In Pursuit of Greater Social Value: A Model for Expanding Online Social Relationships for Greater Social Capital

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Abstract

Social networking has matured into a set of hyper-standards adopted by individuals across the globe. As a result, social network platforms scurry to create innovative tools and services to maintain user connections and promote additional use and end user satisfaction. This directly impacts greater social media pipelines to extend and bolster digital data volume. The abundance of data from online social network transactions creates a need for users to be deliberately aware of their online social capital or their Return on Investment (ROI) from their online social engagements. This study extends prior work of social online engagement by exploring the direct relationships between social identity (SID) attributes and their impact on social capital. The SID score represents an individual's derived social capital from a business value perspective (bridging capital) and personal value (bonding capital). The goal is to develop a framework that effectively measures social network activity and influence a calculated "SIDScore", based on users online social media engagements and interactions. The outcome will assist users in determining the significance of their online relationships and give users a tool to manage engagements to achieve stronger social capital (ROI).

Keywords: Social Capital, Online Social Media, Social Network Sites, Social Identity, Return on Investment, Node Networks, Bonding Capital, Bridging Capital, NodeXL

1.0 Introduction

Ubiquitous technology is tightly coupled in our daily routines from mobile device applications in transportation, business, and classrooms, to the growth of augmented reality for gaming and medical use. As such, social media (especially social network sites (SNS)) has grown rapidly in popularity in the last twelve years. Research suggests that around seven-in-ten Americans use social media to connect with one another and engage and share news content and information (Pew Research Center 2018). This growth in the social media outlets has stimulated the increase in the number of daily hours individuals invest in social networking interactions. Time is spent delivering rich social content and interactions with micro-blogs, videos (to include the data rich Live Video streams), pictures with automatic geotags, embedded face recognition algorithms, meta-tags, and other social media artifacts.

This strong influence of social networks formed by social ties (personal, professional, community related) in our daily lives generate the critical need to understand if and how usage patterns influence one's personal and professional value chain online. As online activity increases, and social network sites (SNS) offer more innovative tools, social media engagements spike and users capitalize on SNS resources. As activity increases, emotional stimuli foster SNS ability to harvest more digital artifacts and the exchange of data streams expand. As an increased number of users engage in social network activities, greater volumes of data are generated to create a multitude of opportunities from target product/services and marketing to delivery of adaptive social announcements (e.g. Health alerts, weather updates, research). Burke, Kraut, and Marlow discussed in "Social Capital on Facebook: Differentiating Uses and Users" how most Facebook users invest more time in order to increase and harvest emotional support using pictures, video stimulus, social content editing tools (the more creative the post the greater the change of a quality response), and multi-level response options designed to simulate core emotions (e.g. Like, Love, Happy, Sad, Angry)(Burke, Kraut, & Marlow, 2011). The exchange of data streams is an important value adds for SNS corporations creating an ideological platform to connect individuals to ideas, anecdotal rhetoric, and strategic propaganda.

These social media interactions empower and cultivate personal social growth, and users also capitalize on social approval. SNS are designed to influence the sharing of ideas and celebration of achievements. One user's achievement(s), when shared in digital societies, may become another user's opportunity. This connection provides a rich source to develop a skill, raise awareness on a specific (or set) topic(s), join a society, and provide an abundance of social capital options. Ultimately, each user embraces social media for some social capital, yet is unable to calculate the most efficient or effective methods to engage (as many corporate and political leaders have invested in calculating).With such continuous engagement and connectivity, SNS users require a model which provides them a better understanding of the importance of shared data awareness and the value of their online social engagement. SNS users should be aware of the derived value and clearly understand they have benefited from their investment of time, engagements and relationships. This means calculating their social engagement and sees the quantitative value of their commitment, which is known, in businesses, as Return on Investment (ROI). We create the notion of a Social Identity (SID) value as a way to measure this ROI from a perspective of social capital. This study will extend past work of online engagement by normalizing SID attributes, introducing new SID Attributes, modeling the direct relationships between the updated SID attributes revealing their impact on social capital. The framework in this study will influence users to manage the level of social capital by raising the awareness that capital exist and provide an instrument to validate.

