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Communication Willingness Factors Between Project Stakeholders in the Construction Industry

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Effective communication is a critical component of project management and, as a result, an essential component of the construction business. Construction project teams present unique communication challenges with the multidisciplinary makeup of members that have different communication styles with varied levels of understanding, skills, and adaptability. Past research has been fragmented with understanding the factors that promote communication between contracting parties. This study identifies ten factors that impact communication willingness and tests the level of impact of each factor. Additionally, industry practitioners were surveyed on the factors impact on communicating with other project stakeholders. Fifty-three individuals were surveyed in the South-Central region of the United States, representing four different project stakeholders: owners, architects, project managers, and superintendents. A personal desire to succeed and communicating with skilled individuals were found to be the motivators that had the greatest impact on promoting communication willingness. One-way analysis of variance (ANOVA) was used to identify three differences with communication willingness between the different project stakeholders.

Key Words: Communication, Project Stakeholders, ANOVA

Introduction

Effective communication is a critical component of the construction business. Construction teams are generally reorganized and formed for almost every new project, creating the need to adapt quickly to new relationships. Scanlin (1998) noted that “ineffective communication is a root cause of most project failures.” Proper communication is necessary to balance the asymmetry among project teams. Project managers and project team members spend approximately 90% of their working time engaged in some form of communication (Burke, 2010). Poor communication among stakeholders is the most common single item resulting in more time spent on a task than expected (Thomas et al., 2018). There is often a lack of communication willingness among project teams, which is not conducive to the realization of project success. (Wu et al., 2017). This paper explores motivators that impact the willingness to communicate among project team members, including the owners, architects, project managers, and superintendents.

Literature Review

DeSanctis and Monge (1998) defined communication as the process of sharing ideas, feelings and opinions between two or more people. Team communication is a two-way process through which project team members interact with one another (Orlikowski & Yates, 1994). Communication in construction projects is unique due to the nature of project teams: they are temporary in nature, have multiple stakeholders that don't stay on the project for its entire duration, and often have differing goals and responsibilities (Ibadov, 2015). Wu et al. (2017) defined communication among construction project teams as the process of information sharing, exchange, and transmission across the entire lifecycle of the project. Communication willingness, defined as the intention for a project team to share information (Ding et al., 2007), is an essential component of the communication process that can contribute towards project success. Wu et al. (2017) defined communication willingness as the extent to which the project team communicates and shares information with the other project teams participating in the project. Upon reviewing literature related to improving communication ten motivators were found to relate to communication willingness. They are presented in Table 1 and discussed below.

Table 1

Communication Willingness Factors

Factors	Short Description	Source
Intrinsic Motivation	A personal desire to succeed.	Murtagh, 2016
Extrinsic Motivation	Monetary rewards.	Murtagh, 2016
Contract Trust	Having a fully executed contract with agreeable terms with the individual.	Turner, 2007
Competence Trust	When the individual demonstrates high competence with their profession.	Turner, 2007; Turner, 2004
Emotional Trust	Having a good personal relationship with the individual.	Turner, 2004
Formal Communication	Using formal communication methods (e.g. emails, reports, written documents, etc.)	Johnson, 1994; Turner, 2004; Wu et al., 2017
Informal Communication	Using informal communication methods (e.g. oral communication, phone, text, etc.)	Johnson, 1994; Turner, 2004
Event Driven Communication Frequency	When we have identified project milestones in which we will communicate.	Turner, 2004
Calendar Driven Communication Frequency	When we have set weekly or monthly events in which we will communicate.	Turner, 2004
Leadership Driven Management	When the individual has good people skills.	Chan and Tse, 2003; Hagberg, 2006

Uncertainty, team conflict and the temporary nature of construction projects can all lead to decrease in willingness to communicate. However, there are several factors that should be considered that can lead to an increase in the desire to communicate. Communication willingness can be impacted by *intrinsic motivators*, such as a personal desire to succeed, and *extrinsic motivators*, such as monetary compensation. They serve as a driver towards the team members' desire to engage in the project. Intrinsic motivators come from within, and are flexible, with a longer lasting effect on individual team members (Murtagh et al., 2016). Extrinsic motivators are more controlled and driven externally in ways such as financial or profit related (Murtagh, 2016).

The need for trust is also an important factor that influences the project stakeholders' desire to communicate with their counterparts. Trust is the most important success factor in fostering cooperation (Cook and Hancher, 1990; Kwan and Ofori 2001; Cheung et al., 2007), eliminating adversarial relationships by information-sharing (Cook and Hancher, 1990), solving specific construction industry problems such as low productivity and growth rates (Kwan and Ofori, 2001), and establishing a sense of trustworthiness (Cheung et al., 2013). There are three types of trust that team members rely upon during the construction project: contract trust, competence trust and goodwill trust. (Turner & Muller, 2004; Fong & Lung, 2007; Hartman, 2000). *Contract trust* is the standard set by the agreement both parties enter. *Competence trust* is gained by a shared understanding that the professionalism, technical skills, and managerial style of the project team members will properly carry out the tasks of the project to achieve a successful outcome. *Emotional trust* is the ability to be able to get along with someone and work with them (Turner & Muller, 2004).

