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Functional and dysfunctional relationships at work and their impact on individual performance

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Functional and dysfunctional relationships at work and their impact on individual performance

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ABSTRACT

The impact of workplace relationships on individual performance in the construction industry has been understudied. Nevertheless, improving individual performance is essential for project performance and gaining competitive advantage. This case study aims to study how the department climate in terms of existing relationships influence individual performance as rated by managers. Specifically, the paper presents the idea of functional and dysfunctional relationships in project-based organizations and its importance to individual performance. The case study uses data from a survey distributed to employees in one department within a global construction and engineering organization. First, different types of relationships were identified using the survey data available on frequency of knowledge sharing interactions and functional and dysfunctional relationships among the employees. Second, a social network analysis approach was used to identify centrality scores and shortest paths for both functional and dysfunctional networks. Finally, a linear regression analysis was performed to study the impact of functional and dysfunctional relationships on the individual performance. The results demonstrate that functional relationships have significant positive impact on individual performance while the dysfunctional relationships does not have any significant impact. These results have practical implications for practitioners in construction and engineering companies as they improve understanding regarding the factors affecting individual performance. Furthermore, the results contribute to theory of work climate by indicating that work climate could affect the individual performance which eventually could be a factor affecting the organizational performance.

CHAPTER 1: INTRODUCTION

Construction and engineering firms are increasingly interested in improving employee individual performance. The study of individual performance and the factors affecting individual performance is important, as the way individuals perform their everyday tasks collectively contributes to project results and organizational performance (Cheng and Li, 2006). However, despite the importance of individual performance, past research mainly focused on identifying the antecedents for project level performance (Leu and Lin, 2006; Chan, Scott and Chan, 2004; Barraza, Back and Mata, 2004) and the antecedents of individual performance continue to be understudied. Moreover, the few scholarly works which studied individual performance in construction and engineering organizations have primarily focused on individual expertise and knowledge sharing (Poleacovschi and Javernick-Will, 2016; Tuuli and Rowlinson, 2009, Cheng and Li, 2006). This paper takes a different stance to identifying the antecedents of individual performance by focusing on working relationships which are frequently neglected from practitioners' and scholars' perceptive on improving individual performance. The rationale for studying work relationships is the past work that identified the role of work environment and climate on individual performance. For example, the way people share knowledge positively or negatively affects their performance (Poleacovschi et al. 2017; Poleacovschi and Javernick-Will 2016) partially because employees spend less time getting their tasks done whenever they have strong relationships or relationships that are based on frequent interactions as they could access the right knowledge required to solve everyday engineering problems (Poleacovschi et al. 2017).

Maintaining strong relationships with people at work could help an individual in many ways such as making better and quicker decisions, performing better as a team member, reduced conflicts and creating a welcoming environment, which could eventually help in boosting productivity and individual performance. Interactions with colleagues represent central individual experiences and have the most emotional impact on employees (Elfenbien, 2007). This work underlines the importance of the relationships in the workplace especially because construction and engineering organizations heavily emphasize formal processes as key to how performance is improved (Cao and Hoffman, 2010; Simpson et al., 2006; Lauras et al. 2010) and tend to undervalue the importance of social and "soft" practices. This research takes a different stance and shows that individual performance is affected by how employees "feel" about their relationships with other employees.

Specifically, the nature of the relationships, dysfunctional or functional is expected to be essential as people in construction and engineering organizations spend a large portion of their time interacting with other employees and the quality of these interactions could affect their productivity. This research departs from a previous meta-analysis of the relationships literature which showed that dysfunctional relationships influence employees' desire to leave an organization (LePine, Podsakoff & LePine, 2007; Kinjerski and Skrypne, 2004) suggesting that the nature of relationships (functional and dysfunctional) plays an important role to people's experiences at work. However, there is dearth of work that studied this topic in the context of construction and engineering organization and to my knowledge, no previous work had evaluated the relationship between the nature of relationships and individual performance.

The case study was conducted using survey data obtained from a single department in a global construction and engineering organization. Data on individual performance and nature of

relationships, was collected from one department in the organization. Using the social network analysis the centrality scores and shortest path scores were calculated to study the types of relationships that were formed among the employees based on frequency and energizing or de-energizing effect. Using linear regression analysis, it has been found that the nature of relationships among employees has a significant impact on manager rated performance scores and also that the shortest path in functional and dysfunctional networks affect the manager rated performance scores.

CHAPTER 2: BACKGROUND

In this section, a summary of previous research on functional and dysfunctional relationships and an overview of the literature on individual performance is provided.