Social capital and social identity go hand in hand. People utilize social engagements to create a personal network to better manage networking, sharing of ideas and self-promotion. Self-promotion is directly related to managing actual or virtual connections in an attempt to protect an established social perception. Social capital, traditionally, is an indication of the benefits people derive from their social engagements in a social network. With these networks viral online, our objective is to develop a framework to calculate a "SID Score," which germinates from our online social media engagements and interactions, representing an individual's derived social capital from a business value (bridging capital) and personal value (bonding capital) perspective. Establishing and defining the attributes which create this capital and further developing a framework for assessing the value of the relationships among attributes that identifies a social identity is a contribution this work.

We create a qualitative and quantitative framework that relates social network precise engagements and responses to social capital. More specifically, relationships among associated metrics are indicators of which types of social capital is needed to best manage and retrieve the desired type of social capital value. When users realize how to calculate the value of their SID score, they can make decisions and strategies can be formed on how to increase the SID scores and maximize social capital. The outcome will assist users with determining the significance of online relationships, promote quality in digital communities, measure social approval, extend the contribution of digital social engagement artifacts, and maximize digital investments. As your credit score determine your creditworthiness, the SID score will contribute to defining your on online social capital potential.

Furthermore, other objectives of the research project will be to test which social identity (SID) attributes are attached to your personal value chain. Do we care if our social value network is high/low? How does SID increase our potential to be validated? This research will also validate should SID be connected to your personal value chain and how to measure ROI. The outcome will assist users in determining the significance of their online relationships and gives users a tool to manage engagements to achieve stronger social capital (ROI). The paper first provides an overview and prior work relating to social capital and online social networks. Next the foundational theory of the framework is described along with a value mapping of the attributes on online behavior to social capital gained, followed by conclusions and future research.

2.0 Background

Much of the classic research on social capital validates the benefits users derive from their social networks. A common theme of social capital is that resources are accumulated through social networks. It suggests how strong ties within a social network create bonding capital from strong emotional support, and weaker looser ties within the broader diverse networks provide bridging capital (Putnam). According to Putnam (Putnam 1995) networks, trust along with norms is interrelated and hence essential components of social capital theory. The trust is critical and for it be established, networks of civic engagement and reciprocity norms are needed. In terms of social networks, research that is more recent indicates certain indications of social capital (as generalized trust) can be positively related to interactions over the Internet (Best & Krueger, 2006). Other research (Hampton and Wellman, 2002) indicated that Internet users were more connected to their communities offline than non-users, as indicated by them greater knowledge of and interaction with them neighbors.

Malkhasyan (2013) studied the question of how Internet increases, decreases or supplements social capital. We believe that online social networks (ONS) will require adjusting the preconceived traditional perspectives of value of engagement as it pertains to online networks.

Other researchers [Wellman,B.et. al] have described social capital as the benefit derived from one's position in the social network; the number and character of ties one maintains; and the resources those ties possess. Today, these ties exist in the online social media networks. Online social networks create different contexts and inclusiveness in audiences where, individuals tend to have larger and more heterogeneous networks, with ubiquitous communications. Some earlier Internet research indicated that since individuals could overcome space and time constraints across the Internet, they could potentially form meaningful relationships with those with common interests [Baym, 1997, Rheingold, 1993; Wellman & Gulia, 1999]. Social media is part of their daily routine for many users. In fact, approximately three-quarters of Facebook users and an estimate of six-of-ten Instagram users visit these sites at least once a day (Pew Research Center 2018). Today, the most widely used form of social media networking platforms is Facebook, with users investing an average of 25 hours per month, with smaller shares of Americans use sites such as Twitter, Pinterest, Instagram and LinkedIn (Pew Research Center 2018).Social networking sites (SNSs) are web-based membership platforms where end users create personal profiles, articulate friendship connections, and socially interact with the connections (friends, followers, groups) by uploading, approving, and commenting on content such as photos, messages, and videos, shared on news feeds [Ellison et al., 2014]. A special issue [Utz, 2015] brings together papers from different disciplines that focus on generating a current understanding about: (1) the benefits people seek and receive from their social media networks (i.e., informational, instrumental support, and/or emotional support); (2) how tie strength influences which benefits people receive.

