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# Uncovering the power of informal networks

## *Synopsis*

This paper explores the relationship between social networks and change management in organisations with egocentric network properties, namely structure, position, and tie. It contributes a theoretical development network-based model for understanding such relationships and demonstrates how data from a survey tool can be used to demonstrate these relationships. The study offers insights into patterns of interaction within organisations and between network members in organisations, demonstrating that social network analysis alone cannot capture the diversity of structural elements within egocentric network properties.

## *Relevance for practice/education*

Utilising social network theories such as degree centrality, structural holes and strength of strong ties a theoretical model is developed. The model incorporates essential aspects of social network theory to explain the relationship between the management of change in projects and social network properties. The model is capable of underpinning and shaping strategic change in organisations.

## *Research Design*

Many theories advocate the importance of social network attributes and the management of change in organisations. The influence of informal networks on performance within an organization at individual, team or organizational level can be significant. Increasingly, executives in organisations developing collaboration in knowledge-intensive work, flexibility, and a de-layered hierarchical structure realise they require knowledge of informal networks amongst their employees. Based on network and change management theories we extend classical social network studies and develop a model to help understand the relationship between employee networks and change management.

## *Key Findings*

We find that employee networks impact an organisation's performance and has implications for managing organisational change. This is in substantial agreement with previous studies. These findings are useful for researchers and help them understand how social network attributes can influence the management of change in organisations using a social networks perspective that is both empirically and theoretically motivated.

## *Key Words*

Social network structure, organisational change, social network analysis, change management.

## ***Introduction***

Over the past decade, organisations have experienced more restructuring efforts resulting in fewer hierarchical levels, and greater internal and external boundaries. This restructuring has resulted in more collaboration and work occurring through informal networks of relationships rather than through formal reporting structures or detailed work processes with tightly controlled channels (Cross & Parker, 2004). These informal networks, embedded in core business as usual work processes or product development initiatives, are not found in formal organisation charts. They generally promote innovation, process improvement, efficiency, and enhanced quality of products or services by effectively pooling unique expertise and enabling organisational flexibility. Thus, it has become increasingly important that organisations support the collaboration of work through these informal networks to allow organisations to compete successfully in the areas of knowledge and the organisations' ability to adapt and innovate. This study aims to provide a relevant contribution to social networks that can influence the management of change in organisations.

## ***Social Networks and Change Management***

The research is focussed on the study of structural, relational and positional properties of social networks, including density and centrality. Wasserman and Faust (1994) define a social network "as a set of nodes and the relations between these nodes, where the nodes may be individuals, groups, organisations or societies."

Network researchers have examined a broad range of types of ties. According to Scott (2004), these include:

- communication ties- who talks to whom, or who gives information or advice to whom;
- formal ties- who reports to whom;
- affective ties- who likes whom, or who trusts whom;
- material or workflow ties- who gives money or other resources to whom;
- proximity ties (who is spatially or electronically close to whom; and
- cognitive ties- who knows whom

In the present economy, the effectiveness and performance in organisations are enhanced by the collaboration of informal networks (Cross and Parker, 2004). The utilisation of social network analysis allows the visibility of otherwise imperceptible patterns of interaction, thus making it possible to facilitate effective collaboration within organisations. Besides, employees may display loyalty to individuals in their network more than they value the organisation. These informal networks are, however, imperative to organisational success and employee engagement.

Notwithstanding their importance, employee networks often have limited knowledge, awareness and support by the organisations. Social network analysis provides a means to identify and assess the vital employee networks that exist in organisations and these networks can be influential in facilitating and disrupting the delivery of organisational change efforts (Cross & Parker, 2004). Thus, internal network structures, ties, and positions are associated with the positive and negative success of organisational change efforts.

## ***The Importance of Managing Change in Organisations***

Change management can be a useful tool to manage a rapidly shifting environment. Research as far back as Lewin (1947) and Schein (1964) emphasises the criticality of change processes such as participation, leadership, and alignment of social and technical dimensions of organisations.

The influence of internal and external forces to the organisation can impact the leadership and implementation of the change process. With the informal structures, including the types of relationships and the patterns of interaction that employees display within the organisation (Cross et al., 2002).

In organisations whereby collaboration between employees with differing expertise is valued by management, informal networks can compete and are often disconnected disrupting organisation structures, culture, geographic dispersion work practices and processes (Granovetter, 1973).

One key finding in the social science literature is that people refer to their network of relationships to access information and solve problems with a common reference "It's not what you know, it's who." With the work being actioned by employees through many and varied informal connections generated over some time and based on trust.

