Technology in business markets: toward a cultural perspective.

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Abstract

The number of technological disruptions increases as do the rhythm of their development and the magnitude of their business and economic consequences. Despite the significance of the phenomenon, the number of works on this topic remains comparatively limited in business marketing.

Latest technological trends and the rise of so called intelligent, autonomous and connected products, have been presented as the new industrial revolution. Nevertheless, few attempts have been made in recent years to offer a comprehensive and critical appraisal of the knowledge on technological adoptions.

This paper constitutes an effort to put together the fragmented body of research on marketing implications on the adoption of technologies in industrial markets setting. The purpose of the paper is to propose a critical review of research on technology adoption; to this aim, we analyse studies conducted in business marketing to show their contributions and limitations to what we add an overview of research conducted in other areas (organisation, strategy, information system). We identify research avenues that open research on technology adoption in business markets to sociocultural perspectives that could be a springboard for future works.

Keywords: Technology adoption, Literature review, Cultural perspective, Business networks.

Competitive paper

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INTRODUCTION

The impact of technologies on firm performance and competitiveness in business markets has long been recognised (Pires and Aisbett, 2003; Varadarajan et al., 2010; Trainor et al., 2011; Makkonnen and Johnston, 2014; Makkonnen and Vouri, 2014; Lee and Lee, 2015; Makkonnen et al., 2016). This phenomenon is not new, but the number of technological disruptions (e.g. nanotechnologies, biotechnologies, information technology, cognitive science, aka NBIC) increases as do the rhythm of their development and the magnitude of their business and economic consequences. A case in point is the rise of so called intelligent, autonomous and connected products, often presented as a new industrial revolution (Porter and Heppelmann, 2014, 2015). At a global level, understanding how firms adopt and use emerging technologies is crucial both for the purchasing firm, so as to maintain its performance, and for the technology supplier to design an efficient strategy for selling its products.

Despite the significance of the phenomenon, research on technology adoption and use remains comparatively limited in industrial marketing (Makkonnen and Johnston, 2014). Moreover, few attempts have been made in recent years to offer a comprehensive and critical appraisal of the knowledge on the topic (one expection being, Makkonnen and Johnston, 2014). Finally, research is dominated by an analysis of the technological features that lead to the adoption and diffusion among potential users, (e.g. Davis, 1989; Venkatesh et al., 2003; Rogers, 2005). If this dominant perspective granted invaluable contributions to the knowledge of technology in a business context, it neglected other theoretical perspectives that could enrich our understanding of the phenomenon.

Accordingly, the purpose of the paper is to propose a critical review of research on technology adoption in a business context and to identify research avenues that could be springboard for future works. To this aim, we first analyze studies mainly conducted in business marketing complemented by relevant works in other areas (organisation, strategy, information systems) to show their contributions and limitations. Then we propose that research on technology adoption could benefit from a cultural perspective and we identify five areas for future research to broaden our understanding of technology adoption: institutionalisation and legitimisation of technologies, construction of meaning of technologies (sensemaking/giving), technology narratives, technological frames of reference, technology as ideology, enchantment of technologies.

OVERVIEW OF RESEARCH ON TECHNOLOGY ADOPTION IN BUSINESS MARKETS

Given the broad definition of adoption (intention to use and actual use of a technology over time), it comes as no surprise that research on the topic has taken various perspectives. Variety is found in the types of adoption behaviour explained: intention, adoption per se, mandatory adoption, use, satisfaction, and, at an aggregate level, diffusion (accumulated number of users of an innovation, Frambach and Schillewaert, 2002). Variety is also found in the unit of analysis: users within the organisation or organisations (interfirm-adoption) per se. Likewise, variety

can be seen in the theoretical frameworks used: Technology Acceptance Model (TAM, individual level; Davis, 1989), Unified Theory of Acceptance and Use of Technology (UTAUT, individual level; Venkatesh et al., 2003), Diffusion of Innovations (DOI, meso/macro levels; Rogers, 2005), Technology, Organisation, and Environment framework (TOE, firm level; Tornatzky and Fleischer, 1990), Integrative Framework of Technology Use (IFTU, individual level, focused on use; Kim, 2009).

Despite this, most research on technology adoption conceive adoption as a rational decision-making process influenced by several factors (Hertwig, 2012; Barret et al., 2013) and show little interest in the process of adoption itself (Seligman, 2006; Makkonnen et al., 2016). In this dominant perspective, research efforts aim at increasing the explanatory power via blending of theories Hernandez et al. (e.g. the compatibility factors, from DOI, is used with usefulness and ease of use, from TAM, in 2009), changing units of analysis Hernandez et al. (e.g. 2009), show that the significance of antecedents to adoption changes when dependent variable is intensity of use vs future use intentions, adding new constructs (e.g. Hunter and Panagopoulos (2015) analysis of commitment to technological change) or exploring new technology, functional and industry contexts (e.g. Guesalaga (2016) analysed the use of social media by the sales force). We provide an overview of this dominant perspective first, before highlighting its contributions and limitations. Then, we briefly review emerging research perspective with other theoretical and/or methodological underpinnings, whose findings enrich and enlarge the knowledge of technology adoption and use in business to business contexts.

A DOMINANT PERSPECTIVE: TECHNOLOGY ADOPTION AND USE AS A RATIONAL DECISION MAKING

Four theoretical models have been dominant in the literature and are the conceptual basis for many empirical research on this topic, our goal here is not to be exhaustive but to show the contributions and limitations of this dominant perspective. The developed models are based on user preferences predetermined by psychological predisposition to physical characteristics of the technology (Barret et al., 2013). Potential users evaluate the value of a technology based on their perception of its features and make a decision to adopt from the performance of the technology. The final aim of the models responds to foresee the adoption rate of technologies and forecast individual levels of technological diffusion. Table 1 proposes a summary of these models.

Technology acceptance model (TAM). It develops the constructs of perceived usefulness and perceived ease of use to determine individual intention to use a technological system, considering intention as the behaviour's predictor and the cognitive representation of a person readiness to perform a specific behaviour (Davis, 1989). TAM is the adaptation of the theory of reason action TRA developed by Fishbein and Ajzen (1975) applied in information systems.