Ellison's study (2007) was one of the first to have explored the intensity of Facebook usage effects on users' perceived bridging and bonding social capital. Other research has also documented a relationship between use of the SNS Facebook and increased levels of social capital and well-being [Burke, Kraut, & Marlow, 2011; Burke, Marlow, & Lento, 2010; Ellison, Steinfield, & Lampe, 2007, 2011; Steinfield, Ellison, & Lampe, 2008; Valenzuela, Park, & Kee, 2009]. Moreover, online social media platforms have accelerated social approval by providing simpler digital tools and docile processes to lower the learning curve and increase time investments. Undoubtedly, SNS provide an environment for public and private display of connections between users (via Friend/Followers/Network lists) which may help users to expand its networks through shared connections (Donath & Boyd, 2004). How these connections add value to users is investigated in this research.

From a business perspective, research on how social medias effective usage adds value to businesses has been generated. Frameworks and algorithms for measuring the market value and return on investments that businesses gain from utilizing SNS in a multitude of facets are available. Even a scoring model for organizations to calculate a precise usage score exists. For any corporation, it is critical to know whether the money invested in social media marketing has provided a return that's worth what was calculated as expense. [3] describes five tools to help a company accurately and completely measure such ROI from social media.

Yet, a careful assessment of how individuals can strategically gain value by engaging in a systematic way and derive their social media network is not well documented. For this, we propose the Social Identity score (SID score) as a way to systematically observe the intertwining of social capital and a return on investment from SNS engagements. In the finance industry, a user's credit score reveals the individual ability to repay debts. The lower the score the less likely a person would be granted credit, and/or it will result in a higher interest rate. High credit scores yield better borrowing potential and interest rates. Similarly, a high SID Value for individual users who is seeking to promote a business (SID-BV) might adjust its online practices and policies to maximize the value of bridging capital. We provide a framework on how SNS relationship activities can be measured for value add or ROI. The goal of this study is to closely examine a set of established SID attributes, and build a many-to-many network of attributes that will be used to determine the Return on Investment in engaging on Online Social Networks (OSN).

3.0 Strategic Framework for Social Capital ROI

Over the past few decades social networking connections through individuals and open publishing in general have rapidly became a popular tool for maintaining relationships, communicating and expanding businesses.

These turnkey applications connect users to a network of individuals with like opinions and philosophical constructs increasing the amount of emotion support a user can receive (or gain in this narrative) in a single post. Consecutively, users are able to validate feelings and ideas within minutes of its time investment using the established approval options. A user can seek to use this validation (like, love, etc.) and support for personal encourage, illicit business, build or spearhead careers, or promote academic synergies. Once posted, the approvals are packaged with a digital earmark of core feelings about the post. Much of the prior work has not captured the value of particular actions and have not related them to determining how an individual user can optimize their social network interactions via understanding the Social Identity score.

The amount of time a user spends on social network sites increases the amount of capital derived. We believe that digital social capital increases over time and will provide a multitude of opportunities from emotional support to business and career offerings. Over a period of time, a user's return on (time) invested (ROI), is measured by the amount of social capital (bridging/bonding) auser acquires. Based on the flexibility of SNS, and the volume of data and changes made daily, social capital is elastic, especially within the social media domain. Since value of social capital is dynamic daily, it is important to introduce strategic frameworks to aid users and organization in better planning how to leverage activity on SNS in order to maximize time invested. Individuals invest hours in building social capital and their social identify (SID) via online engagements. Buskey and Goel, (2016) presented a methodology to qualify the multitude of artifacts that can be derived from online social engagements and developed a framework that theoretically asserted the value of an individual's online social engagements. A SID score potentially assisted in understanding the return on investment (ROI) and social capital from your online social networking activities. Furthermore, the authors indicated how the score provided benefit to users for career, personal, and business opportunities. For example, the more connections on a SNS, the better access to resources, emotional support across heterogeneous SNS platforms, access to a global community of users and increasing bonding capital. Bridging capital benefits from higher connections increasing one to many relationships, creating a wider network of opportunities, and consistent messaging.

