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# VALUE CO-CREATION AND SOCIAL NETWORK ANALYSIS ON A NETWORK ENGAGEMENT PLATFORM



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## ABSTRACT

**Purpose:** The study identifies value co-creation resulting from the influence of relationships, using the DART model, on an engagement platform in a specific network of companies in the Great ABC Region, which does not allow competition, that is, only one company by activity sector and contemplates different business segments with the objective of mutual benefit.

**Originality/value:** A gap in theory regarding value co-creation based on the relationship in the cooperation network with different segments, in which clients are independent organizations.

**Design/methodology/approach:** The research is a descriptive case study of a network named co-creative. The data were obtained from the centrality and density metrics, from the social networks analysis (SNA), besides the information obtained from the document analysis, the non-participant observation technique and interviews with the network components.

**Findings:** There were 12 results of co-creation of values, of which five were completed: development of Biblical APP, personal marketing for digital media, opening of a company in search of financial resources, digital marketing with animation for corporate videos and Coaching specialized in self-esteem for men and women. These results of co-creations were analyzed based on the relationships of the engagement platform provided by the network. Another six co-creations are underway and one under study.

## KEYWORDS

Value co-creation. Business networks. DART model. Social network analysis. Engagement platform.

## 1. INTRODUCTION

Value co-creation is a recent approach in the study of company networks. In the Business Administration field, this concept is researched within companies and their clients while designing a product and/or service. In this research, the phenomenon of co-creation is identified as a result of the social network analysis (SNA) in a specific network of companies (engagement platform), which begins with the indication of clients and/or partners for the companies that participate in it. The analysis of value co-creation, carried out through the Dialogue, Access, Risk/Benefit and Transparency (DART) in the engagement platform (P), which is the basis of the DARTP on networks, focuses on the relational aspects established between social actors, understood here as the owners of the companies that form the co-creative network of the Greater ABC Region.

The DARTP concept means the migration of the traditional model of the product and/or service creation structure between companies and clients to the value co-creation experience, in which companies (represented by the owners) participate of the creation through the personal engagement. The engagement platform (Ramaswamy & Ozcan, 2014; Saraceni, 2015), offered by the co-creation network, emerges as an opportunity in a market with fierce competition (Porter, 2008), which faces an environment of uncertainty that provides interactivity between providers and consumers through a different way of thinking about the development and acquisition of a product and/or service, as a result of the sharing of ideas, information, infrastructure, technology and even labor (Prahalad & Ramaswamy, 2004a, 2004b; Verschoore & Balestrin, 2008).

Payne, Storbacka, and Frow (2008) point out that value co-creation occurs as processes that provide information to the organization through tasks, mechanisms, activities, procedures, and interactions. The interaction, originated from this process occurs between people and companies, distinguishing itself as an environment with interconnection among those involved, which characterizes a network on a platform.

Through the above, the question arises: “What business indications result in value co-creation in the interaction between a certain actor and the other associates of a network of companies, in order to increase and/or create a new business, product, service?”.

Thus, the following objective is proposed: to identify the results of the value co-creation based on the influence of relationships using the DART

model in companies' network engagement platform of the Greater ABC Region.

The relevance of this study, which was carried out in a network referred to as "co-creative", is justified by its international nature, for being vastly known and reputed and for not admitting competition among the participants. Besides, the network has an atypical business environment that is formed by companies that can assume the role of customer (consumer) and/or company (provider), due to the fact that it allows the formation of a co-creative engagement platform, identified here in the DARTP model. The social network analysis helps in the understanding of the process of co-creation that can be generated with the engagement between two or more actors. This understanding can provide insights for studies on other types of networks or platforms.

The structure of this article begins with the introduction, the development of the theoretical framework about DARTP and the social networks analysis, the methodological design, the analysis of the results and ends with the final considerations.

## 2. THEORETICAL BACKGROUND

### 2.1. Value co-creation based on DART model

In the traditional model, companies create a product and/or service and offer this value to customers. In the co-creative model there is an integration between the consumer (client) and the developer (company), that is, a bilateral action is possible to create value together, which is called value co-creation (Prahalad & Ramaswamy, 2004a, 2004b; Troccoli, 2010; Fisher & Smith, 2011; Troccoli & Altaf, 2012).

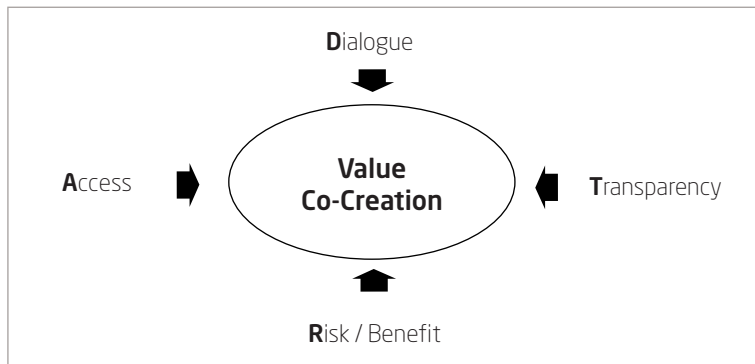
The value co-creation is analyzed by Prahalad and Ramaswamy (2004a, 2004b) through the DART model with its four components: Dialogue, Access, Risk/Benefit and Transparency, according to Figure 1.

In the DART model, Prahalad and Ramaswamy state that:

**Dialogue** deals with communication between the client and the organization and causes the value co-creation process to be observed by action and reaction. For example, the client has an action when reporting an experience and the company a reaction to analyze the solution (Prahalad & Ramaswamy, 2004a). Dialogue becomes a multidirectional flow in search of new discoveries, ceasing to be just an exchange of words to supporting

the process of value co-creation by developing a base of interaction between those involved that enables creativity and innovation with mutual learning (Ballantyne & Varey, 2006).

(Figure 1)  
DART MODEL



Source: Adapted from Prahalad & Ramaswamy (2004a).