Both formal and informal communication methods can impact communication willingness and are needed in project team members relationships (Turner & Muller, 2004). Emails, memos and reports are examples of *formal communication*. They are critical requirements on construction projects. These types of formal communication should be used to communicate project updates and document project artifacts. While this form of communication is more time consuming, it is also more reliable. For example, the owner needs regular reassurance that the progress of the project is following a schedule that will ensure the project's completeness at a predefined time and cost. This requires the communication of analytical data. The owner needs to know that the PM understands the project requirements and is making decisions that are in the owner's best interest.

Informal communication is delivered verbally and is quicker and more personal than formal communication. Informal communication helps to develop trust needed among the project stakeholders, but when that trust is lost, the owner often tends to rely more on formal communication. Nevertheless, there should always be a follow up after informal communication to document the decisions made verbally. The combination of formal and informal communication will help instill a sense of confidence in the owner and avoid unmet expectations (Johnson, Donohue, Atkin & Johnson, 1994; Turner & Muller, 2004; Wu et al., 2017).

Frequency of communication among the project stakeholders can be divided into two different approaches: event driven or calendar driven (Turner & Muller, 2004). *Event driven communication* relies on project phases or milestones. *Calendar driven communication* occurs on a weekly, bi-weekly, or monthly basis. While many contractors focus their approach on monthly and milestone reporting, research shows that more frequent, less formal communication gives the owner the greatest comfort that they are being well informed (Turner & Muller, 2004). Good people skills are broadly applied to the management and leadership function of the project manager's and superintendent's positions and are considered to be *leadership driven management* (Hagberg & Strong, 2006).

Research Objectives and Methodology

In this study the ten communication willingness factors are measured to determine what motivates open and effective communication between construction project stakeholders. There are multiple stakeholders that are involved in any construction project; however, this study focuses on four of the common project team members: architects, owners, superintendents, and project managers. There were two main research questions in this study 1. Is there a difference in willingness to communicate among architects, owners, superintendents, and project managers based on the ten factors; 2. What are the most impactful factors that increase communication willingness among construction project stakeholders?

The data for this research was collected from surveys that were electronically distributed and collected to individuals in the construction industry. Survey participants from Texas and Oklahoma were invited to participate in the study. The survey included demographic questions and quantitative questions related to the ten factors. Each survey participant was asked to assess the level of agreement that each communication willingness factor improved communication with the other three stakeholder groups, using a 5 - point Likert scale with 1 being Strongly Disagree and 5 Being Strongly Agree.

To answer research question one, a one-way ANOVA was conducted to determine if there was a difference in willingness to communicate between project stakeholders based on each individual communication factor. A simple comparison of means was used to answer the second research question.

Data Analysis and Discussion

Fifty-three individuals participated in the survey: architects (n = 12), owners (n = 10), superintendents (n = 14), and project managers (n = 17). Survey respondents varied in the length of work experience, gender, and average project length. One limitation was observed while analyzing the study results. The study had an unequal number of cases (responses by the Architect, Owner, Superintendent, and Project Manager participant groups) in each group. Because sample sizes were not the same in all groups, there was a concern with having an unbalanced design. Although realizing that this is a limitation of the study, the effect of potential unbalanced design was hard to mitigate considering the lack of control over participant responses.

Communication Willingness Factors Impact

A simple comparison of means was used to identify the most impactful communication willingness factors. *Intrinsic Motivation* or the personal desire to succeed was rated the highest among the four stakeholders (4.62). Individual competence within their profession or *Competence Trust* was the second most important factor (4.43) that increases willingness to communicate with the architect, emphasizing the importance of architect's professional experience. Table 2 presents the means from the four stakeholders. The factors are ordered in the ranking of the overall averages of the stakeholders.

Table 2

Ranked Order of Communication Willingness Factors

Factors	Arch. (Avg)	Owner (Avg)	Supt. (Avg)	PM (Avg)	Overall (Avg)
Intrinsic Motivation	4.56	4.68	4.64	4.60	4.62
Competence Trust	4.64	4.13	4.54	4.42	4.43
Emotional Trust	4.21	4.48	4.35	4.31	4.34
Calendar Driven Communication Frequency	4.26	4.25	4.28	4.21	4.25
Leadership Driven Management	4.22	4.32	4.25	4.13	4.23
Event Driven Communication Frequency	4.11	4.10	3.91	4.08	4.05
Formal Communication	4.09	4.02	3.67	4.18	3.99
Contract Trust	4.07	4.00	3.66	3.96	3.92
Informal Communication	3.89	3.81	3.87	3.96	3.88
Extrinsic Motivation	3.21	3.38	3.18	3.12	3.22

Differences with Communication Willingness

A one-way ANOVA was conducted to test if there were differences with the communication willingness factors among architects, owners, superintendents, and project managers. Overall, forty ANOVAs were run with a significance level (Alpha) of 0.05. Only three tests identified differences between the stakeholders’ responses.

