

THE ANTECEDENT ROLE OF SOCIAL NETWORKS IN PROJECT COMMUNICATION

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ABSTRACT

The purpose of this paper is to explore the human dimension of project management by establishing the extent to which social networks explain changes in Project Communication. This study was positivistic and adopted a quantitative, cross sectional study design. Data Analysis was based on responses of project-stakeholders (n=418) who took part in 92 citizenship projects conducted by major commercial banks in Uganda. Use of specific type of projects was meant to minimize bias and enhance usefulness of results owing to the unique nature of specific projects in real life. The statistical analysis results revealed that the social network constructs that were studied (i.e. network transitivity and network degree) are significant predictors of Project Communication. It was recommended that project managers, especially those involved in managing citizenship projects, should value social networks as one of the primary means of ensuring effective Project Communication. In analyzing the dyadic relationship between the study variables with the aid of data from citizenship projects, earlier studies did not accord direct attention to the antecedent role of social networks but instead addressed its mediating, moderating and dependent roles. The use of data from citizenship projects in this study was merited by the fact that many organizations are engaging in social responsibility activities from which the citizenship domain arises.

INTRODUCTION

Organizations today are embracing Project management as a way of attaining and sustaining competitiveness. According to an Economist Intelligence report (2009), over 80% of global executives believe that having project management as a core competence helps to sustain an organization's competitiveness. As such, studies aimed at improving the factors that drive project success like Project communication (PMI, 2008) are receiving great attention from managers. Project communication is only effective and supportive of project success if the receiver of the information is seen to react in a way the sender expected him or her to react (Feldberg, 1975; Ramsing, 2009). Research by Ramsing (2009), Ruuska (1996), Andersen, Birchall, Jessen, and Money (2006), has however indicated that ineffective project communication is still a major deterrent of project success. According to Bowen and Edwards (1996), the communication channels adopted for transmitting messages affects mutual understanding and hence a potential cause of communication ineffectiveness. It is therefore probable that Baker's (2007) findings to the effect that more than 95% of project failures could be attributed to ineffective project communication are largely explained by poor choice of project communication channels. Hansen (1999) has indicated that Social networks provide a unique channel for transferring pieces of information from one node to another and hence can enable effective project communication if they are appropriately used. Burt (1992), Fliaster and Spiess (2008), also aver that social networks are efficient channels for accessing new information and that Social networks with strong ties (high transitivity) provide information which may not be transferred using other channels effectively. Sozen (2012) also avers that the number of social ties (network degree) can account for effective communication by way of brokerage (see also; Burt, 1992; Cross, Borgatti, & Parker (2002); and Hansen, 1999). According to Lengnick-Hall and Lengnick-Hall (2003), Social networks create a system that makes ideas and information accessible to those who need it when they need it and thus support the two-way symmetric communication model which holds that sense making and sense giving are iterative and progressive processes (Morsing & Schultz, 2006). The purpose of this paper is to explore the human dimension of project management as proposed by Cooke-Davies and Arzymanow (2003) by establishing the extent to which social networks (network transitivity and network degree) explain changes in Project Communication. The rest of this paper is organized as follows; the next section reviews literature on social networks and individual commitment to develop hypotheses, followed by the research design, data analysis, discussion of findings, implications, limitations and areas for future research.

LITERATURE REVIEW, CONCEPTS AND HYPOTHESIS DEVELOPMENT

Perkins-Munn and Chen (2004) advance that all research in the field of project management is hinged at improving project performance. Cooke-Davies and Arzymanow (2003) propose that project management can entirely be studied under two dimensions. These include the technical dimension and the human dimension. This study partially explores the human dimension by establishing the extent to which social networks contribute to effective project communication with evidence from citizenship projects. Citizenship projects are of key interest to managers of late as they have become a source of competitive advantage in terms of good public image, more productive staff, lower R&D costs, fewer regulatory hurdles, and stronger synergy among business units (Nangoli, Namagembe, Ntayi & Ngoma, 2012; Goodman 2000; Hopkins, 2007; McDonald & Rundle-Thiele, 2008; Scott, 2007). There are many project management researchers who have so far contributed to the human dimension of project management from different perspectives (see e.g. Diallo & Thuillier 2004; Andersen et. al., 2006) but none of these studies tests the role of social networks as an antecedent of Project Communication.

