to the case. For example, in the case of the TV industry, the dimension of "other

industries" were an important consideration for the growth of digital on demand services such as Netflix. As the technological infrastructure became more robust and cheaper and broadband connections became faster and more reliable, they fostered growth of on demand services that were able to provide a better consumer experience.

Managers cannot expect to have all the information regarding the change drivers and we agree with Gilad (2004, loc. 911/2904) *"if a company waits until everyone is certain about the direction of change in its environment and its effect, it is a sure candidate for the dissonance failure´s Hall of Fame."* So, not only CI analysis but also management decisions must be made in an environment of relative uncertainty. At all points of gathering, processing and analyzing information managers must have a clear vision of which stage the technology is in the innovation process.

The kinds of information and the decision-making criteria are not the same when an innovation is at its early stages compared to when there is a new organization with a business model, value proposition and existing consumers. It is clear that the level of uncertainty and the amount of information available for managers vary as innovation evolves and as it becomes a market reality. We believe that the use of graduated response considering the amplification of this response to weak signs as proposed by Ansoff (1975) seems to be adequate. This suggests that using CI to anticipating and managing potential disruptive innovations is a dynamic process that should be made regularly and not only when managers sense a potential risk for the future.

As pointed by Christensen et al. (2015), the role of management is very conflicting as disruption theory does not dictate what they should do. We believe that even the best CI process will be innocuous in anticipating and helping to manage disruptive changes if organizations do not have the "buy in" of leadership. We follow Gilad (2004, loc. 2556/2904) that *"when it comes to early warning at the attitude toward strategic intelligence, a leader´s influence almost always extends to his entire executive team as well."* The support of top management becomes even more important considering the bias of focusing on existing customers and on more profitable lines of business which inhibits pro-active behaviors to deal with disruptive changes.

These biased behaviors become institutionalized in the organization and it is very difficult to face reality even when a great amount of information is available. We also believe that the fear of cannibalizing existing businesses, cited by Teece (2010) plays an important role on the complex decision process faced by managers on established organizations. Even if there is enough information and sound evidence of the risks that a disruptive innovation can represent to the organization, managers still have to consider the potential cannibalization of current sales if they decide to change their business model to embrace the disruptive innovation.

If no action is taken, the entrants may enjoy an important period of limited competition and this is probably when they will be able to grow and refine their technology (enhancing key attributes to meet mainstream consumers demands), consolidate their business model and move upward to mainstream consumers. As pointed by Christensen (1997, loc.700/4215) *"when established firms wait until a new technology has become commercially mature in its new application and launch their own version of the technology only in response to an attack on their home markets, the fear of cannibalization can become a self-fulfilling prophecy"*. In the end, it is a difficult decision to be made: embrace disruption or be disrupted!

5. FINAL CONSIDERATIONS

From our research, we believe that Competitive Intelligence (CI) can be an important aid to managers on predicting and acting in the face of Disruptive Innovations. Disruptive Innovations should be seem as a process and not as a one-time event that affects established businesses. Therefore, if managers have a robust CI system they should be able to detect weak signals early on (more vague and imperfect information) that will evolve and, as time goes by, will become more specific. We then called for a strategy of graduated response whereas different sorts of actions are being taken depending on the amplification of the weak signals. We explained why managers should be aware, informed and knowledgeable about the situation to take the proper decisions and course of actions.

We then proposed a framework (bi-dimensional matrix) that correlates the need of customers (current and futures) and how they might change over time with the expect trends in technology (change drivers). This framework is intended to help managers assess actual risks in different scenarios. Finally, we proposed that CI should be used as an ongoing dynamic process inside organizations and we cited some organizational characteristics that are paramount to support this process such as the role of leadership and the assessment of potential cannibalization effect on established businesses.

As already discussed in the methodological procedures, this study has some limitations related to the research process used. As we decided to do a literature review to contribute to the theories of CI and Disruptive Innovations, we did not actually proceeded an empirical test of the concepts proposed. Therefore, these concepts still need to be validated and even replicated in a real life business scenario. This is maybe an opportunity for future research.

We believe that the concepts and results of this study may be beneficial for both practitioners and academics of CI and Disruptive Innovations as we tried to contribute with theories and the relationship of the theories on both fields. We also believe these themes will be more correlated and current as business environments are becoming more dynamic and complex and organizations need to be more prepared to deal with Disruptive Innovations that can dramatically change their businesses.