**Access** is the availability and reach of knowledge and information in the interactions between actors focused on understanding and analyzing the risks and benefits about the decision-making. It is an information approach, error-free, relevant, transparent and opportune that is used to obtain quick answers, making it fundamental to anticipate and revoke potential problems in markets with so many uncertainties (Prahalad & Ramaswamy, 2004b; Silva, 2014).

**Risk/Benefit** is an assessment related to the expansion of alternatives that result from obtaining relevant and even confidential information in the development of a product and/or service that is shared between the client and the organization in the integration for the development of the value co-creation process, which includes confidential informations, reports of experiences and risks in economic transactions (Prahalad & Ramaswamy, 2004a, 2004b; Maglio & Spohrer, 2008; Sanchez & Albertin, 2009; Da Silva, 2014).

**Transparency** is considered a critical component, since hiding technological or business information about services and/or products can jeopardize the development of trust between stakeholders, which is a fundamental condition to consolidate the development of the value co-creation process (Prahalad & Ramaswamy, 2004b).



The combination of the components of the DART model, which facilitates the integration of the client and the organization, together with their experiences and relationships, in the context of the interactions also allows the engagement among those involved in a network, in order to enable the value co-creation.

The value co-creation process has several benefits for both the company and its clients, and especially the provision of new opportunities to the companies (Frow, Nenonen, Payne, & Storbacka, 2015). The authors raise some questions such as: which is the process or which are the tools that facilitate the co-creation or its identification? They also point out that the proposed models do not exploit all the dimensions and categories of the process and, thus, propose a co-creation structure that contemplates the reasons and the forms of co-creation, actors, platforms and different levels of engagement.

## **2.2. Engagement platform**

The engagement platform is the environment in which the experiment and learning can take place in a virtual way (internet, forum, blog, among others) and/or physical environment, which allows the relationships between stakeholders (customers, suppliers, partners, clerks, among others). In this platform, value co-creation is bidirectional, that is, it allows the company engagement with stakeholders to develop organizational capacity and, at the same time, allows stakeholders to analyze of value through perceptions, exercises for learning (Ballantyne & Varey, 2006; Ramaswamy & Gouillart, 2010), knowledge (Troccoli, 2010; Da Silva, 2014) and the construction of a new strategic capital (Ramaswamy & Ozcan, 2014; Saraceni, 2015).

The platform of engagement (Ramaswamy & Ozcan, 2014; Saraceni, 2015) emerges as an opportunity offered in a market with fierce competition (Porter, 2008) for the development of value creation together, as it focuses on the union of individuals, processes, interfaces, and artifacts in environments that enable the interaction and intensification of attitudes that co-create to motivate results with reciprocal value (Prahalad & Krishnan, 2008; Schutz, 2011; Ramaswamy & Ozcan, 2014; Saraceni, 2015).

The platform of engagement in this research is a network of cooperation between companies with the aim of working together and enabling the establishment of social relations, contributing to the proximity and establishment of trust between them (Verschoore & Balestrin, 2008).



It includes, on the one hand, the resources and competences of the organizations and on the other, the stakeholders with social and management resources that enable an interconnection environment that provides results in value co-creation.

Jaakkola and Alexander (2014) present the concept of customer engagement behavior, its indicators and the role of this concept in the co-creation of value. The behavioral manifestations of the engaged client are identified and can serve as subsidies to the improvement of the engagement platform.

In this work the network researched, as a platform, has characteristics such as cooperation in search of mutual benefit, access among members and development of interorganizational relationships, which allows companies to obtain flexibility to act as clients and also as providers when acquiring or offering products and services among members. This platform also favors the joint process between the various actors, with a high level of engagement in a collaborative and cooperative relationship (Frow, Nenonen, Payne, & Storbacka, 2015).

In other words, what happens to this group of actors is also the result of the network of connections existing between them (Borgatti, Everett, & Johnson, 2013) and for this reason, in this work, it is utilized, as a research tool, the social networks analysis.

### **2.3. Social network analysis**

This research contemplates the choice of a network that stands out through the cooperation components, that is, it does not allow competition among members. It has as main attribute the mutual benefit that resulted in the application of a technique performed through the social network analysis (SNA) as a strategy used to ponder stages of business indication, business accomplishment, partnerships made and the value co-creation that is focus of this study.

In the literature, SNA is addressed as a set of “nodes, actors, units or vertices”, that is, individuals, groups and/or institutions, which are consolidated through social connections (Wasserman & Faust, 1994; Scott, 2000; Mollo Neto & Waker, 2011) that are explored “from the relations of communication, influence, trust and cooperation” (Farina et al., 2012). Hanneman and Ridlle (2015) argue that social network analysis presents different definitions at the levels: actor (individuals or companies), groups (dyads or triads) and the network as a whole.



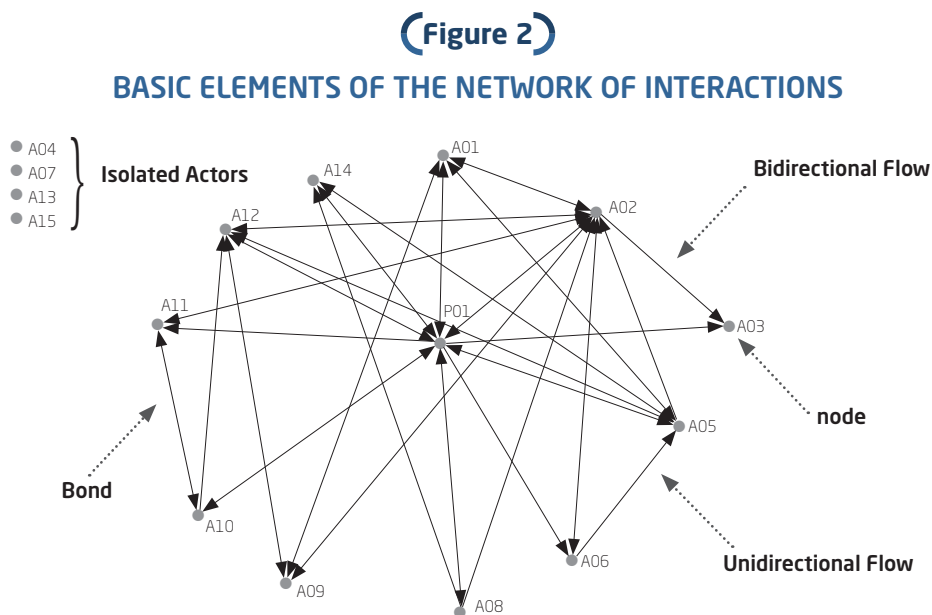
In this research, it was used the Density measure that indicates the comparison between the number of ties (links) that occur between the actors with the total number of possible ties in the network and the following measures of centrality:

- *Degree*: it is the centrality of degree that measures the number of ties of the actors, that is, the number of connections that each actor contemplates in the network. These are indications of opportunities and denote influence and prestige. In this work the connection between the actors means the indication of business that result in the co-creation of value.
- *Closeness*: it is the centrality of proximity. It is the reason for the proximity of an actor with a number of other actors, which attributes to him being a center of reference, capable of giving him advantages in direct negotiations or exchange and at the same time power of influence. The greater the proximity, the more business indications that result in value co-creation may occur.
- *Betweenness*: it is the centrality of intermediation. It is about actors who play a role of influence and stand between two actors. Intermediation denotes the influence on information flows and cooperation. The greater the value of intermediation in the business indication, the more power the actor has in the network through the interrelationships.

The measures of centrality *Degree*, *Closeness* and *Betweenness* explain the position of the actor regarding to the center of action of a network, in order to indicate the power of the actor in the network. The “*Centrality Degree*” has two derivations: “*In-Degree*” that allows to identify which actors are able to attract more resources of the network and “*Out-Degree*” that indicates the greater or less influence of the author in the network. These measures are associated with the number of links or flows that originate or flow to the central actors (Hanneman & Ridlle, 2005), according to Figure 2.

In Figure 2, is possible to identify the links, which are the directed arrows (relations, ties or bonds) for an actor (unidirectional), such as A06 to A05. Another link is the A02 with A03, in which the actors interact with each other, that is, links that occur between the two actors (bidirectional). The links depending on the relationship between the actors direct to a target that can be an indication of client, partnership, value co-creation, among other requirements that are defined for analysis. This means that

A06 indicates customers who can do business with A05, or A03 indicates partners to A02, for example. If an actor has connections to many actors, then these actors are receiving nominations from that author (*Degree*). In the case of the actor P01 that is close to many actors of the network means that it must present high value of *Closeness*. An actor with a high value of *Betweenness* indicates that he serves as an intermediary for approximating other actors in the network.



Source: Alejandro and Norman (2005).

There are also actors without ties, that is, those without lines that represent the relations, being those that do not have connections, for example, the actors A04, A07, A013 and A15 (loose nodes). The red dots are identified as “nodes” or actors, that is, people or groups with the same goal (Alejandro & Norman, 2005).

The links between the actors are also influenced by the size of the network that determines its density which is the result of the total existing connections divided by the number of possible connections, which shows, for example, the potential of the network in the indication or in the partnership between the actors (Hanneman & Ridle, 2005; Vieira, 2008). In this sense, the mapping of the network makes it possible to identify the most relevant actors according to the item under analysis, which is the search of the value

co-creation network. In this case the bonds between the actors represent the co-creation that they are performing.

In this work, the social network analysis is used as a tool for the assembly and the analysis of the network of companies with the business indications that result in value co-creation, with evidences that can increase and improve their performance. The Dart model with its components serves as a guide for the actors who evaluate the importance of each of them, according to the platform in which they are engaged.

### 3. METHODOLOGY

The purpose of the present study is to identify the value co-creation resulting from the influence of relationships using the DART model in an engagement platform in a specific network of companies that cooperate between themselves. The basic principle is that if company A indicates business for the other companies of the network, that company will also receive business indications (networking), according to the documents provided by the network of companies and also data contained in the company's website. In this network, there is no competition, that is, there are no companies competing with each other in their business. Each company has an activity type different from the others. The work also has the following specific objectives:

- **identify** in the engagement platform, through the interaction among the actors of the network, which clients indications have resulted in value co-created, that is, in the creation and development of alternatives to improve and/or create a new business, product or service;
- **describe** the value co-created XX observed in the network (engagement platform), based on the analysis of the DART model.

The design of this research is a descriptive case study, since the research sought to describe characteristics of a group of businessmen, inserted in a specific network of the region of Greater ABC. This object of study is relevant, since it contemplated the analysis of the value co-creation in a network with an atypical environment formed by companies that assume the role of customer (consumer) and/or company (developer) of a certain segment according to the product and/or service offered. The study was

analyzed according to Yin (2006; 2010) and Gil (2009) using several sources of evidence (observation, interview and documentary analysis). Thus, this empirical investigation verified the phenomenon within its context (network of businessmen) in a certain geographic location with the advantage of obtaining the internal view of the phenomenon, i.e., the researcher obtained the vision of the research from inside to outside of the network, through the perception of the businessmen and also from observation.

This study is part of a research that contemplated the relational aspects of value co-creation observed in a network engagement platform that allowed the mapping, through the SNA, of four questions: 1. business indications 2. business carried out 3. partnerships made and 4. results of value co-creation.

The group of analysis was composed by 34 businessmen from different segments: commerce, industry and retail. The network was named as co-creative and was mapped in its totality, with respondents classified as R1, R2, R3 successively up to R34, as it was not allowed to divulge the name of the network, the respondents and also their respective companies.