Often social norm patterns are eerily close to digital social norms not assuming that the users conform to or adopt these characteristics. Since social norms are generally formed based on a person's role, opinions, position in society, an identical social norm is transferred into digital societies. It may be a social norm to support a specific political party. If a user that is connected to another user does not support the same party views, often the user's relationship is impacted with digital validation or lack of online support. These relationships will impart an understanding of how attributes work in concert to maximize social capital ROI. This may also impact the users SID and impede social network goals. This study introduces a new framework that will use normalized attributes to reveal relationships.

The SIDRM is a Node Link diagram designed to initialize relationships between SID attributes and the direct relationship between each partner SID leveraging a many-to-many network mapping. A further description is provided later in this study.

3.1 Normalized SID Attributes

Previously, seven SID attributes that should be measured to calculate a social media score was proposed [Goel, 2014]. These original and initial SID attributes grouping leveraged information pertaining to items as: account, acceptance of users/groups, the number of relationships, volume of traffic generated, membership size comparison, usability statistics, targeted social groups by demographics. In this study we leverage additional research to reconstruct and normalize the SID attributes in order to reduce complexity, eliminate redundancy, and establish SID engagement levels.

In order to establish consistency and a strong set of attributes to effectively measure a user's social score, the original attributes were combined, and two new attributes were added to strengthen the framework and provide a measurement model. The following new SID attributes, outlined in Figure: 01 Normalized SID Attributes], will be used to measure a user's social network activity:

1. APR - Users post content on SNS and may or may not receive commentary or approval based on established ratings provided by the platform. The Approval Rating (APR) can be measured by the type of rating and the number of ratings provided to a giving post. For example, how many Likes a user received for a post on Facebook. APR is High for bonding capital and Low for bridging capital.

2. TSG – SNS users gravitate toward special interest groups based on demographics such as race, sex, religion, and other special interest (e.g. sports, careers, etc.). The number of targeted social groups (TSG) measures how a user's is leveraging SNS to establish a strong support structure. Bonding Capital is High for TSG and Medium for Bridging Capital because users are invested in maintaining relationships for a specific purpose.
3. INV - Social Network Sites require user to create an account (profile). Profiles often include (but not limited to) a user's Name, Birth date, country information, personal interest, etc. This information is used to map special interest and create a network of interest. Users will send an invitation (INV) to connect with a user on the network. The INV attribute measures the likelihood a user will accept/reject an invitation measure closely how selective a user to increase its network. Bothbridging and bonding capital is Low and often at a medium engagement level.
4. MEB – Each SNS shares the overall number of users who have active accounts (memberships) on its platform. The larger the active memberships the greater opportunity to earn capital on a given SNS. This is important if a user is seeking to increase engagement for emotional or simply seeking to increase network for business or career purposes.
5. USG - SNS users generate a level of traffic based on the type and level engagement while using social media. SNS traffic usage (USG) is measured from posting pictures, chatting, to just offering some digital response or rating. Traffic is higher for users that are seeking to increase bonding capital and lower for bridging capital.
6. DIV - Users engagement level is high when a user is seeking to increase bridging capital across multiple SNS. A user seeking to increase bridging capital will have diverse memberships (DIV) across multiple SNS. For example, a user with memberships on Twitter, LinkedIn, Facebook, and many other SNS will benefit with higher bridging capital.
7. REP - Social media engagement is based on the number hours a user spends interacting online creating new relationships, sharing content, responding to digital stimuli, and many other connection activities. Digital engagement often spawns measureable reciprocity (REP) with other users on the same and/or partner SNS. This newly introduced attribute, REP, is High when bonding capital is important and Low for bridging capital. REP is a new attribute.
8. FRQ - New SID Attribute that measures the number of days a user engages on a particular SNS is measured by the frequency (FRQ). Both bridging and bonding capital is high when FRQ increases. The above listed eight normalized social identity (SID) attributes can effectively measure SNS data to calculate a user's SID score. Our next step is to map relationships between the normalized SID attributes.