Contract Trust Impact with Communication with the Architect

A significant difference was found in the project stakeholders’ willingness to communicate openly with the Architect based on having a fully executed contract. The difference was found to be statistically significantly different for the Owner, Superintendent, and Project Manager groups, $F(2, 38) = 3.582$, $p = .0375$, presented in Table 3.

TABLE 3:

<i>ANOVA - Contract Trust Impact with Communication with the Architect</i>						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Owner	10	42	4.2	0.4		
Supt	14	61	4.357143	0.401099		
PM	17	62	3.647059	0.867647		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	4.278971	2	2.139486	3.582048	0.037568	3.244818

Within Groups	22.69664	38	0.59728
Total	26.97561	40	

Project Managers rated this factor lower than both owners and superintendents. Depending on the delivery method, project managers will not have contractual agreements with the architect, which explains the lower rating. However, a difference was found between the Superintendent and the PM which typically work for the construction company. Because the PM is typically more involved with the project contracts, this could demonstrate that the superintendents are not as aware of the contractual obligations between the parties.

Competence Trust Impact with Communication with the Superintendent

A significant difference was found on the project stakeholders’ willingness to communicate openly with the Superintendent based on *Competence Trust*. The difference was found to be statistically significantly different for the Architect, Owner, and Project Manager groups, $F(2, 36) = 4.578$, $p = .0169$, presented in Table 4.

TABLE 4

ANOVA - Competence Trust Impact with Communication with the Superintendent

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Arch	12	49	4.083333	0.810606
Owner	10	49	4.9	0.1
PM	17	79	4.647059	0.367647

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3.993288	2	1.996644	4.578578	0.016919	3.259446
Within Groups	15.69902	36	0.436084			
Total	19.69231	38				

Although still high, the Architect placed less value in the competence trust with the superintendent than the Owner and Project Manager. Both the Owner and the Project Manger treated professional competence as a significant factor in their desire to communicate with the Superintendent. Because the majority of the Architects communication with the contractor is typically with the PM could be the reason that explains why the Architects rated contractual trust with the Superintendents lower.

Informal Communication Impact with Communication with the Project Manager

A significant difference was found on the project stakeholders’ willingness to communicate openly with the Project Manager based on *Informal Communication*. The difference was found to be statistically significantly different for the Architect, Owner, and Superintendent groups, $F(2, 33) = 3.533$, $p = .0407$, presented in Table 5.

TABLE 5

ANOVA - Informal Communication Impact with Communication with the PM

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Arch	12	42	3.5	0.636364
Owner	10	43	4.3	0.455556
Supt	14	57	4.071429	0.532967

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	3.860317	2	1.930159	3.533016	0.040707	3.284918
Within Groups	18.02857	33	0.54632			
Total	21.88889	35				

The Owner treated *Informal Communication* as a more important factor than the Architect in their desire to communicate with the Project Manager. The Owner has a higher preference for *Informal Communication*, which includes face to face conversations, phone calls, text messages, etc. than the Architect. This could be the result of the issues seen in project delivery methods such as Design-Bid-Build that has put the Architects and the Contractors interests in an adversarial relationship. Formal communication becomes critical in disputes, which results in the Architect and the Contractor relying more on formal communication that supports their efforts during project disputes. Architects rated this factor as the ninth most impactful factor for increasing communication willingness. Additional research could focus on the Architects lower value with communicating informally and the impact on relationships between stakeholders.

Conclusion

This paper has explored the communication motivators that impact communication willingness among project stakeholders. Communication willingness is defined as the extent to which the project team communicates and shares information with the other project teams participating in the project (Wu et al., 2017). Ten factors were identified from past research that impact an individual's willingness to communicate effectively, presented in Table 1. Fifty-three professionals in the South-Central region of the United States participated with the study, representing four of the common project stakeholders: architects, project managers, owners, and superintendents. The objective of the study was to identify what are the most influential factors for an individual to be willing to communicate and to identify if there were any differences among the four stakeholders' communication methods.

Based on the overall data analysis, there was a high level of agreement among the groups with the factors' influence on communication willingness. A personal desire to succeed was the most influential factor for communication willingness. Communicating with individuals that demonstrate high competence was the second most influential factor on communication willingness. Interestingly, monetary rewards ranked as the least important factor for all project stakeholders.

Forty ANOVA tests were conducted with the communication willingness factors to identify differences

within the four groups of stakeholders. Three statistically significant differences were identified:

- Compared to Owners and Superintendents, PMs rated *Contract Trust* lower with regards to communicating with Architects.
- Compared to Owners and PMs, Architects rated *Competence Trust* lower with regards to communicating with Superintendents.
- Compared to Owners and Superintendents, Architects rated *Informal Communication* lower with regards to communicating with Project Managers.

The findings demonstrated high level of agreement of the factors influence. However, the three difference identified above demonstrate that the contractual relationships between the parties have an impact on communication. The level of impact can be tested in the future. Additionally, future research can focus on how the different delivery methods impact communication willingness and how the impact of the factors changes throughout the project timeline. Limitations of the study include the small sample size, which could be expanded upon in the future for further validation.

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