Subsequently, the data gathered were tabulated and organized into spreadsheet software (MS EXCEL) and network analysis (UCINET), resulting in a set of descriptive and metric data of centrality and density. The data were collected through documentary analysis, semi-structured interviews and non-participant observation with the 34 respondents for the network mapping in the value co-creation questionnaire and with 13 respondents relevant to the DARTP. Data triangulation begins with the measures of social network analysis (metrics of centrality and density of the network), which were presented and discussed in the meetings with the companies (non-participant observation). Information from the website and documents (reports) were confronted with the measures provided by social network analysis. Subsequently, the value co-creation process and the engagement platform were evaluated in the interviews.

The SNA technique was applied to identify the actors with more or less centrality, which would not be possible only with the application of the observation and/or interview technique, in order to achieve to the proposed goal of identifying the DART components in the co-creation of values resulting from the influence of relations in a cooperation network.

To analyze the engagement platform that improves the DART model and which is called the DARTP, we identified 13 relevant actors while mapping SNA in the network and they participated in an interview in order to respond and evaluate each component with a score of zero to 10, being: 0; 1; 2 (very

low), 3 and 4 (low), 5 and 6 (medium), 7 and 8 (high), 9 and 10 (very high). To identify the most relevant components, the simple average was applied, i.e., the sum of the scores of each item divided by the total of respondents. These results were presented to the respondents which justified the grades that were attributed by explaining the facts that occurred in the network during the period of analysis.

## 4. FINDINGS

The presentation and analysis of the results were based on the methodology to achieve the proposed objectives based on the theories exposed in the theoretical reference. It begins with the characterization of the network object of study of this research that is located in the Region of the Greater ABC, contemplates 34 companies of different segments such as: architecture, electrical, insurance, telecommunication, chiropractic, cargo agent, water purifier, financial consulting, consulting of HR, beauty consultancy, law firms, training consultancy, trade, graphic, systems, accounting, quantum therapy, photography, dentist, digital marketing, work safety, tourism, building maintenance, information technology, coaching, carpentry, graphic animation, communication, pest controller and presenter. The respondents were the owners who have autonomy and decision power in the respective company.

The research confirms that this network does not allow competition, since only a company of a specific specialty is accepted by the network, with a physical structure that provides a structured organizational environment and weekly meetings at 7am with breakfast for the presentation of the networking results obtained in the previous week.

The mutual benefit comes from the cooperation between the companies that indicate customers that can generate business. It is the commitment of all regarding the schedules of meetings and pre-established events, indicated in the members' manual. Such characteristics make this network atypical and allow its members named in this research as clients/associates to obtain high level of freedom to expose their products and/or services, allowing the opportunities of partnership and business among network's members.

Opportunities of client referrals that are outside this network and also for the clients/associates inserted in it are recognized in the SNA as groups that consolidate themselves through social connections (Wasserman & Faust, 1994; Scott, 2000; Mollo Neto & Waker, 2011). Thus, the question asked for each company in relation to all other components of the network makes

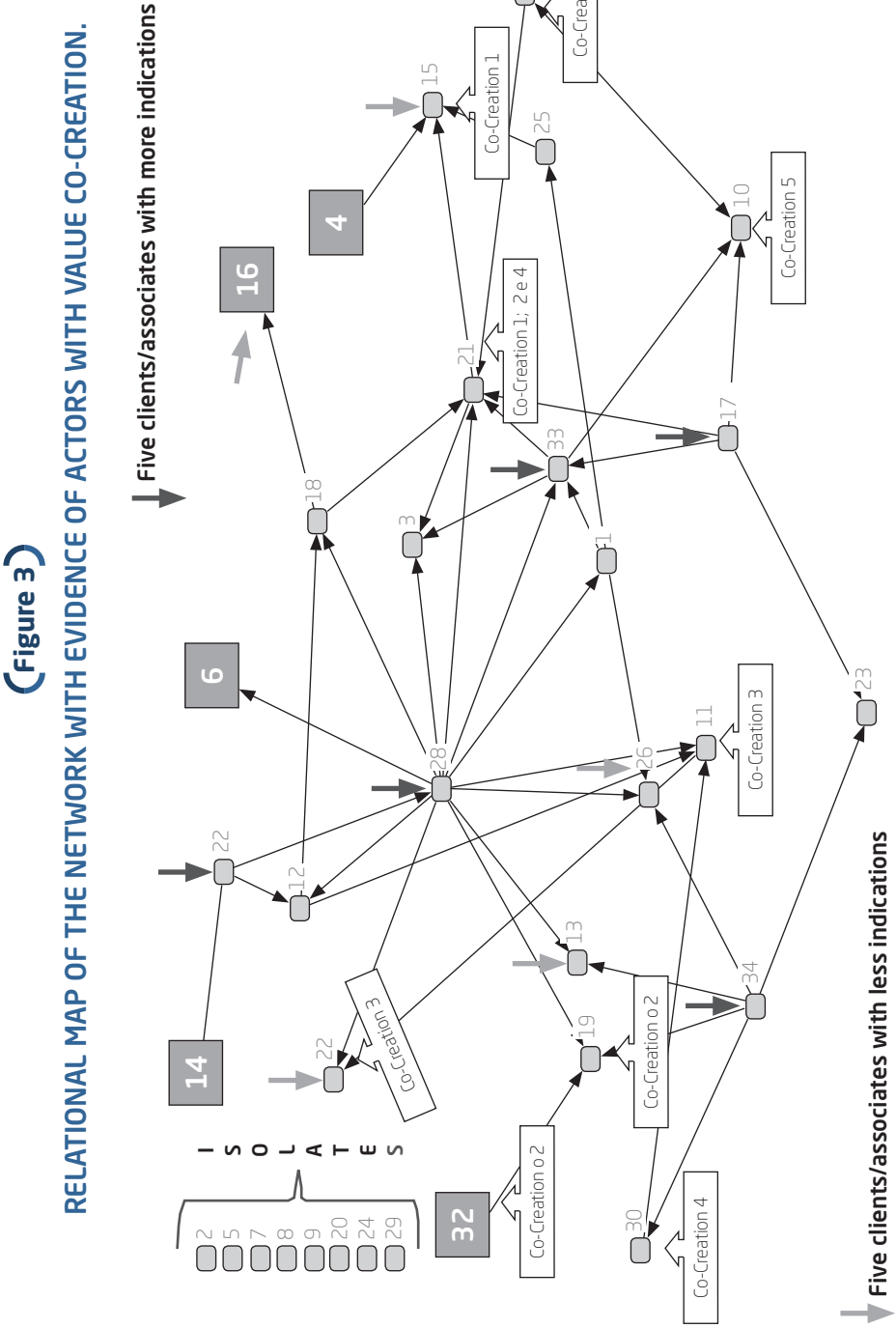
possible the mapping shown in Figure 3: Which business indications resulted in value co-creation in the interaction between you and the other members of this network, to increase and/or create a new business, product, service?