Table 01: Normalize SID Attributes

SID	SID ATTRIBUTE DESCRIPTIONS		ENGAGEMENT LEVEL	
			Bonding	Bridging
APR	The **Level / Rate of Approval** for content shared on SNS. This attribute measures the amount of Likes/Dislikes or other platform approval options.		High	Low
TSG	The number of **targeted social group** divided by race, sex, interest groups etc.		High	Medium
INV	The probability that a User accepts a request or **invitation** to connect on a SNS. This attribute measures how selective a user is based on likelihood they would reject or accept an invitation?		Low/Medium	High
MEB	This attribute measures **SNS Membership** compared to user average connections. The user's network size based on the average number of connections.		High	High
USG	This attribute measures the users **individual SNS usage**. The amount of Traffic a User generates while using in SNS.		High	Low/Medium
	traffic is defined by	posting pictures/videos		
		providing digital responses		
		blogging		
		engaging in surveys		
		chatting (IRC)		
		eCommerce		
DIV	The number of SNS membership a user has and engages. This attribute represents **diverse memberships**.		Low	High
REP	**NEW: The level of **digital reciprocity**. The attribute measures amount of time a user actively provides digital responses within or outside of its digital network.		High	Low
	providing digital responses	approval		
		rejections		
		emoji responses		
FRQ	**NEW: This attribute measures **the frequency a user engages** on SNS measured in days.		High	High

3.2 Value of Many-to-Many mapping (SID Attributes)

Social media content is being used today to influence decisions in corporations, politics, and many social constructs. [Keller, R., Eckert, C. M., & Clarkson, P. J. (2006)]. Software automation and BOT technology is rapidly growing and used to influence social network activity, social issues, and political campaigns BOT Technology create new accounts, create digital propaganda, and spread this information on Social Network Sites [Durham, Ken.(2009)]. These automated accounts are created using weak bridging relationships. Because of the new phenomenon, it is ever so important to understand the relationships between SID attributes to establish a relationship baseline. The direct relationship between SID Attributes is important to effectively understand the level of social capital achieved during online engagements and establish history, social clout, and other trends.

Online social engagements create a network of interlocking activities, which can be monitored to authenticate social capital. We design a two-dimensional Node-Link diagram titled SID relationship Model (SIDRM) to demonstrate the relationship between SID attributes and the level of capital that is generated by the alliance. Relationships between attributes are dynamic and critical to evaluating the level of engagement that is derived between users on SNS. Monitoring, mining, and adjusting these activities will assist individuals influence their SID Score. All eight SID attributes host a one-to-many relationship with some level of measurable social capital value (i.e. bridging, bonding, or both bridging and bonding). Moreover, this tiered relationship also validates if the user has invested actual capital in social media and not just sustained by creating new accounts and sharing data.

The SIDRM Node-link diagram below, demonstrates how all attributes are linked to provide a unique relationship [Bonding(bo) Bridging(bi) Both(boi)] establishing a baseline to measure connections [Figure 1. SIDRM Node-link Diagram]. Each attribute relationship may be greater between two attributes based how a user interacts and responds to digital stimuli (to include digital artifacts) and level of participation on SNS. In turn, the quality of relationship between attributes can determine quantifiable social capital. Ideally, a user on a specific SNS, would, over time, build relationships between attributes, which strengthens the ability to measure, and influence its SID Score.