2.1 Dysfunctional and functional relationships

Construction and engineering organizations are known to have strict project constraints (e.g. cost, and schedule) which is expected that employees' stress level. The activities or situations that might cause stress among employees are called stressors (Leung, Chan and Yu, 2009; Skitmore et al. 2005b) Construction activities, work tasks and people are some of the examples of stressors in the construction and engineering industry. The impact of stressors on the individuals depends on the type of stressor (LePine, Podsakoff & LePine, 2007). Stressors can work both ways and researchers have found that stressors can have both positive and negative impacts on employees (LePine, Podsakoff & LePine, 2007). The stressors that are associated with the positive impacts such as promoting personal growth and achievement are called challenge stressors, whereas stressors that are associated with negative impacts such as turnover and job dissatisfaction are called hindrance stressors (Boswell et al. 2004; Cavanaugh et al. 2000).

Previous empirical work on stressors has identified the role of challenge and hindrance stressors in job performance (LePine, Podsakoff & LePine, 2005; Beehr et al. 2000) and turnover intentions (Hang-Yue, Foley and Loi 2007; Qasim, Javed and Shafi, 2014). For example, past research has proved that hindrance stressors were negatively related to the job satisfaction and job performance. People and the nature of relationships with employees is a type of stressor which can have both positive and negative impacts on individual performance. For example, when we talk to a person we might be motivated whenever we have positive conversations such as being

complemented on our work. Indeed, previous work has shown that the type of interactions affect employees' emotional experiences at work or their energy level (Elfenbien, 2007). Functional relationships are relationships that energize and motivate people during their work (Cavanaugh et al, 2000; LePine, Podsakoff & LePine, 2005), relationships that help employees find meaning in their work and feel motivated (Kinjerski and Skrypne, 2004). Conversely, dysfunctional relationships are relationships that de-energize and de-motivate people in their work. Functional relationships are expected to help with job satisfaction, task performance and loyalty, whereas the dysfunctional relationships might be associated with employee turnover as they are negatively related to the job attitudes, job satisfaction and organizational commitment. (LePine, Podsakoff & LePine, 2007). Additionally, Cavanaugh et al. (2000) found that employees tend to see dysfunctional relationships as obstacles for personal growth and task accomplishment whereas the functional relationships are viewed to be promote achievement and personal development. The importance of functional and dysfunctional relationships has been studied in the management literature, in the context of mentorship between senior employees and junior employees (Scandura, 1998), decision making by managers and organizational conflict resolution (Labianca, Brass and Gray; 1998). However, their importance has been understudied in the context of construction and engineering organizations. The relationships in construction and engineering organizations are especially important because the tasks are highly interdependent. To achieve project goals, engineers need to interact and share their knowledge with other engineers to get their work done. As a result, everyday interactions with colleagues become important for their job performance. For instance, when there is a positive relation between two colleagues they share useful knowledge which could reduce their time spent on a particular project task (Poleacovschi et al. 2017) which ultimately increases their productivity and performance.

2.2 Individual performance

In the time where construction and engineering industry is increasingly competitive, performance measures have become critical to organizational success (Bassioni, Price and Hassan; 2004). Construction and management literature has identified a few important factors that influence individual performance including work processes, work structures and personal characteristics. First, work processes that involve networks and ties affects individual performance in a knowledge-intensive network (Cross and Cummings, 2004) as they provide unique information and multiple perspectives to an individual working on a task. Second, work structures such as rewards and incentives influence individual performance as they motivate employees to stay committed to their work (Ajila and Abiola, 2004). Lastly, personal characteristics such as emotional intelligence helps to increase individual performance and productivity as people who are emotionally intelligent are able to identify and control their own emotions (Lam and Kirby, 2002). While these factors provide a comprehensive understanding of individual performance by emphasizing macro (work processes and structures) and micro (personal characteristics) level factors, they do not consider the dyad level relationships which represent an essential portion of an employee's time especially in project based-organizations where tasks are highly inter-dependent. This research addresses the need to identify the relational antecedents of individual performance in construction and engineering organizations.

The goal of this study is to understand the impact of functional and dysfunctional relationships on individual performance by classifying the types of relationships in office based on responses from the survey questions. Present work covers the gaps in the previous literature by proving that relationships can also be a stressor and affect individual performance. This research topic adds to previous work on work engagement and how it affects the individual performance.

CHAPTER 3: METHODS

The study was conducted using the data obtained from a global construction and engineering organization. The company provides consultation and management services for construction, engineering, hydropower, mining and transportation. The company has various locations all over the world and employs 7000 people. The company provides preconstruction services, construction services, operations and maintenance and a full range of project delivery methods. They focus on constructing new facilities, infrastructure improvement and expansion, waste to energy construction and capital construction services.

3.1 Data collection

The data was obtained from the manager of the company who conducted a survey with the goal to improve performance and knowledge sharing among employees. The survey data was collected from the IT department of the company. A total of 161 employees were surveyed and a 66% response rate was obtained. Every employee in the department was provided the survey and asked to rate significant work connections, the type of relationships (functional and dysfunctional relationships) and individual attributes (hierarchy level, tenure and gender). Data on individual performance was obtained from the dataset that included individual performance as rated by the managers.