Figure 3 shows the relational mapping based on the partnerships that resulted in value co-creation. It is identified that the clients/associates 4, 6, 14, 16 and 32 were considered actors with unidirectional flow, that is, they have a binding direction. In the interviews, it was identified that these actors did not complete a process of value co-creation (except the associate 32). This fact corroborates with the theory that value co-creation is about the bilateral integration, that is, between the consumer and the developer (Prahalad & Ramaswamy, 2004a, 2004b; Troccoli, 2010; Fisher & Smith, 2011; Troccoli & Altaf, 2012 ).

The clients/associates 2, 5, 7, 8, 9, 20, 24 and 29 are isolated and this means that they were not indicated and did not indicate any other client/associates in the value co-creation aspect (Alejandro & Norman, 2005). The other clients/partners had the *In-Degree* centrality measure that allows identify which actors are able to attract more resources of the network as a whole (the arrow points to the actor) and the *Out-Degree* measure (the arrow leaves the actor) which exert greater influence on the network (Hanneman & Ridlle, 2005).

It is observed that three sources of evidence were used for analysis, the first being the mapping of SNA, the second with the application of observation technique in meetings, events, reading of meeting minutes and manuals and the third, the interviews based on the process, called DART meaning dialogue, access, risk and transparency (Prahalad & Ramaswamy, 2004a). These three sources of evidence were relevant to obtain in-depth information about the network mapping, such as:

- R2 was considered isolated, but it was identified that the actor participates in the process of value co-creation in progress in the electric segment with the actors R22 and R26;
- R5, from the chiropractic segment, was highlighted by respondents R1, R13, R16, R25, R26 as an actor with potential, since it contemplates a network of contacts that can benefit the other clients/associates with partnerships and also with indications of clients for acquiring products and/or services;
- R7 and R8 are new members of the network, thus, it was identified that there is a need for closeness with other clients/associates;
- R9, R24 and R29 reported in the interviews that for private reasons they would not remain in the network.



Source: Elaborated by the authors.



The co-creations performed up to the time of the research are shown in Figure 3. The co-creation named number 1 was performed by the actors R15 and R21 who received 3 and 5 indications respectively (*In-Degree*). Co-creation 2 was performed by the actors R19, R21 and R32 (with *In-Degree* values 3, 5 and zero). The co-creation 3 was performed by the actors R11 and R31 (with *In-Degree* values 3 and 2). Co-creation 4 was performed by actors 21 and 30 (with *In-Degree* values 5 and 1) and co-creation 5 was performed by actors R10 and R27 (with *In-Degree* values 3 and 1).

It should be emphasized that the *In-Degree* measure represents the business indication that resulted in value co-creation, represented by the link between the actors (directed arrow). The detailing of Figure 3 is presented in Table 1 with the relational map of the network with the indications (*Out-Degree*) made and indications received (*In-Degree*) by each actor.

**(Table 1)**  
**NETWORK RELATIONAL MAP PER ACTOR**

Actor	Out-Degree	In-Degree	Actor	Out-Degree	In-Degree	Actor	Out-Degree	In-Degree
28	12.000	1.000	25	1.000	1.000	19	0.000	3.000
34	5.000	0.000	4	1.000	0.000	20	0.000	0.000
17	4.000	0.000	11	1.000	3.000	29	0.000	0.000
33	3.000	3.000	7	0.000	0.000	13	0.000	2.000
22	3.000	0.000	6	0.000	1.000	31	0.000	2.000
18	3.000	2.000	3	0.000	3.000	15	0.000	3.000
1	3.000	1.000	14	0.000	1.000	16	0.000	1.000
21	2.000	5.000	9	0.000	0.000	26	0.000	3.000
27	2.000	1.000	5	0.000	0.000			
12	2.000	3.000	23	0.000	2.000			
32	1.000	0.000	24	0.000	0.000			
10	1.000	3.000	8	0.000	0.000			
30	1.000	1.000	2	0.000	0.000			

**Source:** Elaborated by the authors.

Table 1 shows the actors with more indications, presented in the red color, the actors with less indications, presented in green, and also the isolated actors who are in blue. Since value co-creation means integration



between two or more parts, it can be said that more indications (*Out* and/or *In-Degree*) can result in more value co-creation.

Thinking about an ideal situation, the actor 28, for example, would have 33 connections with all the other actors and the same idea is valid to the other actors. From this point of view, the value of the density of the network is low since only 4% of the possible connections occurred among the actors, but from another point of view the same 4% is relevant because it deals with the value co-creations performed in the network in question.

It is worth noting that value co-creation was not the main objective of this network, since the focus is to do business through the indications of clients. Secondly, because it contemplates five new products and/or services that were developed through co-creation among the members of this network, and more six co-creations in progress and one under study, that were not explored in this study. After the intervention of the researchers at the meetings, the companies decided to establish as a priority the search for value co-creation in the relationships and contacts made. In this way, it is interesting that the participants of the network always have in mind the question of co-creation, as this can strengthen and broaden its scope.