Many theories and practical experience advocate that many organisations find it challenging to integrate the perspectives of employees with differing capabilities, expertise, problem-solving styles, and cultural backgrounds. With some organisations responding with tactics of moving boxes on the organisational chart with a view that this will facilitate effective collaboration amongst employees. The importance of informal networks within organisations needs to be realised by executive management as they develop collaboration in knowledge-intensive work, flexibility and a de-layered hierarchical structure have been previously noted (Perron, 1986). The influence of informal networks in performance within an organisation at the individual, team or organisational level can be significant (Coleman, 1988; Burt, 1992). Notwithstanding the availability of research indicating how executives can influence informal networks at both individual and organisational levels, executives display limited leadership to evaluate and support the critical and at times invisible informal networks in organisations (Baker, 2000).

To support this, there has been some limited intraorganisational network research examining the structures, types, and outcomes of ties and the relevance to managing change in organisations. This limited research has been summarised in Table 1.

**Table 1: Findings & relevance to managing change in organisations**

Researcher	Study	Findings, Relevance & Implications to managing change in organisations
Baum & Oliver (1991), Kraatz (1998) & Uzzi (1996)	Interorganisational links can directly affect organisational outcomes	Positive/Negative organisational survival, competition, network effectiveness, and adaptive change
Tsai's (2001)	The examination of (60) business units included the interaction between the centrality of an organisational units network position and its absorptive capacity.	Compelling outcomes on organisation innovation and performance
Hansen (1999)	The network study of new product development projects (41) divisions included; assessing the development of new products in the least amount of time and the attention given to the role of weak ties in searching for knowledge and strong ties in transferring knowledge across organisational subunits	The qualities of the inter-unit network ties should be considered as one factor influencing organisational capacity for large scale change implementation and adaption

<p>Granovetter (1982), Krackhardt (1992) &amp; Marsden &amp; Campbell (1984)</p>	<p>How strong ties may affect organisational outcomes and implications for organisational change</p>	<p>Strong network ties display key characteristics between the parties to the relationship including; frequent interaction, an extended history, intimacy and sharing, and reciprocity in exchanges that allow mutually confiding, trust-based interactions. The knowledge of strong ties will provide benefit in the facilitation of organisational change to adapt their core characteristics in conformance of the planned change.</p> <p>Strong ties are essential for but not limited to: Achieving a shared understanding of the purposes and content of the changes People when faced with change and uncertainty that includes a crisis or significant change efforts, particularly in the absence of shared information and communication of change purposes, tend to prioritise their local interests and local decisions that impede organisational-wide cooperative behaviours necessary for the strategic change to succeed</p> <p>Strategic change is optimised when the social network within organisations includes an abundance of strong ties that cut across formal hierarchical boundaries such as teams, departments, divisions.</p>
<p>Burt (1992), Granovetter (1973), Hansen (1999) &amp; Krackhardt (2001)</p>	<p>How weak ties may affect organisational outcomes and implications for organisational change</p>	<p>Weak ties are characterised by; distant and infrequent relationships, that may be casual, less intimate and sharing, and nonreciprocal.</p> <p>There is a role for organisations to search for weak ties in the change process including: Change scenarios that may pertain to the gradual and incremental diffusion of innovations across organisational units Encouraging the exchange of a wider variety and potentially new information between groups by drawing in more peripheral communicators and extending access to a broader set of contacts and knowledge resources</p>
<p>Haythornthwaite (2001)</p>	<p>Both strong and weak ties are critical for organisational functioning as they provide access to different kinds of resources</p>	<p>The flow of more vibrant, detailed and redundant information and knowledge resources between individuals and groups is facilitated by strong ties. Encouraging the exchange of a wider variety and potentially new information between groups by drawing in more peripheral communicators and extending the access to a broader set of contacts and knowledge resources is facilitated by weak ties.</p>

The influence of utilising social network analysis can enhance the design and implementation of complex organisational change processes by the visualisation and awareness of the myriad relationships that can either facilitate or impede planned organisational change has been previously noted by (O'Connor, 1998). Thus, providing the executive leadership with the visibility of the informal relationships and provides insights into organisational collaborating including but not limited to:

- The organisation information flows across the hierarchy
- Areas of collaboration across the organisation (Divisions, Business Units, Teams)

- Key influential leaders within the organisation
- Identified individuals, teams and groups who may be disconnected from the leading network and will require targeted communication and training
- Asses fragmented relationships that are critical to the creation and sharing of knowledge within the organisation.

With the insights and analysis informing the decisions made in the design and implementation of organisational change initiatives.

To support this view, and the research that was undertaken by Lewin (1947) and Schein (1964), Table 2 illustrates how social network analysis enhances each stage of the classic unfreeze-transition-refreeze organisational change model.