The Diffusion of innovation theory (DOI), explores adoption and spread of innovations (Rogers, 2005). DOI model offers a description of the stages of innovation-decision process, analysing the effects of prior conditions, characteristics of the decision making unit and perceived characteristics of the innovation. DOI theory also proposed a categorisation of potential

adopters grounded on the individual personal innovativeness that guides a potential adopter to acquire an innovation faster than others. The author establishes some ideas regarding adoption in the organisational context that serve as basis to further research.

Technology, Organisation and Environment (TOE) framework, explores the process of technological innovation (Tornatzky and Fleischer, 1990) suggesting that the adoption of innovations is influenced by technology development, organisational conditions and industry environment. This framework is consistent with DOI theory of Rogers (2005) and also introduces the environmental context, presenting in that way multiple external elements that enhance or constraints the adoption of innovations.

Unified theory of acceptance and use of technology (UTAUT) consolidates constructs from eight existent theories to explain user intention and behaviour towards technology (Venkatesh et al., 2003). The model provides a tool to assess the likelihood of success for new technological introductions, helping to understand the acceptance drivers.

The commonality among the existent research based on the theoretical frameworks can be classified in four main categories: characteristics of the technology, characteristics of the organisations, external environmental factors and inter-firm relationships.

1. **Characteristics of the technology**. Research related to this category focuses primarily on intrinsic characteristics of the technology such as ease of use, perceived usefulness and compatibility. Several researchers have explored this category under different scopes. Kim (2009) developed an integrative framework of technology use, that analyses the ease of use through time and its effects in post adoption, understanding post-adoption processes as a management of human experiential memory. Moreover, Wixom and Tood (2005) assemble an integrative research that involves user satisfaction and technology acceptance in an effort to incorporate theoretical perspectives and empirical findings by applying conceptualisations of object-based and behavioural beliefs and attitudes. Furthermore, Lacka and Chong (2016) explore the usability of social media sites in business context, proving that the adoption is lead by the perception of usefulness and usability. Avlonitis and Panagopoulos (2005) analyse the antecedents of CRM adoption by salespeople showing and confirming that technology acceptance depends of the perceived usefulness and the ease of use. In the same manner, Schillewaert et al. (2005) analyse technology adoption by salespeople showing that its use is related to the perceived usefulness in the personal performance development. (Robinson et al., 2005) illustrate the positive impacts of technology adoption in salespeople performance enhancing the ability to adapt towards customers, offering a better adaptive selling experience. Lastly, Lee and Park (2008) show that mandatory adoption has negative effects in user satisfaction with repercussion on perceived usefulness of the product.

2. **Characteristics of the organisation**. Research developed under this category emphasises the impact of the organisational context in the adoption of technologies. Theoretical and empirical works show multiple organisational variables that can enhance or

diminish the intention to adopt technologies. Several scholars have addressed this topic under different perspectives. Frambach and Schillewaert (2002) developed a model of organisational adoption, addressing the adoption decision process at two levels; the organisational level which follows the path established by DOI theory and the individual adopter within an organisation, showing how individuals exert an influential power in the organisational adoption. On the other hand, Papastathopoulou et al. (2007) explored technological adoption at internal level, finding that cross-functional participation in the adoption decision enhances the diffusion and engages employees in the use of the technology. Additionally, the study proves that high levels of diffusion in marketing and sales have positive influence in other areas of the organisation augmenting the diffusion and effectiveness of the technological innovation.

Organisational readiness has been explored under this view by Vize et al. (2013), who analyse the concept of organisational readiness, proving that conditions as inexperience, trust and cost affect the readiness of a company and impede the adoption of technologies. Similarly, Son and Han (2011) examine the influences of technological readiness in post-adoption behaviour, showing that innovative functions have a positive impact on satisfaction and repurchase intention. In the same way, Srinivasan (2008) argues that technological adoption depends on the ability of an organisation to accept and incorporate technologies, naming this organisation ability as technological opportunism. Finally, Hernandez et al. (2009) assert the importance of training and education in the use of the technology, which impact the intensity of use and enhance the motivations for a quotidian use.

Specific organisational contexts are studied by Alshawi et al. (2011) who examine the adoption of CRM in small and medium enterprises (SME), arguing that technology adoption follows the same pattern than other adoptions. The study reveals that the only differential factor is the amount of investment in adoption of new technologies which is directly related to the size of the organisation. In the setting of family business, scholars explore how familiar influences promote or discourage technological adoption. König et al. (2013) argue that familiar firms are reluctant to acquire external technologies, which is attributed to attempts of the family members to avoid losing control over the companies' trajectory. (Kotlar et al., 2013), on the other hand, suggest that technology sellers should use an open approach, offering protective mechanisms that increase the control perception over the technology trajectory. Both authors highlight the difficulties presented in familiar firms in terms of faster recognition of technological needs, lack of aggressive investment and flexible implementation routines.

3. **External environmental characteristics** Studies under this category pay attention to elements outside the organisation and the technology per se that could impact the adoption of innovations. An important number of studies that aim to forecast technology diffusion can be classified under this category, due to the extensive analysis of external sources and influences. For example, McDade et al. (2010) make an attempt to improve the forecast of technology diffusion, arguing that different models should be used according to the

type of innovation. Besides, the analysis of diffusion through network structures shows the abilities of social networks to forecast diffusion rates and patterns among networks. Furthermore, Choi et al. (2010) develop a small-world network model that proves that diffusion of innovations is more likely to fail in a random network rather than in a highly clustered network of consumers.

Other scholars as Hertwig (2012) analyse external institutional and social factors like mimic, coercion and normative pressures that force technological adoption. In the same manner, Vowles et al. (2011) study multiple determinants as perceived characteristics of the innovation, organisation characteristics and external influences that occurs throughout the adoption process, proving that determinants vary between early adoption, later adoption or unawareness of the innovation stages. Likewise, Oliveira et al. (2014) identify the determinants of cloud-computing adoption developing a model that integrates internal characteristics of the technology with organisational and external factors, showing that assessment of new technologies through this blended model offer important insights that lead to adoption or rejection of the technology.