3.2 Significant work connections

In this study, significant work connections are considered as those with whom people frequently share knowledge. As such, to capture significant work connections employees were asked to identify and rate every individual with whom they interact and share knowledge with. Specifically, each individual was asked to respond to the following question: "*Often we rely on*

the people we work with to provide us with information to get our work done. For example, people might provide us with simple or routine administrative or technical information that we need to do our work. Alternatively people might provide us with complex information or engage in problem solving with us to help us solve novel problems. Please indicate the extent to which the people listed below provide you with information you use to accomplish your work." The question was assessed on a scale of 0 to 6 (*0=I Do Not Know This Person/I Have Never Met this Person; 1 = Very Infrequently; 2 = Infrequently; 3 = Somewhat Infrequently; 4 = Somewhat Frequently; 5 = Frequently; 6 = Very Frequently*)." Based on the responses to this question the relationships were classified into two categories, infrequent and frequent. Infrequent relationships are those that were rated 0 (I do not know this person), 1 (Very Infrequently*)*, 2 (Infrequently) or 3 (Somewhat Infrequently) while frequent relationships are those that were rated 4 (Somewhat Frequently), 5 (Frequently) or 6 (Very Frequently). Infrequent relationships were excluded from they are expected to have insignificant effect on the performance of employees.

3.3 Functional and dysfunctional relationships

The variable was operationalized based on a single item to reduce a respondent's cognitive effort of rating the entire department. Respondents were provided a list of people in the department and asked to respond to the following prompt: "*When an individual interacts with their colleagues they might be energized or de-energized based on the qualities of the opposite person. When you interact with this person, how does it affect your energy level?* The question was assessed on a scale of 0 to 4 *(0 = De-energizing; 1 = Somewhat de-energizing; 2 = No effect; 3 = Somewhat energizing; 4 = Energizing*)". Based on the responses to this question the relationships were classified into two categories, de-energizing and energizing. De-energizing relationships are those that were rated as 0 (De-energizing) or 1 (Somewhat de-energizing) while energizing relationships

are those that were rated as 3 (Somewhat) or 4 (Energizing). The relationships that were rated 2 (No effect) were not included in this analysis since they are expected to have no effect on employees' everyday activity. The final dataset on functional relationships included those relationships that were frequent and energizing whereas dysfunctional relationships included frequent and energizing relationships.

3.4 Individual Attributes: Hierarchy, Tenure and Gender

In the survey the employees were also asked to identify their hierarchal level on a scale of 1 to 5 *(1 = Individual Contributor/Team Member; 2 = Supervisor/Team Leader; 3 = Project Manager/Program Manager; 4 = Manager/Business Unit Manager; 5 = Director)*. The employees were also asked to mention their tenure at the company in number of years. The gender data of the employees was provided by the company and coded as 0 (females) and 1 (males). These variables were considered as control variables as they could affect individual performance.

3.5 Individual performance

Individual performance data is generated by asking the managers to rate the people whom they have supervised on a scale of 1 to 5 points based on the eight dimensions which the organization believed were major factors for the project performance*: (1) Knowledge and skills, (2) business development, (3) client service management, (4) project management, (5) general management, (6) leadership, (7) decision-making and (8) baseline skills.* Since every employee is not assessed or involved in project management and general management decisions, these two scores were excluded from the analysis. The average of the six remaining scores was calculated and termed as manager rated performance score and the individual dimensions of the average were termed as manager rated individual scores. In the present research both manager rated performance scores and manager rated individual scores were considered for the analysis.

CHAPTER 4: DATA ANALYSIS

The following section explains the methods used to calculate the centrality scores, shortest path and the average of individual performance based on functional and dysfunctional relationships.

4.1 Social network analysis

Social network analysis is a method used to quantify and map the relationships among any connected entities (e.g. groups, organizations, people, computers) (Wasserman and Faust, 1994). It also provides analytical tools that allows us to perform mathematical analysis regarding individual and network properties and patterns. People who are involved in a social network, which are called nodes, are connected either directly or indirectly to other nodes.

There are multiple social network analysis indicators that can be calculated at the node level to describe different phenomena. The most widely used indicators includes centrality score which is used to determine how influential a node is in a particular network. Centrality scores were used in this research to determine how influential each employee is, based on their ability to energize or de-energize their network ties and also how their network ties energize or de-energize them. It can be calculated by using the formula listed below.

$$C_i = \frac{\sum_{j:j\neq 1} y_{i,j}}{n-1}$$

Where C_i = Centrality of node i

$y_{i,j}$ = Weight of incident links of i

n = Total number of nodes

In-degree centrality of a node is the number of inbound links to a node. These scores help to understand how people energize or de-energize their network ties based on the number of functional or dysfunctional ties that they have. They can be calculated using the formulas listed below.