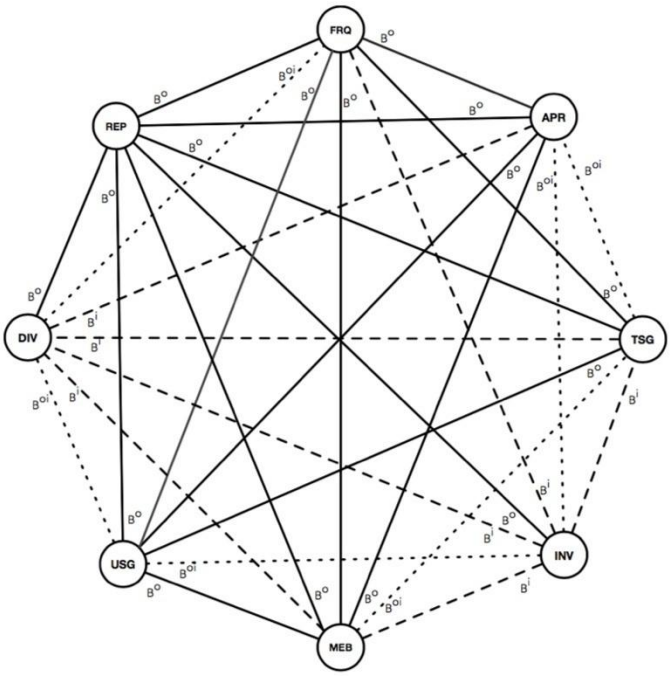

Figure 01: SIDRM Node-link Diagram

Figure 2. Titled "REP One2Many Diagram demonstrates how an attribute has established relationship with each sister SID attribute in the Note-Diagram [Figure 2. REP One2Many Diagram]. REP (Reciprocity) creates a unique relationship with APR (Rate of Approval) establishing a quantifiable bonding relationship which can be measured to influence future SID score.

Since, REP is based (and measured by) the amount of time a user spends responding to digital stimuli, which is strong engagement activity, this attribute strengthens the bonding capital association with all SID Attributes in this model. Hypothetically, a user that invest quality time engaging on SNS with users, groups, etc., would reveal strong correlations of bonding links between other attributes.

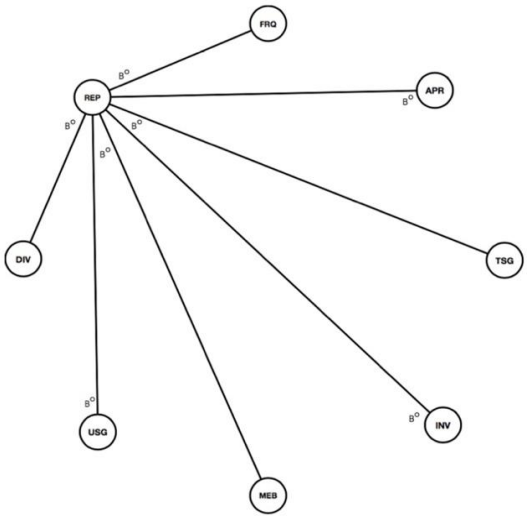

Figure 02: REP One2Many Diagram

An inverse relationship, demonstrates how the diverse membership attribute (DIV) champions more bridging capital [Figure 3. DIV One2Many Diagram]. This attribute focuses on relationship growth, which is established for bridging type capital. The relationships between REP and DIV was outlined previously, however, DIV and FRQ supports both levels of social capital (bonding, bridging) revealing need for memberships on multiple SNS and the frequency of user engagements impacts both. The remainder of the relationships is higher in bridging because diverse memberships, targeting special interest groups, and accepting opportunities to link with other users all strengthen this level of social capital.