4. **Inter-firm relationships** These type of studies regard attentive the effects of inter-firm relationships in the adoption and diffusion of technology. Asare et al. (2016) propose the Technology Adoption in Supply Chain TASC framework that identifies the antecedents of successful inter-firm technology adoption, including internal and external factors that enhance the adoption of technologies in the context of supply chains.

   On the one hand, studies focus on commercialisation and network impacts; Chiesa and Frattini (2011) explore how commercialisation decisions influence consumer acceptance by affecting the attitude of early adopters. In the same way, Aarikka-Stenroos et al. (2014) analyse the impact of networks of commercialisation and contributions of the actors involved in this process, arguing that divergent network actors enhance the commercialisation by developing new markets for innovations, having a positive influence in the acceleration of further adoption by impacting attitudes and spreading knowledge related to the innovation which indirectly supports marketing efforts.

   On the other hand, research pay attention to the relevance of trust. (Obal, 2013) illustrates the relevance of trusty relationships in inter-organisational environments, proving that trust improve the rate of diffusion of a technology. Chien et al. (2012) explores trust in virtual environments such as e-marketplaces in B2B transactions arguing that perceived ease of use influence importantly user trust. Ruyterk et al. (2001) analyse the role of trust in customer relationships in high technology markets showing that trust, commitment and intention to develop long term relationships have a particular effect in the creation and maintenance of customer relationships. Besides, (Lee et al., 2012) study how information technologies contribute to the maintenance of customer relationships increasing trust embedded in the concept of predictability. Finally, Rampersad et al. (2010) show the relevance of relational factors such as trust on the development and management of innovation networks.

Research presented above provide a rich understanding of the decision making process involved in the purchase, diffusion and use of emerging technologies within and across organizations and of the moderating influences that may exist. Avenues of research in this perspective have already been mentioned (e.g. Venkatesh et al., 2003). But this perspective, however refined, can offer only a partial account of the phenomenon of technology adoption in business to business context. Recently, a few works, grounded in complementary theoretical and/or methodological approaches have begun to enlarge our understanding of this phenomenon.

THE EMERGENCE OF COMPLEMENTARY PERSPECTIVES

Research that try to shed new lights on technology adoption is more rare in the field of industrial marketing. We offer here a brief overview organised around three areas of research.

1. **Technology and the relational process between organisations**. Works here draw from the relational approach in business to business. Makkonnen et al. (2016) introduce a behavioural approach on organisational innovation adoption explaining how companies should match potential and actual need with potential and actual solutions through continuous adoption activities. Likewise, Makkonnen and Johnston (2014) enlarge the process to industrial network and the relations and interactions between actors.

2. **The making of technological markets**. Doganova and Karnøe (2015) illustrate the market shaping based on novel technological solutions that envisages markets as ongoing achievements, constituted by actors, practices and devices. In the same manner, Kjellberg et al. (2015) shows a social construction perspective on market innovations process, conceiving markets as ecosystems where societal, material and technical networks play ensemble in a mixture and balancing act between capturing new opportunities resulting from change and stabilising efforts to take advantage of it and turning in innovation results. Furthermore, Hertwig (2012) analyse how external institutional and social factors can coerced the adoption of technologies.

3. **The discursive approach to technology adoption**. Barret et al. (2013) present the impact of rhetorical discursive strategies exerted by the actors involved in the adoption process. Similarly, Lin and Silva (2005) argue that rhetoric is used in the construction of technological frames as a political process in which actors involved frame perceptions of the organisation towards technologies. Bessant et al. (2014) introduce the barriers of innovations and how frame shifting contribute to implement routines that are able to cope with this problems. Additionally, Hsu et al. (2014) added the concept of frame resonance to examine from a rhetorical perspective the discourse used by diverse actors inside the organisation and their influence in the sensemaking toward new technology and Seligman (2006) show the available relations between diffusion of innovation and sensemaking process.

These works allow the expansion of the research scope toward a cultural perspective, granting the inclusion of diverse factors that shape the way that organisations adopt technological

innovations. It is our contention that research on technology adoption could benefit from an extension of research along the lines of the works presented above. We try in the following section to present areas of research in what we call a cultural perspective, a movement already strong in consumer marketing (Arnould and Thompson, 2005).

TOWARD A CULTURAL PERSPECTIVE OF TECHNOLOGY ADOPTION

The endorsement of a cultural perspective focuses on the entangled web of meanings and significations that occurs behind the process of adoption and diffusion of technologies. Even integrative frameworks as Makkonnen and Johnston (2014) do not account for the socio-cultural context and processes in which technology supplier and their customers are embedded. Makkonnen et al. (2016) add the relational context between actors in their network approach, but the question remains of how their behaviour is crafted by the global sociocultural context, even if they mention the role of the social system. More precisely, we concentrate on five main areas, interrelated and partially overlapping, that deserve further attention, and that we summarise in five questions: How technologies are legitimised and institutionalised? How meaning is constructed? How narratives circulates, are produced and used by stakeholders? How technological frames are produces and used? How ideologies shape actors behaviour and relations? How enchantment of technology takes its part in the process?

INSTITUTIONALISATION AND LEGITIMATION OF TECHNOLOGIES

The adoption of new technologies in organisations belongs to a social construction process that involves multiple actors that influence the use and diffusion of the technology. Humphreys (2010) argues that "is necessary to understand the place of technological innovations within the larger and more complex process of industry legitimation, a process that involves cultural, social and material factors".

Institutionalisation has been defined as a legitimation process that is accompanied by a managerial discourse (Abrahamson, 1991), helping to embed an entity in the organisational logic and be part of the taken-for-granted assumptions (Zucker, 1991). This process is analysed by Green (2004) who explains the diffusion as a practice that depends on the discursive justifications used to rationalise it.