6. REFERENCES

Agarwal, K. N. (2006). Competitive Intelligence In Business Decisions- an Overview. *Competition Forum*, *4*(2), 309–314.

Alvesson, M., & Karreman, D. (2000). Varieties of discourse: On the study of organizations through discourse analysis. *Human Relations*, *53*(n.9), 1125–1149.

Ansoff, H. I. (1975). Managing Strategic Surprise by Response to Weak Signals. *California Management Review*, *XVIII*(2), 21–33.

Badr, A., Madden, E., & Wright, S. (2006). The contribution of CI to the strategic decision making process: Empirical study of the European pharmaceutical industry., *3*(4), 15–35.

Blanco, S., Caron-Fasan, M.-L., & Lesca, H. (2003). Developing Capabilities to Create Collective Intelligence within Organizations. *Journal of Competitive Intelligence and Management*, *1*(1), 80–92.

Brody, R. (2008). Issues in Defining Competitive Intelligence: An Exploration. *Journal of Competitive Intelligence and Management*, *4*(3).

Calof, J. L., & Wright, S. (2008). Competitive intelligence: a practitioner, academic and inter-disciplinary perspective. *European Journal of Marketing*, *42*(7/8), 717–730.

Christensen, C. M. (1997). *The Innovator's Dillemma: When New Technologies Cause Great Firms to Fail* (1st ed.). Boston, MA: Harvard Business School Press.

Christensen, C. M., Raynor, M., & McDonald, R. (2015). What Is Disruptive Innovation? *Harvard Business Review*, *93*(12), 44–53.

Gilad, B. (2004). *Early Warning: Using Competitive Intelligence to Anticipate Market Shifts, Control Risk, and Create Powerful Strategies* (1st ed.). New York, NY: AMACON.

Gilad, B., & Fuld, L. M. (2016). Only Half of Companies Actually Use the Competitive Intelligence They Collect, 2–4.

Glaser, B. G., & Strauss, A. L. (1967). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. *Observations* (Vol. 1). https://doi.org/10.2307/2575405

Glazier, J. D., & Grover, R. (2002). A Multidisciplinary Framework for Theory Building. *Library Trends*, *50*(3), 317–329.

Makadok, R., & Barney, J. B. (2001). Strategic Factor Market Intelligence: An Application of Information Economics to Strategy Formulation and Competitor Intelligence. *Management Science*, *47*(12), 1621–1638. https://doi.org/10.1287/mnsc.47.12.1621.10245

Medeiros, J. B. (2014). *Redação científica: a prática de fichamentos, resumos, resenhas*. Atlas.

Meneghetti, F. K. (2011). O que é um ensaio teórico. *Revista de Administração Contemporânea*, *15*, 320–332.

Paap, J., & Katz, R. (2004). Anticipating Disruptive Innovation. *Research Technology Management*, *43*, 13–22.

Reinhardt, A. (1998). Steve Jobs on Apple's resurgence. Retrieved April 30, 2017, from http://allaboutstevejobs.com/sayings/stevejobsinterviews/bw98.php

Sharp, S. (2009). *Competitive Intelligence Advantage: How to Minimize Risk, Avoid Surprises, and Grow Your Business in a Changing World*. Hoboken, New Jersey: Wiley.

Svensson, G. (2013). Processes of substantiations and contributions through theory building towards theory in business research. *European Business Review*, *25*(5), 466–480. https://doi.org/10.1108/EBR-12-2012-0071

Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, *43*(2–3), 172–194.

Torraco, R. J. (2004). Challenges and Choices for Theoretical Research in Human Resource Development. *Human Resource Development Quarterly*, *15*(2), 171–188. https://doi.org/10.1002/hrdq.1097

Vlaskovits, P. (2011). Henry Ford, Innovation, and That "Faster Horse" Quote. *HBR Blog Network*, 4. Retrieved from http://blogs.hbr.org/cs/2011/08/henry_ford_never_said_the_fast.html

Wacker, J. G. (2008). A Conceptual Understanding Of Requirements For Theory-Building. *Journal of Supply Chain Management*, *44*(3), 5–15.

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, *26*(No. 2 (June)), xii–xxiii.