**Table 2: How social network analysis enhances each stage of the classic unfreeze-transition-refreeze organisational change model**

Unfreeze	Change	Refreeze
Motivating Change: Group Level Organisational Level	Facilitating Transition Processes: Assess change Progression	Assessing Health of Informal structure in the Change Environment
Organisational preparedness and acceptance of the change is necessary Disseminate the existing status quo to optimise the new way of operating Develop compelling messages for why the current state of doing things is not sustainable Challenge the organisational beliefs, values, attitudes, and behaviours Expect uncertainty Build a case for change as a prerequisite for engaging employees in a change process	Take action Make changes Involve people in participation The uncertainty in people perception declines and look for new ways of doing things Understand the benefits of change Embrace the new direction Active and proactive participation in the change People align with the reasoning behind the change and act in ways that support the new direction The realisation that not everyone impacted by the change will be supported and be in alignment of the benefits	Make change permanent Establish new standards Establish new ways of doing things Reward desired outcomes & successes Changes begin to take shape, and people embrace the new ways of working Outward signs include a stable organisation chart, consistent job descriptions Changes are internalised or institutionalised through incorporation into everyday business Acknowledgement of people's efforts reinforces their belief in future changes A celebration of the success of the change helps people find closure
Social Network Analysis		
A powerful tool to gain collective agreement in the need to change Identifies dynamics underlying team or organisational inefficiencies Embeds real patterns of behaviour in organisational settings	Instrumental in understanding opinion leaders that can be targeted Helps identify who is most central and connected in the network	A powerful tool to assess the health of informal structure after the change has been implemented

Group Level		
Facilitated sessions identify issues that hinder teams Specific behaviours and design elements of an organisation require modification to improve group efficiency and effectiveness Rich facilitated sessions evolve quickly by visualisation of network diagrams and seeking group engagement to diagnose patterns as well as issues facilitating or impeding their effectiveness		
Organisational Level		
Pinpoint problems of collaboration across an organisation Map relationships that cross organisational boundaries		

In strategic change initiatives, the informal structure of an organisation is typically hidden from the view of most leaders, managers and change agents, but can be influential in facilitating and impeding organisational change efforts has been previously noted (Cross et al., 2002).

Outlined by Scott (1990) and Wasserman & Faust (1994) (and reproduced in Table 3) are the network measures that will enhance and or impede organisational change initiatives.

**Table 3: Network measures that will enhance and or impede organisational change initiatives: Scott (1990) and Wasserman & Faust (1994)**

Network Measure		Impact on Organisational Change
Individual	Degree Centrality	The number of times a person has for a given relationship (such as friendship and influence) The degree is an indicator of direct influence, as well as the probability of receiving information that may flow through the network.
	Closeness Centrality	The average path length is linking a person to every other person in the network. On average, persons with high degrees of closeness centrality tend to hear information sooner than others.
	Betweenness Centrality	The number of times a person lies along the shortest path between two others. Persons high in betweenness centrality are structurally positioned to be brokers, liaisons, and boundary spanners – or bottlenecks and gatekeepers. Networks that contain individuals with high betweenness are vulnerable to having information flows disrupted by power plays or having key individuals leave.
Collective	Cohesive Subgroups	Sets of individuals who have closer ties with each other than with others. Cohesive subsets tend to develop their own culture and identity and may have more influence on individuals' behaviour than the organisation as a whole.

		The existence of multiple subgroups can create difficulties for change efforts due to conflicting perspectives and allegiances.
	Density	The number of individuals who have a given type of tie with each other expressed as a percentage of the maximum possible. Networks with high density are cohesive. Individuals in dense networks tend to share a common culture, communicate information quickly and face stronger pressures to conform to group norms.
	Multiplexity	The relationship between two individuals is multiplex to the extent that there is more than one kind of tie that binds them (e.g., they are not only business partners but friends and neighbours). Networks with many multiplex ties can be difficult to change because changes have ramifications for so many different relationships.

### ***Research Study Foundations***

The research study developed a theoretical model based on social network theories and the social influence model to understand how a social networks model impacts the management of change in organisations. It investigates the association between egocentric network properties (structure, position, and tie) and information and communication use of individuals in managing change in organisations and informal networks in project change management.

### ***The context of the Study***

The context of our study is a small ICT company (telco) based in Tasmania, Australia, established in 2008, when the founders saw a gap in the market for quality internet service provision. There was a need for more pragmatic, service-focused providers who were willing to partner and grow with businesses and take on the role of trusted business advisor. Since then, the local telco grew significantly in operations and now works with over 100 SME's in Australia across all industries. Employing 32 employees at the time of writing this paper, the telco's primary objective is to maintain the utmost levels of service for their customers and strive to place the local telco company at the forefront of internet and cloud services within the ICT industry. This telco was selected as they were in the process of announcing company structure changes that would impact all teams. The deployment of the structural changes provided an opportunity for the research study to review the pre and post deployment impacts to change management in projects. We will address the telco firm as ACME telco from this point on.

### ***Hypotheses***

Research in both sociology and organisational studies demonstrates the importance of relationship networks as a conduit for information and knowledge with the network being critical in informing us how to do our work, seek information and solve problems. This is developed by from whom we know and the impact on what we come to know from informal relationships (Burt, 1992, Granovetter, 1973). This demonstrates the importance of the individual in understanding how process and organisation redesigns and other organisational change initiatives can disintegrate a network's ability to share and create knowledge.