Geilser (2012) explores the creation of new markets as a legitimation process mediated by brands and argues that branding strategies foster innovation's legitimation by tailoring their emotional branding delivery to the exigencies of sociological translations. Humphreys and Latour (2013) and Humphreys (2010) analyse the cultural representation on consumer perceptions of legitimacy in the gaming and gambling context showing the influence of media in the framing process arguing that adoption and acceptance of an industry occurs through a social process of legitimation

Therefore, the comprehension of the legitimation process inside an organisation helps sellers to tailor marketing strategies that are able to engage multiple stakeholders and facilitate the

comprehension of the adoption to all the organisation. A grasp of legitimacy dynamics gives to the seller tools to develop narrative strategies to explain the innovations to different stakeholders allowing to easily navigate through complex regulatory societal environments (Humphreys and Latour, 2013). Consequently, this process is determinant for the adoption or rejection of innovative technology and how it will fit in the society.

Likewise, legitimation strategies have been explored through the lens of discursive and rhetoric, arguing that they play a central role in this process and the use of rhetorical strategies complement and enhance the process of institutionalisation. Vaara and Tienari (2008) affirm that, through textual strategies, particular interest in the organisations can be reproduced or silenced in order to adapt managerial positions in controversial situations. Similarly, Suddaby and Greenwood (2005) consider that rhetoric is used to create and maintain ideological and meaning systems within the organisation allowing to control institutional elements as agency, conflicts and power.

Therefore, rhetoric can be seen as a valuable way to understand technological diffusion. Scholars try to understand discursive influences exert by the actors involved in the adoption and diffusion process. The rhetoric practice explains how the phenomenon of diffusion is linguistically afforded and is discursively constructed into reality (Hsu et al., 2014), allowing to discern discursive influences from social and contextual ones that affect the adoption process.

Nevertheless, the literature on this topic is still modest. Some researchers as Barret et al. (2013) illustrate the discursive influences exert by the actors involved in the adoption-decision process, arguing that discourses encompass ideologies, fully charged of ideals, interests and power, that are manifested as rhetorical frames that shape actions. As consequence, technologies are interpreted and adopted or rejected, based not only on performative characteristics but through the effects of deep social structures encompassed in ideological discourses of diverse actors involved. In a similar way, Elliot and Kraemer (2008) recognised the role of discourse and brought new concepts as technological action frames to understand technological diffusion process. Lin and Silva (2005) argue that rhetoric is highly used in the construction of technological frames as a political process in which stakeholders involved frame and re-frame perceptions of the organisation towards technologies. Furthermore, the rhetorical approach illustrates how cognitive limits grant the use of discourse by managers to construct organisational problems, solutions and goals Green (2004). Thus, the goal of rhetorical strategies is to facilitate change in institutional practices. Brown et al. (2012) argue that power is employed as a strategy to legitimate the institutional logic and grant the setting of arrangements and policies implicated with change and adoption of new managerial practices.

The power of the rhetorical perspective rests on the assumption that adoption processes of new technologies are not based on the effectiveness and the benefits offered by the technology. It is just necessary that the buyers believe the innovation is beneficial (Strang and Macy, 2001). Benefits can be constructed through persuasive discourses by different actors throughout the entire adoption process (King and Kugler, 2000), offering the possibility to the organisation members to rationalise the institutional changes, finding and giving means to the managerial decisions, in order to legitimise them.

We propose the following research question in order to provide further guidance regarding the strategies that could be used to legitimate technology: What kind of marketing strategies are useful to legitimate the adoption of technologies among actors of network business?, Which are the impacts of legitimation in business networks? How spread legitimacy of new technological innovations? Could discursive strategies more effective than narratives to legitimacy innovations?

THE CONSTRUCTION OF MEANING OF TECHNOLOGIES (SENSEMAKING AND SENSEGIVING)

Sensemaking refers to the processes by which individuals interpret and produce meanings of the lived experiences (Weick, 1995), giving primacy to the search for meaning as a way to deal with uncertainty (Mills, 2003) in a construction of the unknown. It is an action oriented procedure that involves retrospective reflections of the situations to rationalise them (Brown et al., 2015). Through sensemaking people is able to create their social world, where negotiated positions take place in a communal construction of meanings (Brown et al., 2008), filtering and framing them into specific cognitive structures that encompass knowledge and expertise creating plausible stories that need to be redraft several times, allowing the translation of the subjective unknown into a more tangible and social construction.

Sensemaking can be viewed as a significant process of organising. sensemaking unfolds as a sequence in which people concerned with identity in the social context of other actors engage ongoing circumstances from which they extract cues and make plausible sense retrospectively, while enacting more or less order into those ongoing circumstances (Weick et al., 2005).

The research of sensemaking in business marketing focuses on how organisational actors create cognitive structures to select, process and interpret relevant information as guidelines for take actions (Gioia and Chittipeddi, 1991). This idea has been conceptualised as *Network pictures* a concept developed by Ford et al. (2011) which tries to analyse and explain how actors embedded in a business network make sense of their actions, relationships and the cognitive structures that rule and affect the network outcomes and the relationships. Likewise, Colville et al. (2012) examine how network pictures help actors to deal with complexity and uncertainty of the context, serving as a guide to their actions and possible outcomes.

A second focal point on the research available on sensemaking in industrial marketing is related to the interplay between organisational cognition and action. Araujo and Kjellberg (2015) affirm that coordination processes depend on the development of common grounds of action, proving, therefore, that a link between the shared cognitive structures among actors is a guide for future coordinated actions. Additionally, Hopkinson (2015) examines the performative role of sensemaking in business network through the metaphor of a Graffiti, suggesting that sensemaking process is an ongoing dynamic construction of the world that occurs as a result of social interaction. Finally, Cederlund (2015) aims to guide future research in comprehending the interaction between cognition, action and outcomes in business networks through the extension of the typologies to analyse organisational change.

Another perspective on the study of inter organisational process of social sensemaking is approached by Medlin and Törnross (2014) who analyse the adaptive process of sensemaking among the actors of business networks, showing that existent relationships are in a continuous change where managers make sense of the network structure with the aim of enhance the firm's interest.