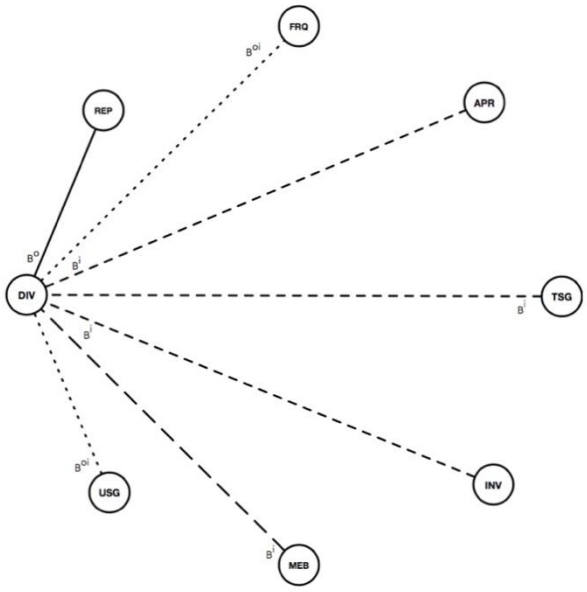

Figure 03: DIV One2Many Diagram

If we explorer, FRQ (Frequency a user engages) the relationships between attributes are more diversified [Figure 2. FRQ One2Many Diagram]. The relationship between FRQ and DIV (diverse memberships) is both bridging and bonding because a user may benefit from both levels of capital (i.e. if a user needs to promote a product, they will normally have a high level of diverse memberships with frequent interactions).

This diagram also reveals the relationship between FRQ and INV is more linked to bridging capital. Bridging capital engages a high number of connections and would accept a high number of invitations where bonding capital may be more discreet.

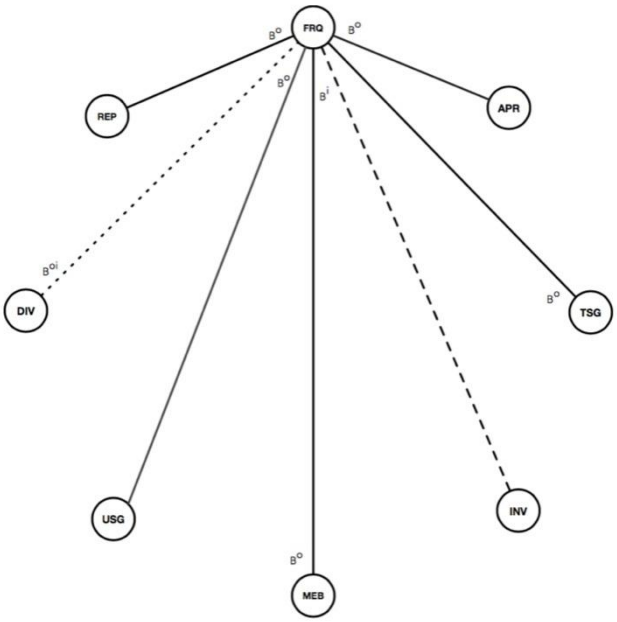

Figure 04: FRQ One2Many Diagram

The SIDRM framework establishes a strong set of relationships between all attributes revealing the social capital network for accounts, strategically planning social media influence, and provides future use in other social content studies. This framework will be validated in future studies using NodeXL. NodeXL is an open source analytical tool that can monitor social network traffic and validate trends between attributes [Udanor, C., Aneke, S., & Ogbuokiri, B. O. (2016)]. This tool will create a quantitative social map of data that can be analyzed to validate the level of social network metrics and understand of how a user invests its time SNS.

4.0 Conclusion

Generally, users participate in online social engagements, which build value even when the user is not readily aware. The framework in this study will influence users to manage the level of social capital by raising the awareness that capital exist and provide an instrument to measure social capital level. In future studies, we will use this framework to closely study a user's social network content and calculate a score. This score will validate if a user is high/low in bridging or bonding or benefit equally from both level of social capital. The scores will create and establish a baseline for social capital and lead to greater social awareness when engaging in SNS, and greater ROI from social network engagements.

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