When leaders and managers embrace change initiatives, they seek their informal network in some ways including seeking help and guidance from a limited number of trusted colleagues, identifying who is influential in the "grapevine," and reviewing the positive and negative forces within the culture and climate for the proposed initiative.

This view is limited as it represents only a narrow number of views of the network of relationships and the reality within the organisation can be distorted. People in the hierarchy are generally removed from the day-to-day work interactions that generate the informal structure. This engenders an inaccurate understanding of the actual patterns

of relationships (Krackhardt, 1990). Furthermore, it increases the potential for inaccurate perceptions as our virtual work world expands through telecommuting, where employees' work relationships can become invisible to their leaders and managers.

With limited research and minimal attention being adapted to the study of social networks concerning the organisational capabilities in change adoption, A noticeable void is in the area of networks within organisations and the role that interunit ties may display ineffective large-scale change implementation and use.

The research focused on two critical concepts used in network analysis, density and centrality. These two concepts have been found to assist organisational change initiatives at an individual and collective level (Scott, 1990; Wasserman & Faust, 1994).

Outlined by Scott (1990) and Wasserman & Faust (1994) is a summary of the positive and negative effects of the density and centrality at an individual and collective level in Table 4.

**Table 4. Positive and negative effects of the density and centrality concepts (Scott, 1990; Wasserman & Faust, 1994)**

Level	Concept	Measure
Individual	Betweenness Centrality	The number of times a person lies along the shortest path between two others.  Positives:  Persons high in-betweenness are structurally positioned to be brokers, liaisons, and boundary spanners-or bottlenecks and gate-keepers.  Negatives:  Networks that contain individuals with high betweenness are vulnerable to having information flows disrupted by power plays or having key individuals leave.
Collective	Density	The number of individuals who have a given type of tie with each other expressed as a percentage of the maximum possible.  Positives:  Networks with high density are cohesive. Individuals in dense networks tend to share a common culture, communicate information quickly and face stronger pressures to conform to group norms.

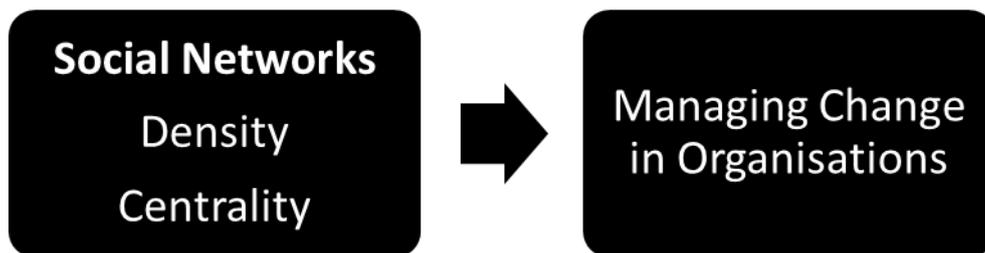
The results of the research will provide quantitative evidence to support the following hypotheses, including:

- (H1) The individual level of the degree of centrality will be lower at the pre-deployment analysis on the management of change for the individual team.
- (H2) The collective level of density will be lower at the pre-deployment analysis on the management of change for the individual team.

The research study will support the development of a social networks model for the management of change in organisations. This will include:

- Pre-deployment analysis on the management of change for the individual and the team

The conceptual model in Figure 1 depicts the measures used to assess the research variables. On the collective level, density is one of the most used measures in SNA and refers to the number of individuals who have a given type of tie with each other, expressed as a percentage of the maximum possible. On the individual level, betweenness centrality refers to the number of times a person lies along the shortest path between two others.



*Figure 1: Conceptual Framework Towards a Social Networks Model for the Management of Change in Organisations*

#### ***Demographic and Social Network Data Collection***

Ethics application was successfully obtained for this study. All 32 employees, including team members, team leaders, and business unit managers in ACME telco, were invited to participate in an online survey in September 2016 and closed a month after. With support from top management, a total of 27 employees responded to achieving a response rate of 84%.

Using sociometric techniques, a survey was developed to collect relational data that described how the respondents interacted with one another. The survey included collecting network data on:

- **Communication Network:** The informal structure of an organisation as represented in ongoing patterns of interaction, either in general or for a given issue.
- **Information Network:** The information network respondents have including who goes to whom for advice on work-related matters.
- **Problem Solving Network:** Who goes to whom to engage in dialogue that helps people solve problems at work.
- **Access Network:** Who has access to whose knowledge and expertise.

Demographic items in the survey included gender, birth year, the highest level of education, role in ACME telco, years worked, and the department they belonged to.

The second section of the survey pertained to social network data. As the entire list of the employee names was available, a socio-centric approach (Chung et al., 2005) was utilised where each respondent was asked if they had

communicated with the other employees in the list. Using a name generator, a communication network of each respondent was elicited.