Social networks

In line with Seibert, Kraimer, & Liden, (2001), this study uses the term ‘social networks’ to refer to the pattern of ties linking a defined set of social actors. These may include are not limited to members of the local community, project staff, projects customers, project suppliers among other entities. Social network theory has principally presented the value of social networks in two ways; by considering (1) the resources in networks (e.g. Burt, 1992) and (2) the network itself as a resource (e.g. Lin, 2005). This study adopts the views of Erickson (2005) and extends that a project may be conducted for its bridging properties to other networks or for its properties as an end in its self. While some organizations engage in citizenship projects philanthropically as an end in themselves, others invest in citizenship projects by virtue of their bridging properties to other resourceful hubs. Dyer and Nobeoka (2000), aver that social networks can play a vital role in enhancing project capabilities. Fowler, Dawes, and Christakis (2009), Granovater (1973) maintain that in social networks, some nodes develop more contacts (Higher Degree) than others and that the clustering coefficient (transitivity) also differs based on the level of interactions (communications) maintained. Social networks can be studied in terms of network degree and transitivity (Fowler, Dawes, & Christakis 2009) so that all other social network aspects like density, centralization and distance arise from the two constructs. Ahimbisibwe and Nangoli (2012) contend that Social network degree is the number of social ties the project has (both incoming and outgoing), and network transitivity is the likelihood that two of a person’s contacts are connected to each other.

Project communication

The term ‘Project communication’ is gaining prominence as a way of referring to information exchanges particularly intended to create understanding among project stakeholders (see e.g. Ruuska, 1996; Nangoli, Namagembe, Ntayi & Ngoma, 2012 and Ramsing 2009). Project communication effectiveness can be described as the degree to which relevant and understandable information reaches the intended information sources/receivers in time (Lievens, Moenaert and S'Jegers 1997). In the realm of citizenship projects, messages with the potential to affect the performance of a particular project together with its other nodes (stakeholders) like sponsors, is commonly exchanged among the local communities, regulatory agencies, customers, project team members and project sponsor among other stakeholders. Stakeholders are any group of individuals who can affect or are affected by the project (Freeman, 1994) all of whom qualify to belong to social networks by virtue of their connections (Seibert et al., 2001). According to Feldberg (1975), the objective of communication is to ensure that the receiver reacts in the way the sender expects. Project communication is conceptualized in this study as extra-project communication and intra-project communication (Lievens & Moenaert, 2000). Extra-project communication refers to communication with the external project environment like the project suppliers while intra-project communication refers to communication flows within the project for example information exchanges amongst project staff or project staff and project management.

Relationship between Social network and Project communication

Synonymous with Granovetter’s (1973) submission that Social linkages can operate effectively during job search activities of network nodes, it can be argued that the social ties a citizenship project generates can play a pivotal role in enhancing the effectiveness of communication between implementing organization and project beneficiaries through building trust. This is further supported by Whiteley, McCabe and Savery (1998), and Tourish and Robson, (2003) who found that effective communication is dependent on well established trust. Social network ties can be beneficial both in terms of network degree and network transitivity (Fowler, Dawes, & Christakis 2009). Burt (1992) extends that social networks are efficient for accessing new information and that Social networks with high transitivity provide information which may not be transferred effectively using other channels/media. In line with the media richness theory, contingency theory and information processing theory (Daft & Lengel, 1986; Trevino et al., 1990), it can be argued that social networks are generally more effective for two-way symmetric communications (Morsing & Schultz, 2006) as they offer opportunities like

face to face interactions which have been celebrated as rich media (see e.g. Vaaland, Heide & Grønhaug, 2008). Burt (1992) also suggested that participation in social networks can provide actors with access to timely information and referrals to other actors in the network. It can therefore be hypothesized that;