Nevertheless, sensemaking processes have not been widely addressed in the context of technological adoption or innovation in industrial markets. Few examples as Seligman (2006) make an effort to match the stages of diffusion innovation model with sensemaking properties trying to provide a richer comprehension on how innovation's adoption occurs. The author argues that adoption process commence with the formation of initial perceptions and symbolic representations of the technology and continuous with a series of sensemaking cycles that pretend to change or modify perception that lead to the adoption of rejection of the technology.

Notwithstanding, Mattsson et al. (2015) emphasise the lack of consensus on how sensemaking is formed through interaction and how collective views are achieved despite the theoretical and empirical progress reached by researchers in the business marketing context.

Therefore, sensegiving and sensemaking are unexplored territories that could provide valuable tools to understand the drivers of technology adoption processes in industrial markets. As consequence, we propose the following research questions that might encourage the development of these fields: How do sellers give sense of new technological markets in industrial contexts? How could sellers guide sensemaking processes to increment the adoption of technologies? How do buyers make sense of the benefits and impacts of the new technologies?

TECHNOLOGY NARRATIVES

Narratives have deeper repercussions in the adoption of technologies as a tool that gives sense to innovations and as an element that encompasses expectations, experiences and articulates sequentially the multiple exchanges between buyers and sellers. "Narratives are forms of discourse, vehicles of ideology, and elements of collective action frames, but unlike all three, they can be identified in a chunk of text or speech by their formal features" (Polleta et al., 2011). Likewise, Humphreys and Brown (2008) understand narratives as "specific, coherent; creative re-descriptions of the world, which are authored by participants who draw on the (generally broad, multiple and heterogeneous) discursive resources locally available to them".

A narrative is created by a narrator who develops a structured story, consisting of a beginning, middle and end, where the narrator introduces in-cohesive experiences by choosing relevant elements and integrating them into an entire and cohesive entity (Czarniawska, 2004; Elliot, 2005). The plot connects the events, activities and characters in a coherent structure that account a series of events in the order in which they occurred to make a point (Polleta et al., 2011; Araujo and Easton, 2012). Furthermore, the narrative requires a story that raises unanswered questions, presents unresolved conflicts, or depicts a not yet completed activity; characters may also encounter and then resolve a crisis or crises (Green and Brock, 2000). In Bruner (1986) words, "Narrative deals in human or human-like intention and action and the

vicissitudes and consequences that mark their course. It strives to put its timeless miracles into the particulars of experience and to locate the experience in time and place".

The power of narratives relies in the ability to transport the story receivers to different temporal and spacial scenarios. A reader which is able to resonate with the story can be transported to the narrative world where processes of interpretation are enacted in the story receiver mind based on prior experiences and knowledge. The capability to empathise with the story and the characters is what produces a memorable and transforming narrative experience. Van Laer et al. (2013) argue that stories constitute a central part of human life and consumption experiences. In their work they make a compelling recapitulation of the existent literature in narrative transportation and consider new elements as the relationship among storyteller and the story receiver. Meanwhile, Green and Brock (2000) show that narratives are processed in a different way that cognitive elaborations and the power of the narrative lies in the experiential component as well as a melding of cognition and affect.

Narratives work in a more subtle level than the rhetorical discourse, however, they give extra tools to obtain actions from the audience. Green and Brock (2000) offer a differentiation between rhetorical communications and narratives. Rhetoric is influenced by framing: the impact of the discourse is affected by the speaker credibility. In contrast, when a reader is transported by a compelling narrative regardless if the narrative corresponds to the reality, the source lose their influence. "Thus, narratives might be used to advantage by low-credible sources or by speakers who lack cogent arguments". Hamby et al. (2015) extent the research on narrative transportation studying the attitudinal influences of story based online reviews. This research shows that minimal narrative structures are able to evoke transportation and emphasise their possible uses for companies in the elaboration of marketing strategies that allow deeper connection with the brand. Finally, Escalas (2013), concludes that narrative strategies lead to a positive evaluation of products that are advertised, without paying attention to the argument strength. In contrast, cognitive elaborations only lead to favourable evaluations towards the brand and the advertisement when the argument is robust.

Narratives in marketing have been used in four different fronts: selling narratives, strategical insights, innovation and product development. The literature in selling narratives focuses on comprehending the role of stories in personal selling, their impacts in the buyer-seller exchange and their effect in the network (Gilliam and Flaherty, 2015; Lacoste and La Rocca, 2015; Makkonen et al., 2012; Araujo and Easton, 2012). Among the benefits found in the literature, we emphasise the virtue of narratives to transport the audience (Green and Brock, 2000; Polleta et al., 2011) engaging the audience and reducing counter arguments from the buyer side (Gilliam and Flaherty, 2015). Furthermore, recent studies developed by Cayla and Arnould (2013) and Cayla et al. (2014) prove the contributions of narratives to ethnography and their functionality to obtain market insights. The authors argue that narratives and ethnography can reveal new market opportunities and help executives to rethink previous assumption about markets.

Likewise, narratives contribute to innovation and product development. Bartel and Garud (2009) illustrate the benefits of narrative in this field "narrative plays a key role in resolving the

coordination problems in innovation", enabling translation of ideas, reducing ambiguity and the incorporation of organisational history into relevant and current meanings that guide innovation efforts. Additionally, Van den Hende and Schoormans (2012) describe how product narratives provide valuable input from customers in the pre-development phase of a new product. The authors argue that a narration can predict evaluations of the product and if the narrative creates a sense of transportation could even replace temporarily the need of a prototype.

In the same manner, narratives contribute to the establishment and development of trusty relationships, having impacts in business networks. On the one hand, sellers develop narratives that give sense to the novel technologies while explaining the benefits and trying to persuade prospective buyers. On the other hand, buyers deconstruct those narratives to make sense of the technology, assigning meanings, doubts and expectations that serve as a material to reconstruct a new narrative that is congruent with the organisation and permit gain legitimacy among internal and external actors. Those narratives created by the dyad buyer-seller are are nurtured throughout the multiple interactions between the parts in an ongoing process of give and make sense of the technology.

An interesting avenue of research has been pointed by Lacoste and La Rocca (2015) who highlight the possibilities to analyse the narratives in the interactive co-creation process. Stories in this context play an important role in mutual learning and teaching in seller-buyer relationships in business markets (Komulainen, 2014) and contribute to the construction of collective and participative sensemaking process (Haas et al., 2012).