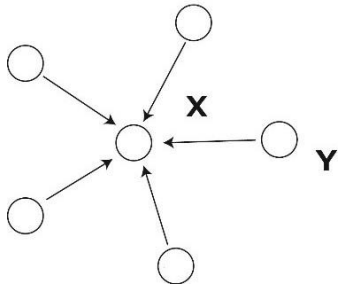
$$C_i^i = \frac{\sum_{j:j\neq 1} y_{j,i}}{n-1}$$

Where C_i^i = In-degree centrality of node i

$y_{j,i}$ = Weight of incident links directed towards i

n = Total number of nodes

Figure 1 Visual representation of in-degree centrality



In-degree centrality

In-degree centrality scores for both functional and dysfunctional networks were calculated for each node, or person, using Netminer software. As a result, two variables were included in the final analysis as independent variables which are functional in-degree and dysfunctional in-degree scores. Functional in-degree represents the number of ties that a node has in the functional network and its impact on those ties whereas dysfunctional in-degree represents the number of ties a node has in a dysfunctional network and its impact on those ties.

Another important indicator used in this research includes the shortest path. A path is a sequence of nodes in a network that are connected to each other distinctively. The shortest path

helps us to calculate average distance between a particular node and the rest of the nodes in a network minimizing the total associations in the path. High shortest path scores indicates that more number of steps are required to connect with others and low shortest path scores indicates that lower number of steps are required to connect with others. It can be used to understand the pattern of information flow and also the possibilities for fastest flow. The shortest path scores were calculated for each node involved in functional and dysfunctional networks using Netminer software and are termed as functional shortest path and dysfunctional shortest path scores. Functional shortest path score represents the number of steps required to connect with a person in functional network and dysfunctional shortest path represents the number of steps required to connect with a person in dysfunctional network.

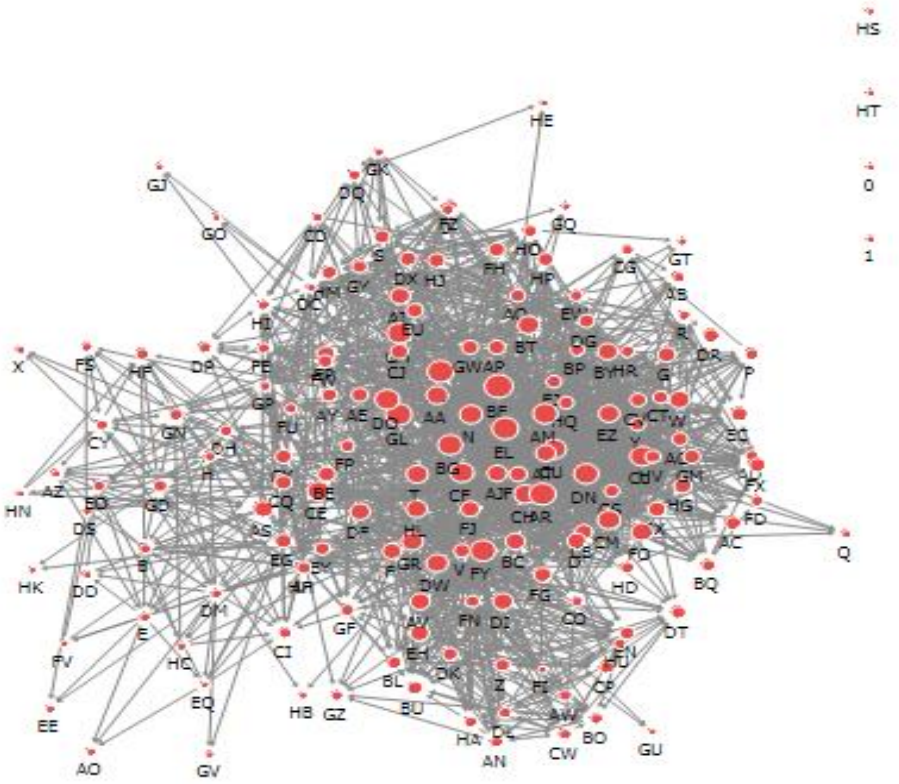
4.2 Linear regression analysis

Linear regression analysis is a widely used predictive analysis which identifies if a set of independent variables are affecting the outcome variable or dependent variable. Specifically, it helps identify which variable has the most significant impact and also the magnitude with which the independent variable affects the dependent variable. The regression estimates help explain the relationship between one dependent variable and one or more independent variables. In this research, linear regression analysis was performed using the software JMP pro to determine the impact of functional and dysfunctional relationships on individual performance of the employees by using centrality and shortest path scores. Since the functional and dysfunctional relationships are expected to have an impact on the individual performance they are called independent variables whereas the performance scores are called dependent variables.