The mapping of the network was confirmed and complemented by the analysis of documents named “reference”, which are forms fulfilled by the associates to prove the nominations made by the actors and presented to all in the meetings.

In addition, the *Betweenness* measure, which indicates the intermediation of an actor between pairs of actors in value co-creation, is presented, that is, the importance of this actor in the performance of the co-creation among other actors as shown in Table 2

**(Table 2)**  
**DEGREE OF INTERMEDIATION *BETWEENNESS***

Percentage	Clients/associates
Zero	2;3;4;5;6;7;8;9;13;14;15;16;17;19;20;22;23;24;26;29;31;32;34
> 0% < 1%	1;10;11;12;18;28;27;30;33
> 1%	21;28

**Source:** Elaborated by the authors.

Table 2 provides the result obtained with the degree of intermediation (*Betweenness*) that indicates the number of connections (percentage) between two clients/associates in which an actor is present. In this regard, respondents 21 and 28 were detached, but with a low percentage that was 1.18% and 1.37% respectively, which means that they intervened less than 2% of the pairs of actors of the network. Respondents 1, 10, 11, 12, 18, 28, 27, 30 and 33 were highlighted by the percentage greater than zero and less than 1. And the majority of respondents who were 2, 3, 4, 5, 6, 7, 8, 9, 13, 14, 15, 16, 17, 19, 20, 22, 23, 24, 26, 29, 31, 32 and 34 were classified as zero intermediation in the value co-creation aspect. There is almost no intermediation in the network surveyed in relation to the indication of business that resulted in value co-creation.

Another measure of centrality is *Closeness* which indicates the clients/associates who are more “close” to each other in relation to the indication of value co-creation. For example, if there is a direct relationship between two clients/associates, then they are close. If among these clients/associates there are others, the relationship is more distant (greater distance between clients/associates). The greater the value of the *Closeness* centrality measure, the greater the closeness of the clients/associates in the value co-creation aspect, as presented in Table 3. The actors are expected to be close to each other in order to facilitate the co-creation.

**(Table 3)**  
**PROXIMITY DEGREE CLOSNESS**

Percentage	Clients/associates
> 0 < 3%	2;3;5;6;7;8;9;13;14;15;16;19;20;23;24;26;29;31
> 3% < 4%	1;4;10;11;12;17;18;21;25;27;30;32;33;34
> 4%	22;28

**Source:** Elaborated by the authors.

Table 3 indicates that only respondents 22 and 28 were detached with a percentage above 4%. Most companies (actors) are close to less than 4% of total companies. Other respondents are between zero and 4%, which characterizes the lack of approximation among clients/associates in the mapping of this network. The two respondents, despite the low index presented in the network, were considered by the SNA as the closest clients/associates in the network. Hanneman and Riddle (2005) explain that this

measure seeks the reason for the proximity between the actors, besides analyzing their possible influence power. The low values of *Closeness* and *Betweenness* centrality measures are indicating that firms should engage and relate more closely to each other to result in value co-creation.

The results obtained by the SNA show that the centrality measures are linked to the number of connections (*In-Degree* and/or *Out-Degree*) that are flows that originate or flow to the central actors (Hanneman & Ridlle, 2005) and with the non-participant observation technique and the interviews, contributed to respond to the specific objective of describing the values co-creation concluded in the network as an engagement platform based on the DART, according to Table 4.

**(Table 4)**

### ANALYSIS OF THE COMPONENTS OF COMPLETED VALUE CO-CREATIONS

Value co-creation	Participants	Co-creation components				Product and/or service
		D	A	R	T	
1	R15 e R21	x	x	x	x	Development of Biblical APP
2	R19, R21 e R32	x	x			Personal Marketing for Digital Media
3	R11 e R31	x	x	x	x	Opening of a new company for financial regularization and search of resources
4	R21 e R30	x	x		x	Digital marketing with video animation for campaign in social networks
5	R10 e R27	x	x	x	x	Coaching and self-esteem for men and women

**Source:** Elaborated by the authors.

Table 4 shows the value co-creations that have been completed in this network. The first co-creation of value was created jointly by participants R15 and R21 with the development of a Biblical APP. The co-creation components based on the DART components were applied in their totality. Dialogue was provided by the reach between different actors that were interconnected (Prahalad & Ramaswamy, 2004a). Access allowed the availability and reach of knowledge and information (Prahalad & Ramaswamy, 2004a, 2004b; Da Silva, 2014). The Risk/Benefit dealt with the disclosure of confidential information about the development of this product (Maglio & Spohrer, 2008). Transparency

was the most critical component that contemplates the dissemination of technological information (Prahalad & Ramaswamy, 2004b).

The second co-creation occurred jointly by participants R19, R21 and R32. Through the technique of observation, it was noticed that due to the coexistence in the platform of engagement it was possible the access among them to initiate a process of value co-creation with the development of a personal marketing for digital media. The components of co-creation based on DART components were dialogue and access. The dialogue contemplated a client/associate action (R17) when reporting an experiment with photos that would be posted to a site during the weekly presentations. This action has sparked a reaction between companies R19 (photography), R21 (digital marketing) and R32 (journalism) to analyze an immediate solution on personal marketing that has consequently expanded to digital media. This process is recognized as a vehicle of experience for the consumer, that is characterized as a process of value co-creation observed by action and reaction, that is, the client has an action when reporting an experience and the company a reaction to analyze the immediate solution (Prahalad, 2004; Ballantyne & Varey, 2006). Access was characterized by the information and tools available between clients/associates that are interconnected in this network (Prahalad & Ramaswamy, 2004a, 2004b). Thus, these components allowed the development of thematic communities, that is, the grouping of actors with access to dialogue on some subject (Prahalad & Ramaswamy, 2004a, 2004b).