In that manner, we could argue that the implications of narratives are significant and have repercussions among multiple members of a business network. The use of narratives contribute to increase the "hype" of a specific technology, implying that sellers could obtain a leverage based on the narratives that move around the network. In the same way, buyers and network partners try to read through the "hype" to avoid technological fads.

In summary, narratives are an important tool for the development of marketing strategies that are able to drive technology adoption. Therefore, we propose the following research questions to expand the knowledge on this field: How do narratives allow the articulation of business relationships towards the adoption of technologies?, Which are the effects of using narrative strategies in business networks? Do they offer any kind of leverage? How buyers decode those narratives to give sense of the new technology offered?

TECHNOLOGICAL FRAMES OF REFERENCE

The frame concept according to Haselton et al. (2005) refers to the process by which people and communities conceive interpretations of a specific situation or modify their conceptions about an existent issue. For Gioia and Sims (1986) frames, refer to "definitions of organisational reality that serve as vehicles for understanding and action". Frames include assumptions, expectations, specific knowledge and previous experiences used by a person to understand his surrounding and conferring meaning to ambiguous situations. They can be expressed in a variety of forms in the organisations.

The frames are flexible and adaptable through time. Their structure and content can be modified according to the context, adding a new set of meanings to adapt to new realities. They can be compound by a number of stories. However, frames are key references to comprehend underlying narratives of a social groups (Bennett and Toft, 2009). Additionally, frames allow to reduce uncertainty in change situations giving the possibility to make an interpretation through the organisational lens providing a course of action.

Orlikowski and Gash (1994) extrapolated the frame concept, rooted in social cognitive research including aspects of collective cognition and social construction of technology and applied to the technological field, aiming to understand how individual cognitive structures shape the process of technological adoption, using the concept of frames as shared cognitive structures. The authors developed the concept of *technological frames of reference (TFR)* to examine how people adopt technology in organisations through individual frames, analysing, at the same time, the nature of the technologies itself and the contextual influences. In other words, this approach studies interpretive individual processes within organisations and their relation with technologies and its context.

Therefore, the technological frames of reference offer a useful analytic perspective to explain and anticipate actors agency in the organisations, discovering how diverse groups inside the organisation developed dissimilar meanings towards technology according to their expectations.

These frames are relevant and have been used as a base for other researches as Davidson (2002) analyses the determinants factors of the stakeholders in the definition of requirement and their application in other contexts, Hsu et al. (2014) added the concept of frame resonance to examine from a rhetorical perspective the discourse used by diverse actors inside the organisation and their influence in the sensemaking toward new technology. Furthermore, Lin and Silva (2005) studied the political and social influences exert in the construction of technological frames. Finally, Walsh (1995) argues that frames are resistant to modifications, nonetheless, relevant changes in the context can trigger shifts that comes with new knowledge and will modify the sensemaking process of technology adoption allowing the re-framing process. Bessant et al. (2014) present barriers of innovations and how frame shifting contribute to implement routines that are able to cope with this problems.

Nonetheless, the available literature does not offer a clear path regarding strategies to find a perfect frame alignment, however, the majority of the authors indicate that the design of effective communications is a useful tool to achieve consensus between the parts and obtain engagement. The following questions intend to expand the research on this topic applied to industrial markets: How could sociocultural elements be used within marketing strategies in order to provide a frame alignment that facilitates the adoption of technologies in industrial markets? Could industrial marketing offer a new perspective that contributes to frame alignment?

TECHNOLOGY AS IDEOLOGY

The analysis of ideology as an avenue of research is rooted on the conception that ideologies are a common horizon to see the world, created in a social process of heritage where beliefs are shared to form social practices that are embedded in institutions and thus in organisations (Homburg and Pflesser, 2000). Therefore, we examine the implications of ideologies in consumption through the lens of consumer research with the aim to expand this field in business marketing research. We regard specially the idea of technological consumption and paradoxical technology consumption.

Press et al. (2014) examine the role of ideologies in strategical changes, proving that in specific cases strategic orientations respond to ideological conceptions, and these ideologies are regulatory sources of legitimacy embedded in cultural-cognitive process. Likewise, the authors propose that managers that recognise conflicting ideologies are able to obtain greater success in the introduction of new products. Appealing to ideological conceptions allows to obtain higher levels of commitment from the actors involved in a cultural cognitive process of legitimacy that can be started by institutions.

Kozinets (2007) presents the concept of technology as an ideology, contributing to the idea of technological consumption, by describing four main ideologies that shape technological consumption and arguing that cultural forms influence the adoption of innovative technologies. The author defines ideology as "systems of meanings that tend to channel and reproduce consumers thoughts and actions". This work analyses consumers technology consumption narratives, arguing that "people are not just consuming technological gadgets as gizmos, they are consuming the ideology of technology itself". The consumers appeal to ideologies where they assume a position that gives a sense of personal and social identity. "Technology ideology is represented as a particular ideological field constituted as a family of four ideological elements that are themselves anchored by four institutionalised nodal points". The author, highlights that ideological nodes can coexist in modern technological societies even if they present paradoxes in terms of morality or/and individuality.

The semiotic square presented by Kozinets (2007) examines the relationships between paired concepts. The model presents four different ideologies; *technopian, green luddite, work machine and techspressive* anchored by institutionalised nodal points that assign and fix meanings and articulate ideological elements. The author emphasises that "nodal point self-referentially, tautologically and performatively specify a particular supreme good, and by articulating that good to technology they fulfil the evaluative, institutionalising function of ideology". Kozinet's work provides insights in the effect of ideological influences in technological consumption, simultaneously, illustrating that the origin of ideologies is related to cultural myths, perceptions and prior experiences with technology. The model allows the comprehension of how ideologies can define the level of interaction with the technological innovation. Therefore, ideologies play an important role in the development of technological consumption, helping to assign individual and collective meanings towards innovations and finally, contributing to the creation and development of narratives that resonate at a deeper level with consumers.