CHAPTER 5: RESULTS

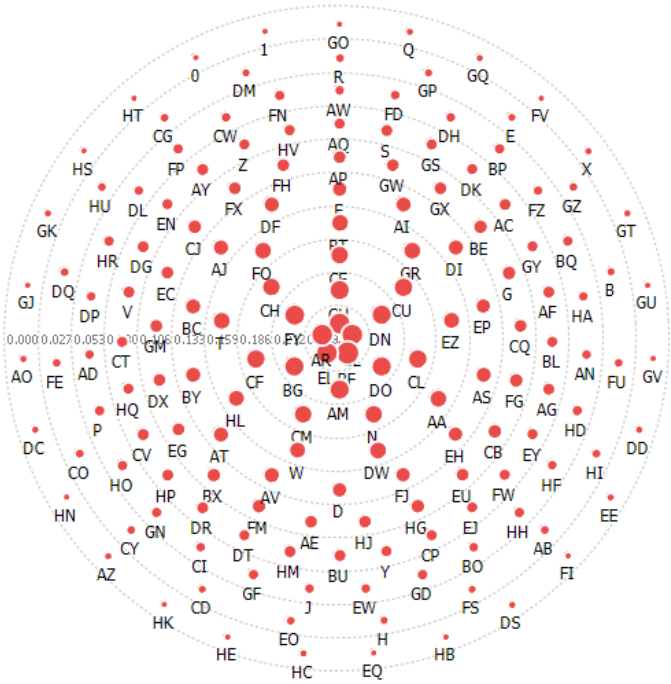
The following figures represents the functional and dysfunctional networks using spring map and concentric map. These maps can be used as a tool to identify the nature of networks and centrality of the people involved in the network.

Figure 2 Spring map for functional network



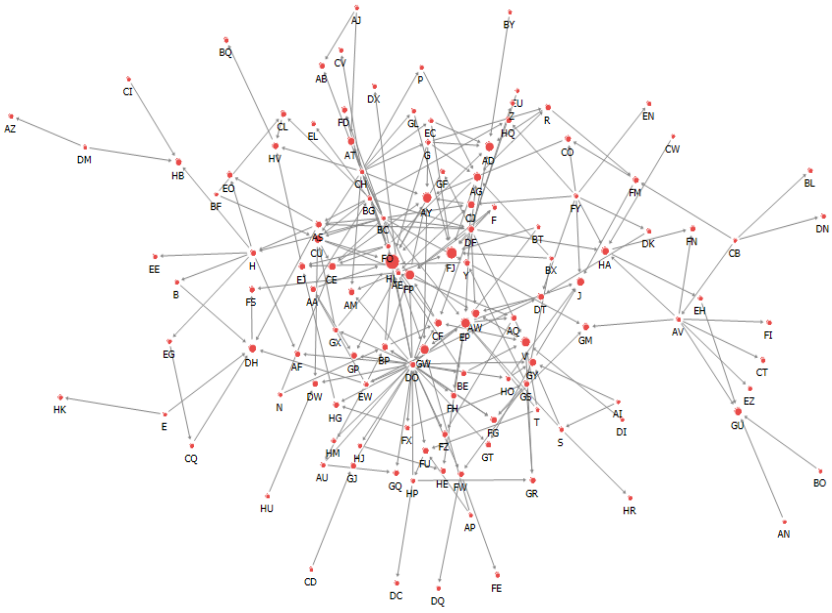
The red dots on the map represent the nodes of the network and the size of the dot represents the level of its centrality. The larger the dot is, the higher is its centrality score. The lines that are connecting the dots represent the functional relationships between the employees.

Figure 3 Concentric map of functional network



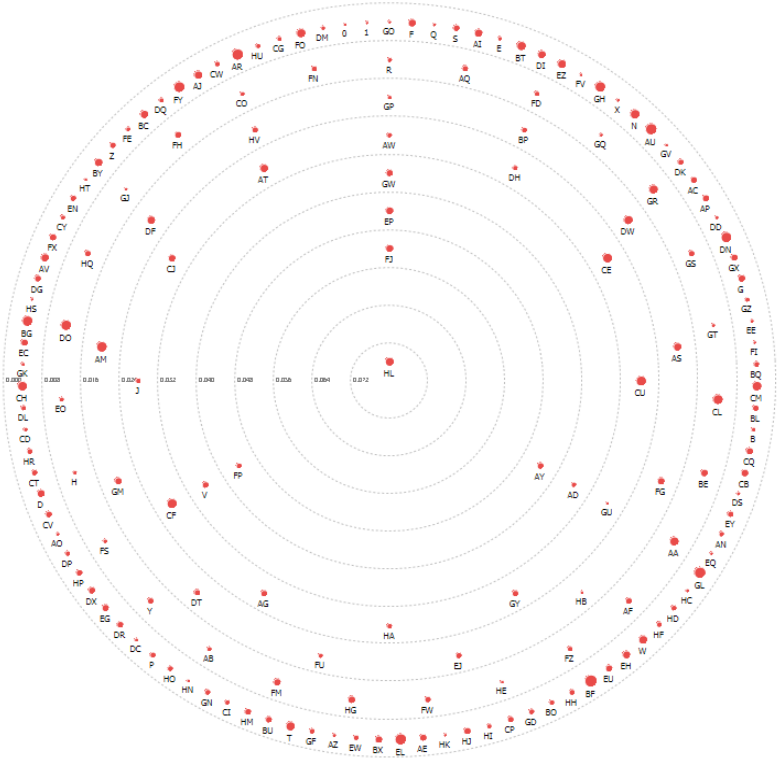
The red dots on the map represent the nodes in the network and their distance from the center is based on the magnitude of the centrality. The dots closest to the center are the ones with highest centrality.