- H1: *Social network elements positively influence project communication*
 H1 (a):- *Network transitivity positively influences project communication*
 H1 (b):- *Network transitivity positively influences intra project communication*
 H1 (c):- *Network transitivity positively influences extra project communication*
 H1 (d):- *Network degree positively influences project communication*
 H1 (e):- *Network degree positively influences intra project communication*
 H1 (f):- *Network degree positively influences extra project communication*

METHODOLOGY

Social networks were measured using a combination of the network Degree and network transitivity (Fowler, Dawes, & Christakis, 2009; Rosenthal, 2007). There are other scholars like Balkundi and Kilduff (2005), Reagans and McEvily (2003) who have used similar measures to study Social networks. The study of social networks using qualitative scales is still relevant in current research (see e.g. Assis-Dorr, Palacios-Marques & Merigó, 2012). Project communication was categorized as internal project communication and external project communication and measured using an abridged version of Goldhaber and Rogers' (1979) Communication Audit Survey (CAS) questionnaire. Respondents assessed both variables based on a five (5)-point Likert scale ranging from 1=Strongly Disagree, 2=Disagree, 3=Not Sure, 4=Agree and 5=Strongly Agree. The research used a quantitative, cross-sectional survey design which focused on describing and drawing inferences from the findings on the relationships between social networks and project communication. Simple random sampling method was used. A population of 121 citizenship projects (Bank of Uganda records, 2009/2010) were written down on small pieces of paper and mixed in a box, 92 of them were then randomly picked in accordance with Krejcie and Morgan (1970). The unit of inquiry comprised the corporate affairs managers and those employees who were or had ever taken part in the sampled projects. The inclusion and exclusion criteria was that where a person was picked and found not to have participated in the selected projects, he/she was discarded and replaced with the next convenient person. The self-administered questionnaire that was used as a data collection instrument, was first pilot tested on experienced business management lecturers from Makerere University in Uganda and project citizenship managers from selected commercial banks. Based on these responses and comments, item scales that were unclear and ambiguous were either improved or deleted. Data reliability analysis was conducted by calculating the Cronbach's (α) coefficient for each construct as seen in (Table I) below. The results showed that the Cronbach's (α) measures for all the constructs exceeded the recommended critical point of 0.70 (Hair et al., 2009), indicating good internal-consistency reliability. The Variance Inflation Factor (VIF) and the tolerance levels were also run to test for multi-Collinearity as seen in Table 3. The variance inflation factor (VIF) was less than 4 and tolerance ratio was above 0.1, indicating that multi-collinearity in this study did not thus arise (Garson, 2010). The Analysis of Data was performed using SPSS version 15.0 based on 418 responses after data cleaning. Hierarchical regression was used to investigate the relationships between the variables and the extent to which changes in project communication were explained by variations in transitivity and network degree. Hierarchical regression was used because it precisely indicates what happens to a model as different predictor variables are introduced. Moreover, it clearly shows the contribution of each study construct.

Table I:	Cronbach's Alpha
Intra-project	.918
Extra-project	.926
Project Communication	.920
Transitivity	.918
Network Degree	.919
Social Networks	.925

Source: primary data

PRESENTATION OF FINDINGS AND DATA ANALYSIS

The majority of Respondents were females (51.7%), which could imply that more females take part in citizenship activities than their male counterparts. A majority of these respondents were in the age bracket of 20 to 30 years representing 73.3%. Of the respondents, 72.7% had attained at least a bachelor's degree, and 4% and 15% had masters and professional qualifications, respectively. Regarding the positions held in the execution of citizenship projects by individual respondents, a majority (78.5%) of them revealed that they participated in the capacity of both beneficiaries and team members, while 10.5% were project managers and 4.1% were purely project beneficiaries. The project types included the categories of health (31.7%), education (19%), environment (11.1%), economic (25.4%), and rehabilitation (12.7%). As seen in Table 2, all respondents agreed that network degree (Mean=3.7 and network transitivity (Mean=3.9), affected project communication. This is because all the means for the study constructs was above 3. The study revealed a significant positive relationship between Social network elements and project communication. ($r=0.609^{**}$, $p<0.01$). This was in line with hypothesis one (H1: Social network elements positively influence project communication). The study also revealed a positive relationship between Network transitivity with project communication ($r=0.4680^{**}$, $p<0.01$) which supported hypothesis H1 (a). Findings showed a positive relationship between Network transitivity with intra project communication ($r=0.655^{****}$, $p<0.01$). These were in line with hypothesis H1 (b). Findings further revealed a positive relationship between network transitivity and extra project communication (0.722^{**} , $p<0.01$). These were in line with hypothesis H1 (c). There was a positive relationship between network degree and project communication (0.620^{**} , $p<0.01$). This was in line with hypothesis H1 (d). Network degree was also positively associated with intra project communication (0.625^{**} , $p<0.01$) and this was in line with hypothesis H1 (e).