Mick and Fournier (1998) examine paradoxical consumption of technology, explaining eight main paradoxes that exist and occurs in routinely settings. Thus, cultural myths and narratives of technologies put together both sides of the paradox, showing simultaneously benefits, drawbacks and threats of technology. The majority of those myths explain the concerns of the technological future and the domain of the technology over humanity, offering a moral compass and establishing some guidelines of the barriers that technology should not cross.

Although, this study is developed under the perspective of consumer research, it offers valuable insights on individual consumption of technologies that need to be validated in business marketing setting. Doing this, the study of ideological influences can be extended from individual levels to collective, societal and organisational settings, allowing to enlarge the knowledge of ideological postures and impacts in technological adoption in business markets.

We propose the following questions that could enhance the comprehension of ideologies towards technology in business markets: How individual ideological postures can affect the adoption of technologies in business networks?, How the recognition of conflicting ideologies contribute to the entrance of new technological products? How organisational ideologies towards technology can be shaped to increase the adoption of innovations?

ENCHANTMENT OF TECHNOLOGY

The concept of enchantment primarily comes from anthropological sciences and is intrinsically related to the concepts of magic and religion, subsequently carrying the process of disenchantment and re-enchantment, which are related to economical and political changes that affect the way people consumes. An initial definition was developed by Gell (1992) "...the power that technical processes have of casting a spell over us so that we see the real world in an enchanted form". This explanation relies on the viewer's power to assign meanings to objects, granting attributes and enchanted characteristics to them. Moreover, the author includes the idea of magic as an accompaniment to uncertainty but also distinguish that magic is not an opposite of knowledge.

For Bennett (2001) to be enchanted is to participate in an experience that generates a sensation of temporary suspension which brings disorientation and excitement. Enchantment is associated to the sense of fullness and liveliness where the senses are sharpened and the concentration is at the maximum level, due to the nature of the experience. Hence, it requires an active engagement with the object. Two elements are mandatory for the creation of enchantment: "First, a pleasurable feeling of being charmed by the novel and as yet unprocessed encounter and second, a more unheimlich (uncanny) feeling of being disrupted or torn out of one's default sensory-psychic-intellectual disposition".

Arnould et al. (1999) explore the role of magic in consumption experiences, shedding lights on the internal characteristics of the magical system; the evocation of hope, optimism and confidence. In their work, they enquire the case of rafting trips in the wilderness, which brings elements of ritualisation, magic, rhetoric, narratives and consumption. They describe how

individuals grant meanings to experiences and objects, based on a symbolic relation between the environment and the events they live, transcending modes of thought and agency.

The process of disenchantment responds to the consumption society and the lost of magic in modern economic models, therefore, humanity seeks avidly a sour of enchantment that offers transcending meanings to their lives (Ritzer, 2010). The consumerist culture tries to evoke and recreate this sense through material objects, Baudrillard (1970) considers that consumption can be seen as a magical thinking which is constructed through a sense of happiness given by the objects, allowing the consumers interaction with the real world as a relation of curiosity. Therefore, in a disenchanted world the economic model will be forced to recreate the sense of enchantment in consumers to attract them, being able to preserve the cycle of consumption. Landy and Saler (2009) suggest that the progressive disenchantment of the world has been accompanied by its continual re-enchantment, and this is a cyclic process that occurs consciously and is part of the consumption model. According to Firat and Venkatesh (1995) the search for re-enchantment is one of the causes of the development of consumer societies.

An attempt to return to prior enchantment stages is proposed by Ritzer (2010), who recognised the development, recreation and simulation of enchantment and disenchantment in modern consumer cultures and the implications of cultural referents in order to introduce re-enchantment in a stable cultural order. Nevertheless, Ostergaard et al. (2013) criticise Ritzer's work, arguing that the world can not be re-enchanted in terms of returning to values that previously existed, recognising that disenchantment process was a requirement of modern progress as a threshold to evolve in the era of rational, scientific and technological achievement, bringing with it a state of prosperity and wealth being. Therefore, modern enchantment depends in the imaginative aspect of the individual, arguing that pleasure do not resides in the object itself, but on gratifying meanings developed by the consumer towards the object (Campbell, 1983).

Equally, Campbell (1983) emphasises the need of a new perspective that allows the comprehension of re-enchantment in the modern consumer who is an individual that does not fight against the modern consumer society, basing his pursuit of enchantment in an imaginative pleasure given by the self-assign meanings to the experiences. Therefore, we assume that re-enchantment is directly related to the experiential aspects of the modern world.

A perspective regarding how technology brings a re-enchanting experience is presented by McCarthy et al. (2006) who explore the uses of enchantment concept to facilitate interactions between people and technologies, considering that enchantment is enacted to ongoing and active interaction between technology and users, that allows the creation of a sense of living with and through technologies. The authors recognise the enchantment as the experience that people may desire in the devices used by them. In addition, Blythe et al. (2004) present different tools that help to achieve enchantment using concepts such as creation of meaningful experiences, relationship between human and the device, enjoyment and the concept of fun, emotional responses and the construction of narrative experiences in the development of technologies.

We explored the contributions of the enchantment concept in technological consumption, finding that enchantment contributes in two directions, the first one is related to increase the

expectation of the product and, therefore, has a direct impact in the increment of the hype. The second direction refers to the development of long-term relationships in the business to business context. In the seller-buyer exchange, if the buyer desires to reach the expectations promised by the seller, it should be necessary to establish a durable relationship in order to achieve the expected state of the technology. However, empirical work on this field is still limited, becoming an important research opportunity to address.

The following research questions are aimed to extend the comprehension of enchantment in technology adoption and expand empirical research within business markets: Are buyers perceiving innovative technologies as enchanting products?, Do promoting technologies as enchantment elements contribute to the adoption and diffusion of technologies? How enchantment can contribute to enhance marketing strategies focus in industrial markets?