Figure 4 Spring map of dysfunctional network



The red dots on the map represent the nodes of the network and the size of the dot represents the level of its centrality. The lines that are connecting the dots represent the dysfunctional relationships between the employees.

Figure 5 Concentric map of dysfunctional network



The red dots on the map represent the nodes in the network and their distance from the center is based on the magnitude of the centrality. The dots closest to the center are the ones with highest centrality.

Table 1 represents the descriptive statistics of all the variables used in the linear regression analysis.

Table 1 Descriptive statistics of variables

Variable	Observations	Mean	Std Deviation	Min	Max
Gender	107	0.64	0.48	0	1
Hierarchy	107	1.83	1.26	1	5
Tenure	107	6.18	5.02	1	25
Functional In-degree	107	0.11	0.06	0.01	0.27
Dysfunctional In-degree	107	0.01	0.01	0.00	0.06
Manager Performance score	107	3.70	0.56	2.25	5.00
Knowledge and skills	107	4.01	0.52	2.00	5.00
Business Development	107	3.48	0.52	2.50	4.50
Client Svc. Mgmt.	107	3.93	0.51	2.50	5.00
Leadership	107	3.57	0.53	2.50	5.00
Decision Making	107	3.73	0.52	2.50	5.00
Baseline Skills	107	3.89	0.60	2.50	5.00

To study the impact of functional and dysfunctional relationships on individual performance, the manager rated performance scores were compared to the functional in-degree and dysfunctional in-degree using the linear regression analysis.

Table 2 includes the results for relationship between the functional and dysfunctional in-degree centrality scores and manager rated performance scores. The results in model 1 evaluate the relationship between dysfunctional in-degree centrality and manager rated performance scores. The results indicate a positive coefficient but no significant effect ($P>0.05$). Model 2 evaluates the relationship between functional in-degree and manager rated performance scores. The results

indicate a positive coefficient with a significant effect (P<0.05). For instance, in model 1, a 1 unit standard deviation increase of dysfunctional in-degree centrality is associated with 1.65 units of standard estimate increase in the manager rated performance scores. Similarly, in model 2, a 1 unit standard deviation increase of in-degree functional centrality is associated with 11.29 units of standard estimate increase in manager rated performance scores.

Table 2 Linear regression analyses results for functional and dysfunctional in-degree centrality and manager rated performance scores

Variables	**Model 1**	**Model 2**
Gender	0.02 (0.06)	0.03 (0.06)
Tenure	0.01 (0.01)	0.00 (0.01)
Hierarchy	-0.07 (0.05)	-0.09 (0.05)
In-degree dysfunctional	1.65 (0.91)	
In-degree functional		11.29 (5.52)[a]

Note: Linear regression coefficients are standardized
[a]Correlation is significant at p<0.05
[b]Correlation is significant at p<0.01
[c]Correlation is significant at p<0.001; N=107

Table 3 includes the results for relationship between functional in-degree centrality and manager rated individual scores. The results indicates a positive coefficient with highly significant effect (P<0.001) on knowledge and skills, leadership and decision making skills scores. It also indicates a positive coefficient with a significant effect (P<0.01) on business development skills, client service management and baseline skills. For instance, a 1 unit standard deviation increase of functional in-degree centrality is associated with 3.73 units of standard estimate increase in the leadership scores.

Table 3 Linear regression analyses results for functional in-degree centrality and manager rated individual scores

Variables	K&S	Business Dev	Client Service	Leadership	Decision Making	Baseline Skills
Gender	-0.06 (0.05)	-0.05 (0.05)	0.10 (0.05)	-0.0 (0.05)	0.01 (0.05)	0.12 (0.06)
Tenure	0.01 (0.01)	0.03 (0.01)[b]	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.0 (0.01)
Hierarchy	-0.09 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.06 (0.04)	-0.06 (0.05)
In-degree functional	3.84 (0.76)[c]	2.13 (0.79)[b]	2.74 (0.79)[b]	3.73 (0.79)[c]	3.47 (0.79)[c]	3.33 (0.92)[b]

Note: Linear regression coefficients are standardized
[a]Correlation is significant at p<0.05
[b]Correlation is significant at p<0.01
[c]Correlation is significant at p<0.001; N=107

Table 4 includes the results for relationship between dysfunctional in-degree centrality and manager rated individual scores. The results indicate both positive and negative coefficients with no significant effect (P>0.05) on any individual score.