Respondents could then choose the name of the person they had communicated with, followed by another set of questions which elicited the strength and nature of the relationship. This includes frequency of the communication (quarterly to daily) and emotional closeness (ranging from 'not close at all' to 'very close').

As each respondent completed their survey, we were able to obtain a whole communication network of the organisation. Although five respondents did not participate in the survey, others nominated them during the name generator component of the communication network question. Therefore, all 32 employees appear in the sociogram. Rather than names, unique IDs were used for each employee to preserve their anonymity, privacy, and confidentiality. It was noted that one of the IDs (ID 27) belonged to the researcher and was removed from all analyses as it was included in the survey for testing purposes.

### ***Measures***

#### ***Social Network Measures Betweenness Centrality & Ego Density***

To operationalise the model proposed above, we used betweenness centrality and ego-density.

In graph theoretical terms, betweenness centrality measures the extent to which a node (person) lies in between the shortest path of all other nodes (persons) in the network. Mathematically, it is expressed as the ratio of the number of shortest paths between two nodes passing through a particular node over the total number of shortest paths from one node to the other. Therefore, it is a number between zero and one. High betweenness centrality means more information will flow through that node. Hence, it will have more control over the network and more likely to be the information broker or bottleneck of the network. The mathematical expression for betweenness centrality is:

$$b(i) = \sum_{j,k} \frac{g_{jik}}{g_{jk}}$$

*Equation 1*

Where  $g_{jik}$  is the number of shortest paths from node  $j$  to node  $k$  ( $j, k \neq i$ ), and  $g_{jk}$  is the shortest paths from node  $j$  to node  $k$  passing through node  $i$ .

Density or ego-density, in this case, is calculated as the ratio of an actual number of ties over the maximum possible number of ties in the network. The higher the density, the more members in the network connection with each other. From an egocentric perspective, ego density represents how dense other nodes that one specific ego communicates with are connected. An ego density of 1 means all members that the ego communicates with are connected, which forms a clique. The mathematical expression for ego density is:

$$D = \frac{2N_i}{N(N-1)}$$

Equation 2

### Results and Findings

Using UCINET and NETDRAW (Borgatti et al., 2002), the sociograms depicting the communication network of ACME Telco is shown in figure 4. The sociogram shows a fairly dense communication network within ACME telco. The employees are colour-coded into their roles/departments, and the thickness of the lines represents the frequency of communication (where thicker lines mean more frequent communication). While several employees are at the periphery of the communication network, employees from different roles tend to communicate with one another, and there is no clear-cut display of factions and cliques in departmental silos. This indicates that the communication structure fosters free-flowing communication between employees in different departments.