Lastly, Network degree was positively associated with extra project communication (0.660^{**}). This was in line with hypothesis H1 (f). Findings on social networks and intra project communication showed that intra project communication indicates the level of internal communication practices that take place in projects among the project participants. This is supported by Ruuska (1996) who asserts that through intra project communication, parties in a project are able to connect to each other while Granovater (1973) and Coleman, (1988) indicate that the strength of the network grows through a history of communications in which members of a network do develop friendship and trust. Findings on project social networks and extra project communication showed that extra project communication by project team members enables team members to connect the project to its environment. This is supported by Kempe, Kleinberg, and Tardos (2003), who eludes that if the project environment, is made of a number of social entities which can only be interacted with through the use of project social networks.

Table II: Zero- Order Pearson Correlations

	Mean	S.D	1	2	3	4	5	6	7
Project communication(1)	3.8494	0.64182	1						
Intra -project communication(2)	3.8935	0.69168	.860 ^{**}	1					
Extra project communication(3)	3.7482	0.65005	.836 ^{**}	.693^{**}	1				
Network Transitivity(4)	3.9132	0.63993	.680 ^{**}	.655 ^{**}	.722 ^{**}	1			
Network Degree(5)	3.7935	0.7871	.620 ^{**}	.625 ^{**}	.660 ^{**}	.788 ^{**}	1		
Social Networks(6)	3.8092	0.95587	.609 ^{**}	.600 ^{**}	.701 ^{**}	.836 ^{**}	837 ^{**}	1	

***.* Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data

Table III: Hierarchical Regression analysis with project communication as the dependent variable

Variables	Model 1	Model 2	Model 3	Collinearity Statistics	
				Tolerance	VIF
(Constant)	4.138**	0.813**	0.871	Na	Na
Gender	0.113	0.183**	0.172**	0.939	1.065
Marital Status	-0.076	-0.073	-0.092	0.784	1.276
Age Bracket	0.037	0.041	0.044	0.849	1.178
Highest level of education	0.227**	-0.096	-0.076	0.832	1.202
Social networks					
Network Transitivity		0.689**	0.504**	0.369	2.707
Network degree			0.235**	0.367	2.724
R	0.243	0.72	0.734	Na	Na
R square	0.059	0.518	0.538	Na	Na
Adjusted R square	0.029	0.498	0.516	Na	Na
F- statistics	1.943	26.434	23.706	Na	Na
Sig	0.107	0.000	0.000	Na	Na
R square change	0.059	0.459	0.02	Na	Na
F change-statistics	1.943	117.12	5.371	Na	Na
Sig F Change	0.107	0.000	0.022	Na	Na

Note: N=418, **regression is significant at 0.01 level, * 0.05 level, standardized coefficients are reported.