Table 4 Linear regression analyses results for dysfunctional in-degree centrality and manager rated individual scores

Variables	K&S	Business Dev	Client Service	Leadership	Decision Making	Baseline Skills
Gender	-0.06(0.05)	-0.05(0.05)	0.09(0.05)	-0.0(0.05)	0.01(0.05)	0.12(0.06)
Tenure	0.01(0.01)	0.02(0.01)[a]	0.00(0.01)	0.00(0.01)	0.00(0.01)	-0.0(0.01)
Hierarchy	-0.06(0.06)	-0.01(0.04)	0.01(0.04)	-0.0(0.05)	-0.0(0.05)	-0.03(0.05)
In-degree dysfunctional	7.72(5.11)	1.76(5.00)	-0.84(5.02)	6.2(5.27)	1.57(5.24)	7.53(5.91)

Note: Linear regression coefficients are standardized
[a]Correlation is significant at p<0.05
[b]Correlation is significant at p<0.01
[c]Correlation is significant at p<0.001; N=107

From the set of results represented above, it was observed that people with high functional in-degree centrality have higher performance ratings. A potential explanation for the positive and significant relationship between functional in-degree and individual performance is that people who are involved in frequent functional interactions could share information more easily within their networks which could help them perform better in their daily tasks.

Table 5 includes the results for relationship between shortest path functional and shortest path dysfunctional on manager rated performance scores. The results in model 1 indicates a negative coefficient with a significant effect ($P<0.01$) of functional shortest path on manager rated performance scores. The results in model 2 indicates a negative coefficient with no significant effect ($P>0.05$) of dysfunctional shortest path on manager rated performance scores. For instance, a 1 unit standard deviation increase in the functional shortest path is associated with 0.11 units standard estimate decrease in the manager rated performance scores of the employees. It means that when the length of shortest path in a functional network between two nodes is increased the performance of the employees is decreased. No significant impact of shortest paths in dysfunctional network was observed on the manager rated performance scores.

Table 5 Linear regression analyses results for functional and dysfunctional shortest paths and manager rated performance scores

Variables	**Model 1**	**Model 2**
Gender	0.00 (0.04)	0.01 (0.04)
Tenure	0.01 (0.01)	0.01 (0.01)
Hierarchy	0.00 (0.03)	-0.00 (0.03)
Shortest Path Functional	-0.11 (0.04)[b]	
Shortest Path Dysfunctional		-0.03 (0.03)

Note: Linear regression coefficients are standardized
[a]Correlation is significant at $p<0.05$
[b]Correlation is significant at $p<0.01$
[c]Correlation is significant at $p<0.001$; N=107

Table 6 includes the results for relationship between functional shortest path and manager rated individual scores. The results indicate a negative coefficient with a significant effect (P<0.01) of functional shortest path on knowledge and skills, leadership and baseline skills. For instance, a 1 unit standard deviation increase in the functional shortest path is associated with 0.15 units of standard estimate decrease in knowledge and skills scores.

Table 6 Linear regression analyses results for functional shortest path and manager rated individual scores

Variables	K&S	Business Dev	Client Service	Leadership	Decision Making	Baseline Skills
Gender	0.01 (0.01)	0.02 (0.01)[a]	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)
Tenure	-0.09 (0.05)	-0.05 (0.05)	0.08 (0.05)	-0.03 (0.05)	0.00 (0.05)	0.09 (0.06)
Hierarchy	-0.02 (0.04)	0.00 (0.04)	0.01 (0.04)	0.02 (0.04)	0.00 (0.04)	0.00 (0.04)
Shortest Path Functional	-0.15 (0.05)[b]	-0.03 (0.05)	-0.08 90.05)	-0.16 (0.05)[b]	-0.02 (0.05)	-0.20 (0.06)[b]

Note: Linear regression coefficients are standardized
[a]Correlation is significant at p<0.05
[b]Correlation is significant at p<0.01
[c]Correlation is significant at p<0.001; N=107

Table 7 includes the results for relationship between dysfunctional shortest path and manager rated individual scores. The results indicates both positive and negative coefficients with no significant effect (P>0.05) of dysfunctional shortest path on the manager rated individual scores.

Table 7 Linear regression analyses results for dysfunctional shortest path and manager rated individual scores

Variables	K&S	Business Dev	Client Service	Leadership	Decision Making	Baseline Skills
Gender	0.01 (0.01)	0.03 (0.01)[b]	-0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	-0.00 (0.01)
Tenure	-0.07 (0.05)	-0.05 (0.05)	0.1 (0.05)	-0.01 (0.05)	0.01 (0.05)	0.11 (0.06)
Hierarchy	-0.03 (0.04)	0.00 (0.04)	0.00 (0.04)	0.02 (0.04)	0.00 (0.04)	-0.00 (0.05)
Shortest Path Dysfunctional	-0.08 (0.04)	0.03 (0.04)	0.02 (0.04)	-0.05 (0.04)	-0.02 (0.04)	-0.05 (0.04)

Note: Linear regression coefficients are standardized
[a]Correlation is significant at $p<0.05$
[b]Correlation is significant at $p<0.01$
[c]Correlation is significant at $p<0.001$; N=107

From the set of results represented above, it was observed that people with low shortest path scores in functional network have higher performance ratings. A potential explanation for this observation is that people with low shortest path scores have shorter average distance to other nodes in the network which helps them approach others more easily when seeking and sharing information.