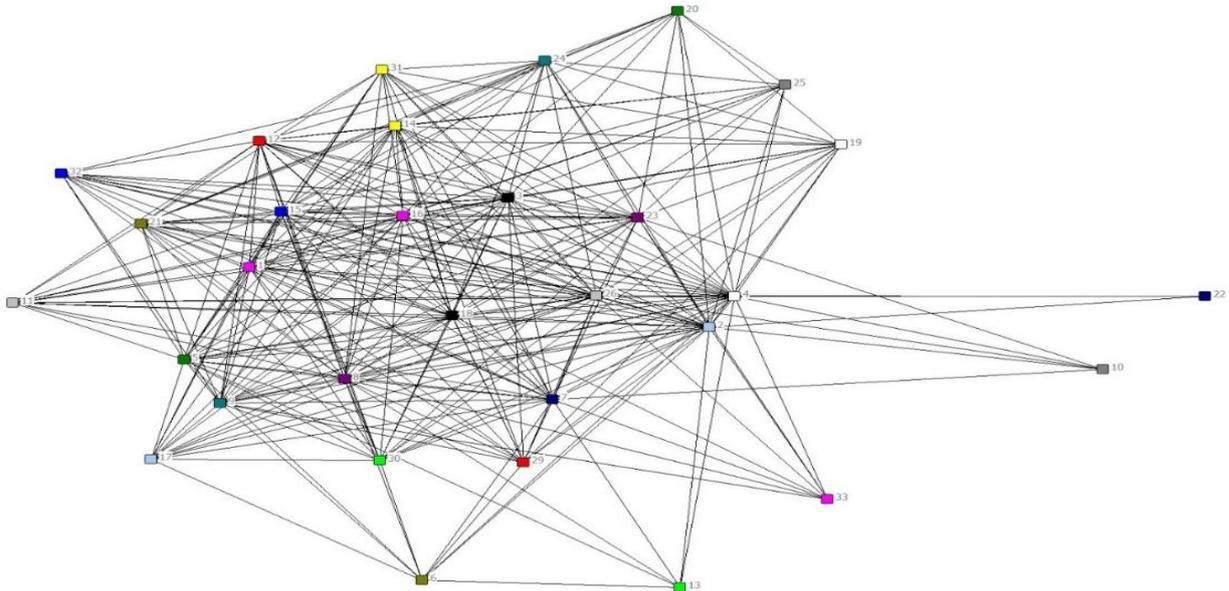


Figure 2: Sociogram showing the roles of employees and communication structure

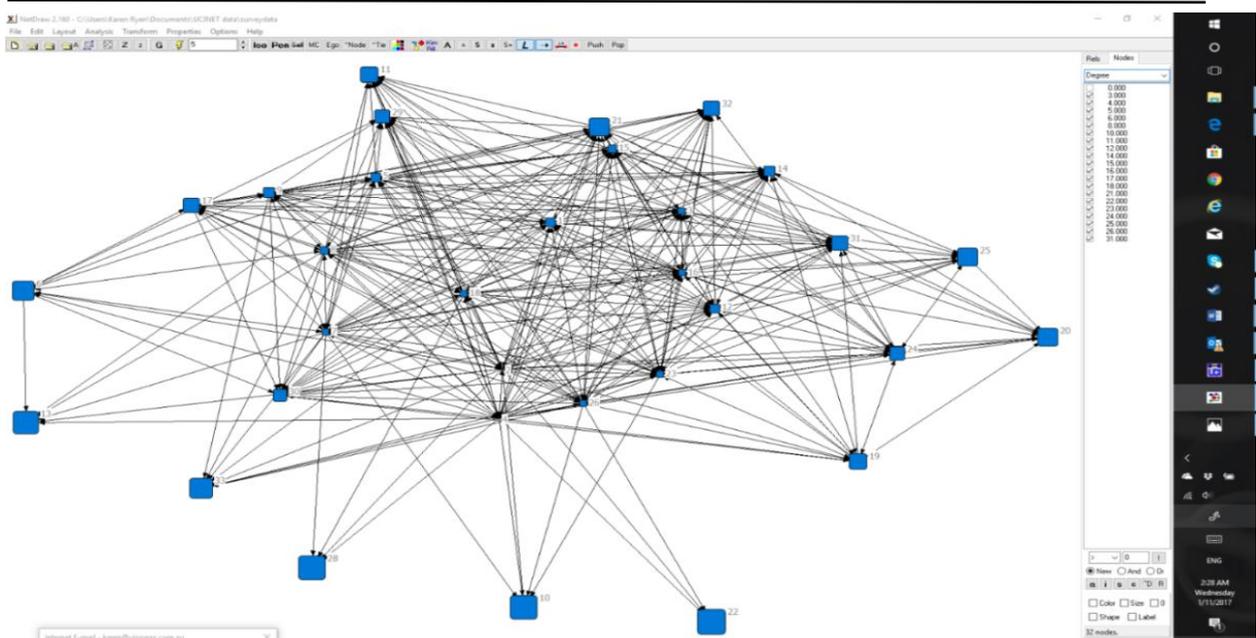


Figure 3: Sociogram showing the roles of employees and betweenness centrality

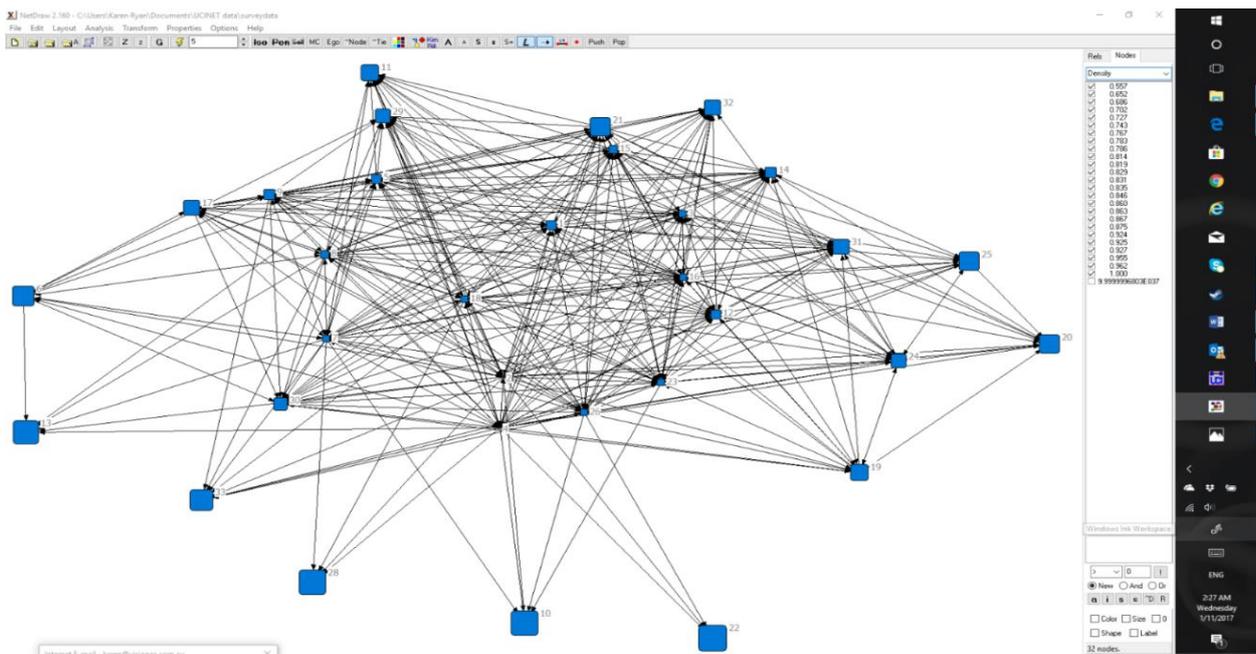


Figure 4: Sociogram showing the roles of employees and ego-density

(H1) argues that the individual level of the degree of centrality will be lower at the pre-deployment analysis on the management of change for the individual team.

The median score for betweenness centrality is 0.192 (out of 1) is low among all 32 employees. This result supports H1.

(H2) argues that the collective level of density will be lower at the pre-deployment analysis of the management of change for the individual team.

The median ego density is 0.649 (out of 1) is relatively average among all 32 employees. Given this result, we find support for H2.

### ***Findings***

This demonstrates that the use of social network analysis alone cannot summarise the complex diversity of structural elements that exist within egocentric network properties, for example, actors, subgroups of actors or groups. This provides insights into the patterns of interaction and the formation of observable patterns of information exchange within organisations and between network members in organisations.

In the context of managing change in organisations, network data extracted from social network analysis may be able to assist organisations to discover possibilities in:

- An awareness that networks and collaborative relationships that can enhance the success of implementing successful organisational changes
- A visualisation tool for leaders to analyse and assess the myriad relationships that can either facilitate or impede organisational change
- The information flows within the organisation
- Visibility of the people or groups of people that are disconnected from the leading network and to optimise change adoption may require targeted communication and training
- Ability to enhance the organisation change adoption by assessing relationships within the network that should be expanded or reduced with the identification of influential employees
- The measurement of effectiveness for organisational change initiatives
- By assessing the communication, network organisations can identify transmitters, isolates, and bottlenecks, and assess the potential speed of diffusion
- How assessing the information network can identify critical individuals, culture carriers, and overburdened organisational members; change implementations need to be aware not to overlook central players of the network.

### ***Discussion***

#### ***Betweenness Centrality and Managing Change in***

Betweenness centrality is defined as who is critical for a network's information flow, i.e., who connects different segments of the network and who is an important intermediary or broker (Wasserman & Faust, 1994). The importance of measuring the number of times a person lies along the shortest path between two others with persons high in betweenness centrality those who are structurally positioned to be brokers, liaisons, boundary spanners