Source: Primary Data

Hierarchical analysis explains the extent to which the independent variables predict project communication. As seen in Table 3 above, in model 1 control variables were introduced which predicted 5.9% of the variance in project communication. When the second model was run the variable for network transitivity was introduced and it was found to be a significant predictor of project communication with a prediction potential of 51.8%. The R square change was 45.9% and the F-change statics was significant (F-Statistic =26.434).When network degree was introduced, the Beta coefficient for network transitivity dropped from 0.689 to 0.504. The Beta coefficient for the network degree construct was $\beta=0.235$. There were no issues of multi-collinearity because the tolerance factors were above 0.10 and the VIF factors were less than 5.0. A tolerance of less than 0.20 or 0.10 and/or a VIF of 5 or 10 and above indicates a multi-collinearity problem (O'Brien, 2007). The research results are in agreement with those of Ruuska (1996), Bian (1997) and Kempe, Kleinberg, and Tardos (2003) who found out that a positive relationship exists between the social net works and project communication. According to them, the two constructs of project social net works are crucial in creating project communication. They help in bringing internal and external individuals in a project together. In the due course parties in the project are able to connect to each other and interactions with in the project will smoothen both within the internal and the external environment in the project. A number of projects obtain resistances from both the internal and external environments due to lack of awareness on the project which emanates has a result of lack of information on project and the lack social networks.

DISCUSSIONS

The finding on the significant relationship between project social networks and project communication agree with a number of scholars like Kempe, Kleinberg, and Tardos (2003), Ruuska (1996) and Bian (1997) who aver that social net works have a positive impact on intra-project communication and extra project communication. According Ruuska (1996), lack of net work connections within a project signals poor communication. Intra project communications focus on the project teams while extra project communications focus on the end user or the beneficiary of the project (Lievens & Moenaert, 2000). Project team members have to be given all the information required for a project to take place as well as the parties with in the external environment in the projects. Project communications are always broken if the parties in the projects are not aware of what is going on, on a given project due to poor net working. In Uganda, citizen ship projects for commercial banks have not been a success due poor communication while undertaking the projects in these societies despite the fact that a lot of money and time has been invested in them. Some of these projects have got resistances in some societies in the country and this has been because the commercial banks have not carried out proper communication among the individuals which due to inefficiency of supportive social networks between the society and the project implementers. In line with the finding that many societies are in support of citizenship projects and Kunst and Kratzer's (2007) view that social network members can quicken the diffusion and acceptance of any innovations arrived at, it is arguable that how well an organization relates with its other nodes like the local community will determine how freely the locals provide possible business development advice to that organization and how the organization's staff will take instructions from management aimed at implementing the project idea generated.

Implications, Limitations of the Study and areas for further Research

Although social networks are a widely studied concept, our study makes a key contribution by studying social networks within the domain of project management by paying particular attention to the value of social networks generated by citizenship projects as a primary hub. These results may go a long way in validating studies conducted in developed countries as the study sample was from a Low developed Country (LDC). Our study contributes to an understanding of social networks and project communication in citizenship projects of commercial banks in a developing Nation. The implication of our findings is that we provide a different view point of understanding the aspects that affect project communication. People put a lot of emphasis on the reasons as to why projects fail in Uganda, but none had specifically focused on building project communication through the use of project social networks. Our findings generally stick to the general assertion that project social networks promote project communication and are significant predictors of project communication. However, it should be noted that we provide an understanding that the components of project social networks do not evenly improve project communication. Both network transitivity and network degree are significant predictors of the project communication but network transitivity influences the project communication more that network degree. Network transitivity has a beta coefficient of 0.504** which is higher than that of network degree which is 0.235**. The first implication for project managers and owners is to understand that project social networks explain project communication. In order for them to improve the project communication of their projects, project team members should ensure that supportive project social networks are natured. The study was limited by a number of factors that can provide opportunities and directions for further research in the area of project management. These factors are explained as follows; the first is that project social networks and project communication were studied in banks and basically looking at citizenship projects. In future, studies can consider judging project social networks and project communication from the perception of other kinds of project like the Agricultural projects, AIDS projects, Water Sanitation projects, construction projects and many other projects. The independent variable, which was 'social net works' explained only about 53.8% of the variance in project communication. The percentage is not hundred percent, implying that there are other variables that need to be included in the model to increase its explanatory power. We therefore recommend that other variables like government regulations, institutional set-up of various stakeholders and cognitive thinking of stakeholders in projects, among other factors could be studied to determine the extent to which they affect project communication. Project social networks and project communication are aspects that are built and grow over a given time. Therefore a longitudinal study of studied variables could also be conducted to consolidate the above findings.

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