The third co-creation occurred with the respondents R11 and R31. Based on the technique of observation and interview, it was found that R31 is an actor who contributes with the network through his experience and even indications of clients for the other members of the network, however due to his segment that is of the area of Law, aimed at recovering companies with financial difficulties, the process of co-creation occurred only with R11 that has a company in the financial segment (to get money in financial institutions). This project had the consolidation of ideas and experiences of two independent companies that worked in different segments, but were partners in the service of common customers. The development of this partnership (Prahalad & Ramaswamy, 2004a), the long-term relationship and the evolution of the intervening aspects of trust and commitment (Farina, 2009) led to the opening of a third company for financial regularization and search of resources. The co-creation components based on the DART model were applied in their totality. The Dialogue was used as a multidirectional flow of information (Ballantyne & Varey, 2006) to serve a common customer. Access was a tool used to share information, minimize costs and time with an



improvement in the agility of answers to decision-making in the execution of the business (Prahalad & Ramaswamy, 2004a, 2004b). The Risk/Benefit presented a positive result, since the companies obtained benefit with the reduction of value related to the contracting of external service and the risk was very low, since both companies developed activities together in search of a single objective. Transparency was mainly due to the confidentiality that each respondent had in relation to their clients, since such information was shared to solve the problem presented by the client.

The fourth co-creation was performed jointly by participants R21 and R30 with the development of digital marketing with video animation for campaign in social networks. The co-creation components based on DART model were Dialogue, Access, and Transparency. The Dialogue was about the interaction, engagement and inclination to act between clients/associates (Prahalad & Ramaswamy, 2004a) with the suggestion of applying the use of words in videos, becoming a reciprocal understanding between the parties. Access was important because it allowed the sharing of information and tools available among the clients/associates that are interconnected in this network to present the project (Prahalad & Ramaswamy, 2004a, 2004b). Transparency is considered a critical point in relations due to the dissemination of technological information (Prahalad & Ramaswamy, 2004a), which may be classified as confidential was surpassed by these respondents (R21 and R30), who reported that the trust factor nullifies the possibility of not disclosure of such information.

The fifth co-creation was co-managed by participants R10 and R27 with the development of coaching and self-esteem for men and women. The co-creation components based on DART model were applied in their totality. Dialogue went beyond words exchange and developed a basis for interaction between those involved that enabled creativity and innovation with mutual learning (Ballantyne & Varey, 2006). The Risk/Benefit favored obtaining the relevant information about each client/associate, which made it possible for each individual to make a self-assess in order to decide on joining the self-esteem project. Transparency was the basis for the realization of this project and was treated with great seriousness, since the co-creation was done with people and not with products. Access was recognized by R10 and R27 as the network itself as an engagement platform.

The recognition of the clients/associates that this network is considered as an engagement platform was verified by the technique of observation and by the interviews. These data, in addition to the results obtained in the SNA, were submitted to the 13 clients/associates considered relevant in



this network in a meeting with a durability of approximately two hours for analysis of the DARTP, that is, the improvement of the engagement platform (P) in the components of DART. These respondents were interviewed with the aim of evaluating, with scores ranging from zero to 10 [0, 1 (very low), 3 and 4 (low), 5 and 6 (medium), 7 and 8 (high), 9 and 10 (very high)], his perception about DARTP, which is the consolidation of the DART components with the network engagement platform, according to Table 5.

**(Table 5)**  
**DARTP**

Respondents	Dialogue	Access	Risk / Benefit	Transparence	Engagement platform
1	7	9	4	7	5
2	7	9	7	6	9
5	6	8	8	4	9
11	4	10	4	5	4
14	4	10	8	8	5
15	8	6	6	6	8
21	4	9	8	6	7
25	7	9	8	7	8
26	8	9	8	6	10
27	6	6	6	7	9
28	5	6	8	7	10
30	6	8	5	6	8
33	7	5	8	4	5
<b>Average</b>	<b>6.08</b>	<b>8.00</b>	<b>6.62</b>	<b>6.08</b>	<b>7.46</b>

**Source:** Elaborated by the authors.

Table 5 presents the consolidation of the grades that were applied for each component of DART and also for the platform of engagement of the co-creative network that originated the DARTP. Respondents 11, 15,



21, 27 and 30 are the participants in the concluded value co-creations. Respondents 10, 19, 31 and 32 are also participants in value co-creations concluded, but are no longer in the network, which is why they did not participate in the validation of DARTP. Respondents 1, 2, 26 and 28 report that they are developing co-creations, meaning they are in the design phase. Respondents 5, 14, and 33 have ideas of value co-creations that are not formalized. Already the R25 identified the possibility of co-create value, but he did not have availability to continue in the network. Among these respondents of the DARTP stands out the R11 that gave the score 10 for the Access justifying that this component is fundamental for the network and the score 4 for the Platform of Engagement reporting that there is much space for improvement in the narrowing of relationships that can generate more business and more value co-creation. R15 emphasizes Platform and Dialogue as the most relevant components. R21 prioritizes Access and states that it reduces risk. The R27 highlighted the Engagement Platform as the key to value co-creation development and the R30 reports that balance in the Engagement Platform and Access generate opportunities.

Together with the justifications extracted from the reports of the respondents who concluded the value co-creation, it is verified that, in a general way, that is, including the scores of the 13 respondents, it was calculated the simple average that resulted in the Access component with greater relevance with score 8.0; followed by the Engagement Platform with score 7.5, Risk/Benefit with score 6.6, Dialogue and Transparency had the same score 6.1. Other results were obtained through the following statements from respondents:

This network is a platform that teaches engagement among people [...]. Here is an apprenticeship not provided in other networks (R2).

Another network with this engagement would only be possible with the application of the tools provided by the network (R11).

I worked for over 20 years in other companies and participated in other networks [...] none gave me the opportunity to meet so many businessmen, and the best, without competition (R15).

This network is a platform that leverages business through engagement among members (R33).