bottlenecks, and gatekeepers. With the networks being vulnerable to having information flows disrupted by power plays or having key individuals leave that contain individuals with high betweenness has been previously noted (Wasserman & Faust, 1994). Baum & Oliver (1991), Kraatz (1998), Uzzi (1986) assert that "Interorganisational links can affect directly organisational outcomes with positive and or negative links impacting organisational survival, competition, network effectiveness and adaptive change in terms of the management of change in organisations." The results of this study indicate that there is a significant positive relationship between ego network betweenness centrality and the management of change in organisations.

### ***Density and Managing Change in***

Density is defined as the number of individuals who have a given type of tie with each other, expressed as a percentage of the maximum possible. Networks with high density are cohesive. Individuals in dense networks tend to share a common culture, communicate information quickly and face stronger pressures to conform to group norms has been previously noted by (Wasserman & Faust, 1994). With the benefit of considering the nature of an inter-unit network tie is one factor influencing capacity for organisational change implementation and adoption has been argued by (Hansen, 1999). The importance for organisations to be aware that strong and weak ties are critical for organisational effectiveness as they provide access to differing resources. As strong ties facilitate the flow of more vibrant, detailed and redundant information, and knowledge resources between individuals and groups and weak ties are of greater importance. They encourage the exchange of a wider variety and potentially new information between groups through peripheral communicators and extending the access to a broader set of contacts and knowledge resources (Haythornthwaite studies, 2001)". The results of this study are indicative that there is a significant positive relationship between ego density and the management of change in organisations.

### ***Conclusion***

The findings demonstrate that ego-network properties (centrality and density) are positively associated with the management of change in organisations.

### ***Towards Research (Theory and Methodology)***

Contributions made by the study concerning the theory are as follows:

- Contributed to the understanding of social network attributes and the management of change in organisations
- Developed a conceptual model to explore the associations between social network properties (structure, position, ties) and managing change in organisations
- Demonstrated how the research model could be operationalised in the context of organisations and the management of change.

### ***Towards Practice (Context of the Study)***

The results provided by this study suggest the importance of social networks for the management of change in organisations. In the context of the study, this could be translated into the organisational context and why developing a network perspective is a leadership imperative to the management of change in organisations.