DISCUSSION AND CONCLUSION

Our review of the existent literature suggests that the research on the subject is dominated by a rational approach, and developed under four main theoretical models (TAM, DOI, TOE and UTAUT). These models address four common attributes (intrinsic characteristics of the technology, the organisational context, the environmental influences and the effects of the relationships inter-firms). We highlight few attempts drawn under an alternative perspective that elucidate the need to open the door to new sciences and theories that might be able to deeper explain the phenomenon. This approach brought important insights that fashion the way that scholars and managers face and understand technology adoption nowadays. However, we consider that a profound sociocultural perspective is required in business markets to understand how contextual and cultural elements permeate individuals and organisations, affecting the construction of meanings and influencing technology adoption processes in industrial markets.

Each one of the avenues of research provides interesting insights that can be extended to the industrial marketing setting. The comprehension of how sellers construct and assign meaning towards technology (sensegiving) could offer ideas that can enhance marketing strategies to increase the rate of technological adoption. Likewise the understanding of how buyers make sense of novel technologies (sensemaking) will permit to obtain a deeper knowledge of the motivations that drive technology adoption. To this aim, we propose three research questions that can encourage research on this field. How do buyers make sense of the benefits and impacts of the new technologies? How do sellers give sense of new technological markets? How could sellers guide sensemaking processes to increment the adoption of technologies?.

Likewise, obtaining a deeper understanding of the cultural forces that shape ideologies in business markets will enhance the possibilities to develop marketing strategies that fit with belief systems of specific clients, reducing in that way counter argumentation and facilitating the entrance of new technologies. The study of ideologies in consumer research has shown the power of ideologies fashioned by cultural settings and how companies could address and manage cultural ideologies to introduce its products. Therefore, we suggest the following research question that serve as a springboard on this subject. How individual ideological postures can

affect the adoption of technologies at organisational level?, How the recognition of conflicting ideologies contribute to the entrance of new technological products? How organisational ideologies towards technology can be shaped to increase the adoption of innovations?

New technological innovations present a certain halo of magic, an enchanting property that encourage the discovery of the product, we argue that this property enhance the adoption of technologies. With recent innovations such as Internet of Things or cognitive systems we observe how manufactures of these technologies elucidate the use of the innovation in industrial settings using the enchanting properties of the novelty. Empirical research on this field is still limited, becoming an important research opportunity to address. Therefore, we offer the following questions. Are buyers perceiving innovative technologies as enchanting products?, Do promoting technologies as enchantment elements contribute to the adoption and diffusion of technologies?

The study of legitimacy permits the exploration of the processes of adoption, use and diffusion inside the organisations. The comprehension of the forces involved in this process at business levels grants the possibility to developed tailored marketing strategies that are able to navigate among the different actors involved, facilitating at the same time the comprehension of the innovation that leads to enhance the rate of adoption and the posterior institutionalisation of the technology. We recommend the following questions to expand the knowledge of legitimacy and institutionalisation of innovations. What kind of marketing strategies are useful to legitimate the adoption of technologies among actors of network business?, Which are the impacts of legitimation in the business networks? How do spread legitimacy of new technological innovations in business networks? Could discursive strategies be more effective than narratives to legitimate innovations?

The comprehension of the technological frames allow the possibility to understand cognitive processes that occur within the organisations and to identify how actions taken within companies are guided by organisational reality. Therefore, the achievement of an alignment between the technological offer and the organisational frame of reference will increase the rate of adoption of the innovation. We propose the following questions that could lead to empirical and theoretical research on this topic. How could sociocultural elements be used within marketing strategies in order to provide a frame alignment that facilitates the adoption of technologies in industrial markets? Could marketing offer a new perspective that contributes to frame alignment?

Finally, we explore the idea of narratives as a tool to enhance technology adoption due to its ability to transport the story receiver to narrative worlds. Narratives also are are able to give sense to new technologies in a subtle way, that encompasses individual and collective elements (such as ideologies, expectations, doubts and paradoxes) where processes of interpretation are enacted in the story receiver's mind based on prior experience and knowledge. This transportation effect allow the audience to feel engaged and seduced by the enchanting power of the story. The level of engagement with the story is what at the end produces a memorable and transforming narrative experience, having direct impacts in the way organisations adopt

technologies. Recent marketing strategies developed by technological companies affirm our assumptions in the usefulness of narratives in industrial markets. Therefore, we advocate for the exploration of some elements that we presented below. How do narratives allow the articulation of business relationships towards the adoption of technologies?, Which are the effects of using narrative strategies in business networks? Do they offer any kind of leverage? How buyers decode those narratives to give sense of the new technology offered?

In conclusion, the main point of the paper is to plead for the need to open research on technology in business market to sociocultural perspectives. Doing so, scholars could find a broader field of research that might offer countless insights and new perspectives of the phenomenon. For managers, the use of a cultural perspective in the development of marketing strategies could lead to achieve a higher level of engagement and identification with customers and even reduce counter-argumentation achieving higher rates of technological adoption in organisations.

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Theoretical models of technology adoption		
Study	**Description**	**Functionality**
DOI Theory Rogers (2005)	DOI offers a model that describes the stages of the innovation-decision process and analyses effects of previous conditions, characteristics of the decision making unit and perceived characteristics of the innovation.	Potential adopters can be classify according to their personal innovativeness showing their potential speed to acquire new innovations.
TAM Davis (1989)	This model explains technology user acceptance behaviour by individuals assuming that perceived usefulness and ease of use impact the intention to use a system. The intention of use precedes the actual system usage.	Its functionality relies in the explanation of how users come to accept and use a technology and forecast technological adoption based on their intentions.
TOE Framework Tornatzky and Fleischer (1990)	Offer a framework that extend DOI, it takes the technological aspect, the organisational context and includes the environmental influences that enhance or constrain the adoption of innovations.	This framework allow the analysis of the innovation at three levels permitting to study the adoption and assimilation of technological innovation.
UTAUT Model Venkatesh et al. (2003)	Four main constructs; performance expectancy, effort expectancy, social influence, and facilitating conditions which are moderated by age, gender, experience and voluntariness of use. All the elements impact the intention to use a system.	The model provides a tool to assess the likelihood of success for new technology introductions and helps to understand the acceptance drivers.

Table 1: Theoretical models regarding adoption of technologies