The differential of this network is that we can be clients, suppliers and co-creators because of the weekly meetings and the use of the methodology (R26).

Relationships are the basis for business development on this platform (R21).

These reports refer specifically to the question of Engagement Platform. It was noticed that the clients/associates recognized this network as relevant for learning, consolidation of relationships and consequently to do business. Ramaswamy and Ozcan (2014) explain that the Engagement Platform is one of the ways to devise and execute a method for organizing “individuals to create value together” (Saraceni, 2015), which is referred to as the value co-creation process.

Finally, in order to achieve the goal of identifying the components of DART in value co-creation resulting from the influence of relationships on a network of companies in an Engagement Platform in the Greater ABC Region, it was possible to identify processes that occurred during the weekly meetings which correspond to the components of DARTP, such as:

**Dialogue:** this is the communication between clients/associates to talk about themselves and their products/services in meetings that obtained an average grade of 6.08, considered reasonable. On this platform, clients/associates used a one-to-one procedure that they characterize as a conversation that is held between two or more clients/associates with a learning objective about the business segment of each company.

**Access:** was considered the most relevant in the analysis of the co-creators with a mean score of 8.00. They consider that Access to the other associates, provided by the Engagement Platform (co-creative network), allows the personal engagement of companies representatives.

**Risk/Benefit:** this component obtained an average grade of 6.60, considered reasonable. Respondents identified that risks could occur in relation to the reputation of a client/associate within the network, which does not have the trust of other clients/associates and usually would not receive business indications. It was also pointed out that there is no financial risk in this network, since the Engagement Platform provides long-term relationships that allow the development of trust and commitment both in the indications of other people and in the internal acquisition of products and/or services.



**Transparency:** this component presents the same average as the Dialog (6.08), considered reasonable, what converges with that verified by the technique of observation and interviews, when it was possible to identify that this question was considered the most sensitive in this network and which coincides with the statement of Prahalad and Ramaswamy (2004a) to be the most critical component in the relationship between the organization and the client in the value co-creation process.

**Engagement platform:** presents an average of 7.46, being considered the second highest note, what converges with that verified by observation technique and interview reports that affirm that the network is a platform of personal engagement that provides learning, opportunity to meet businessmen, leverage business and to make possible something that is not the main objective of the network, that is the co-creation of value.

In this way, it was possible to study the DARTP through social network analysis, observation techniques and interviews in a network considered as an Engagement Platform in the Greater ABC Region.

## 5. CONCLUSIONS

This research was focused in a relevant business network that contemplates different characteristics, such as: cooperation without competition, since only one company per segment is allowed; independent companies, that is, in several areas that seek mutual benefit; requires long-term relationships among members and provides an infrastructure for business development and partnerships; allows the flexibility of acquiring internal business in the network where customers/associates can simultaneously be clients, when they buy products and/or services from each other, as well as providers, when the opposite occurs, that is, they offer their products and/or services for the other members of this network, which characterizes the opportunity of developing the value co-creation process in a vertical way (between the network and its associates) and horizontally (among the associates). These characteristics were developed through the relationships between the clients/associates whose main focus was first to help the other clients/associates of this network with indications of new prospects clients and, consequently, to be rewarded with the new business.

The results obtained through the analysis of the documents, by the technique of non-participant observation and interviews, analysis of social relations (SNA), analysis and description of the components of the process

of value co-creation, based on Prahalad and Ramaswamy (2004a, 2004b), through the DART model (Dialogue, Access, Risk/Benefit and Transparency) and the Engagement Platform proposed by Ramaswamy and Ozcan (2014) allowed to conclude that the network is a platform for personal engagement with a business environment differentiated that offers the opportunity for clients/associates to play the role of providers and consumers within the same network.

The DARTP analysis has resulted in the validation of the network as a relevant Engagement Platform for the process of value co-creation. Ramaswamy and Ozcan (2014) explain that the Engagement Platform is one of the ways to plan and execute a method for organizing “individuals to create value together, with each stakeholder individually co-creating value” (Saraceri, 2015, p. 70). Stakeholders are considered the customers/associates who are providers and also consumers, unlike other companies and/or individuals that are outside this network that are only clients and/or partners.

The SNA was a relevant tool to identify the actors with more or less relevance in the measures of centrality: *Degree*, *Betweenness* and *Closeness*, since through these mappings (networks), interviews and observations, it was verified the critical points of the network of co-creation and also of each actor. This result was considered a relevant strategic mapping that occurred taking into account the questions: business indications, business done, partnerships made and that culminated with the results of value co-creation. In this way it was possible to represent the actors and also the value co-creation network, as well as to indicate the relationships among the members of the group in search of improvement to obtain better personal results in the platform of engagement with possibilities of development of new co-creations of values.

This work evidenced the importance of applying the theoretical models of value co-creation proposed in the academic literature, with the inclusion of the concept of Engagement Platform. In this way, the theory is more complete and feasible and the results of the applications more enriching. The study also showed that in a network of companies the centrality of the actors should be emphasized, that is, the actors should be closer to each other, to intermediate their relationships and to relate more (*Degree* centrality) in order to generate more co-creation of value. The analysis of social networks presents a broad set of measures that allows a greater research of the relations among the actors of a network, in order to contribute and increase the performance with respect to the value co-creation.

As a contribution and suggestion for future studies, it is identified that there is the possibility of analyzing the components of value co-creation in networks that allow competition, coopetitive networks and/or SNA application in other models of value co-creation. The limitations presented in this research focus on the geographical coverage of the Greater ABC region, being specifically explored in a network called the co-creative network. It is possible to apply this model with a focus on the comparison between networks of other regions. In addition, the application of this model in a network that contemplates other business models, that is, in a specific segment and/or networks that are competitive, cooperative, franchises and other business networks. Another limitation is the application based on the DARTP co-creation model in the qualitative method, thus, it allows the applicability in the quantitative method in search of a confirmatory study, as well as the development of indicators.

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