Key organisational considerations developed during this research study that can influence the management of change in organisations include:

- Relationships and connections can positively or negatively impact the implementation of organisational change initiatives. With individuals not being isolated and their connections provide opportunities through access to valuable information, resources, create constraints and can influence their ideas, attitudes, and behaviours.
- Work often happens through informal channels, and organisational activities often occur through interactions outside of formal reporting and working relationships. Understanding informal networks are critical in flat, team-based, and agile work environments where formal structure provides little guidance.

- Leadership occurs through relationships. Direction, alignment, and commitment are created through relationships between people working on shared challenges. All people contribute to this process, and thus leadership may be shared throughout the network. Further, boundary spanning leadership requires a network perspective to see and build connections between groups accurately.
- Successful leaders develop networks of strong, diverse relationships with the awareness that under- and over-connectivity suppresses performance and limits outcomes.
- Change implementation is optimised with the visualisation of network knowledge as relying on formal, vertical channels alone impedes the capacity to adapt to emerging change impacts. With the opportunities of acceleration in change adoption being accelerated by activating informal networks and enhancing the network's capacity to span boundaries. This approach is critically important in cultural transformation as the organisational culture lives largely within the connections between people. Understanding these connections provides insights into subcultures, pockets of resistance, and hidden champions of the transformation.

***This research study provides a means of:***

- Identifying and assessing the health of strategically important networks within an organisation. By making visible these otherwise invisible patterns of interaction, it makes it possible to work with groups to facilitate effective collaboration.
- Providing organisations with a means of assessing the effects of decisions on the social dynamics of the organisation.
- Visually assessing patterns of relationships that hold the group together, including:
  - Identifying people highly central in networks and impact a group by controlling information or decision making can assist organisations in how to reallocate informational domains or decision-making rights to make the group more effective.
  - Understanding who is peripheral in a network and creating ways to engage these people is a means to expertise resident in a given network is effectively utilised.
- Identifying informal networks where effective collaboration and knowledge sharing has organisational impact review networks that cross-functional or hierarchical boundaries. However, informal networks can be, at times, unrecognised when their interactions underlie organisation capabilities and support strategic innovation.
- Promoting collaboration within a strategically important group.
- Supporting critical junctures in networks that cross-functional, hierarchical or geographical boundaries
  - Pinpointing breakdowns of informal networks and target junctures.
- Ensuring integration within groups following strategic restructuring initiatives.
- Assessing the health of informal structures.
- Networking the ability to share information and leverage each other's expertise.
- Integrating members from a different location on projects.
- Enabling face to face and sharing cross networks of information and skill-sets.

***Key benefits of the study include:***

- Makes visible the patterns of information sharing within and across strategic networks.
- Allows managers to review diagrams and recommendations, look at relationships and define and resolve issues in team performance and outcomes.
- Identifies issues and specific behaviours and organisational design elements that require modification for efficiency and effectiveness.
- Rich team discussions can be enhanced as network diagrams are presented, and patterns are self-diagnosed.

***This study provides a personal tool for individuals to shape their network to:***

- Improve individual connectivity.
- Assess the effectiveness of personal network:

- Composition - diversity and relying too heavily on individuals' functional area or those closest to you.
- Invest in the development of specific types of relationships.
- Assess and support strategically important informal networks in organisations can deliver performance benefits.
- Network relationships provide critical anchoring points for employees.
- Identify and assess the health of strategically important networks by making visible the invisible patterns of interaction and work with groups to facilitate effective collaboration on how design decisions and leadership behaviours affect the relationship and information flow central to how work is delivered.
- Provide a means for leaders and managers to assess the effects of decisions on the social fabric of their organisation.

### ***Directions and Future Research***

This study originated as conceptual and exploratory. Further empirical research is needed to substantiate and evaluate the applicability of the framework in some different large-scale organisational change initiatives and industries. Furthermore, the application of this framework via a case study on how a particular organisation manages change during the different phases of a project lifecycle would be valuable. A focus group study or semi-structured interview might also be conducted with project/program managers to delineate the tool's usefulness. Operational issues would include the availability of network data, stakeholders included in the scope of the project, definition of what constitutes a tie, whether the multiplex nature of the tie (contractual relationships, collaborations) needs to be considered. Practically, it is possible to claim that such a model would allow organisations to enhance the success of organisational change management.

### ***Limitations of the Study***

As with many other studies on social networks, the size of the dataset raises a concern about representation level and generalisation of results. With only 32 respondents from a small telco, it is difficult to judge the significance of the findings in a generalisable context, since larger sample sizes are generally required for statistical testing. Also, the scope of the study is limited to an ICT company, and whether the findings can be generalised to other areas requires further research. However, given this limitation, this study aims to contribute to the literature on the relationship between social networks and managing change in organisations.

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