CHAPTER 6: DISCUSSIONS AND IMPLICATIONS

This case study used data obtained from a global construction and engineering organization was used to study the impact of functional and dysfunctional relationships on individual performance. These relationships were classified into functional and dysfunctional relationships depending on employee's perceptions on whether they felt energized or de-energized by the people with whom they frequently interacted. Social network analysis was used to calculate the in-degree centrality scores and shortest path scores for each employee based on their functional and dysfunctional connections. In-degree centrality scores were calculated based on the number of ties, or connections, that each node has within their functional or dysfunctional networks. Shortest path scores were calculated based on the average of distances between a source node and rest of the nodes in a network. Linear regression analysis was used to calculate the impact of functional in-degree centrality, dysfunctional in-degree centrality, functional shortest path and dysfunctional shortest path scores on manager rated performance scores.

The first set of results revealed the relationship between the in-degree centrality of people in functional and dysfunctional networks and manager rated performance scores. Social network analysis was used to calculate the in-degree centrality scores for each employee based on their functional and dysfunctional connections.The results from this analysis showed the number of inbound, or incoming, connections (functional or dysfunctional) that each node has. Linear regression analysis was used to study the impact of in-degree centrality of functional and dysfunctional networks on manager rated performance. The results (Table 2) indicate that functional in-degree centrality of the employees has a significant positive impact on the manager rated performance scores. The results (Table 3) also indicates that functional in-degree centrality of employees have significant positive impact on every manager rated individual score. These

results show that a person's performance was improved when they were frequently connected with the people who energized them. A potential explanation for the positive and significant relationship between functional in-degree and individual performance is the utility of functional relationships towards individual work productivity. Specifically, people who are involved in frequent functional interactions could share information more easily within their networks which could help them perform better in their daily tasks. On the other hand, another set of results (Table 2) indicates that the manager rated performance scores of people with high dysfunctional in-degree centrality was not affected in a significant way. This also applies in the case of manager rated individual scores (Table 4) where dysfunctional in-degree centrality had no significant impact on any of the manager rated individual scores. It means that a person's performance was not affected when they were frequently connected with people who de-energized them .

The second set of results revealed the relationship between shortest path scores of employees in functional and dysfunctional networks and manager rated performance scores. Social network analysis was used to calculate the shortest path scores of every employee based on their functional and dysfunctional connections. The results of this analysis showed the average of distances between a source node and the rest of the nodes in a network. Linear regression analysis was used to determine the impact of functional and dysfunctional shortest path scores on manager rated performance scores. The results (Table 5) indicate that shortest path scores in functional networks have a significant negative effect on the manager rated performance scores. The results (Table 6) also indicate that shortest paths in functional network have a significant negative impact on knowledge and skills, leadership and baseline skills of the employee. This means that people with low shortest path scores in functional network are associated with improved manager rated performance scores of the employees. A potential explanation for this observation is that people

with low shortest path scores have shorter average distance to other nodes in the network which helps them approach others more easily when seeking and sharing information. As a result, they perform better in their daily tasks. On the other hand, another set of results (Table 5) indicates that shortest path scores of employees in dysfunctional networks have no significant impact on the manager rated performance scores. The results (Table 7) also indicate that shortest path scores in dysfunctional networks have no significant impacts on the manager rated individual scores. This means that shortest path scores in dysfunctional networks does not affect either manger rated performance scores or manager rated individual scores of the employees.

This study has practical implications by showing that frequent and functional interactions between employees help employees to improve their individual performance. An explanation for this finding is that frequent and positive interactions affect employees' work productivity as they can easily reach out to their netowkr with the goal to solve everyday work problems. This study adds to the theory of stressors and their impact on employees by showing that interpersonal relationships among employees can also be viewed as a stressor that affects individual performance. As a result, the current case study improves understanding regarding the impact of work climate and emphasized its important for individual performance.

CHAPTER 7: CONCLUSIONS

To conclude, the results in this study showed that functional relationships in the workplace positively contribute to individual performance. A potential explanation for these results is that people feel motivated and energized when they interact with their functional peers. Therefore, practitioners are encouraged to promote functional relationships and interactions in the workplace. This research contributes to current construction management research by identifying the antecedents of individual performance. Additionally, functional and dysfunctional relationships were studied in the context of turnover intentions, employees' experiences and job satisfaction while this research studied the nature of relationships in the context of individual performance.

The current research comes with various limitations and scope for future research. First, the data was obtained from a single company and it cannot be generalized to other companies without further investigation. Second, the performance data was obtained based on the managers' assessment which are subjective scores and may not necessarely be representative of actual performance. Future research could focus on addressing the gaps in this research by obtaining data from multiple organizations and identify more objective assessments for individual performance.

CHAPTER 8: REFERENCES

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