sciendo

Civil and Environmental Engineering
Vol. 19, Issue 1, 156-166, DOI: 10.2478/cee-2023-0014

ADDRESSING THE CAUSES AND EFFECTS OF POOR COMMUNICATION IN THE JORDANIAN CONSTRUCTION INDUSTRY: A STUDY ON IMPROVING PROJECT PERFORMANCE

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Abstract

The construction sector in Jordan faces various obstacles, one of the most significant being poor communication, which negatively impacts project performance and can even lead to project failure. The primary objective of this study is to identify and evaluate the causes and effects of poor communication in Jordan. A questionnaire containing 32 causes and 21 effects of poor communication was used to gather data. The top ten causes of poor communication are; possessing different levels of education among construction teams; a lack of communication plan; a lack of an appropriate communications medium; a lack of communication procedures and training; a slow flow of information between parties; diversity of culture among construction teams; construction teams possessing different skill levels; contractual barriers; the unavailability of information at the time of need, and a lack of understanding among parties. Poor communication is a prevalent issue in the Jordanian construction industry, Jordan's construction industry needs to improve its current communication state. Both contractors and consultants are affected by this issue and there is a high level of agreement between them on the causes and effects of poor communication.

Keywords:

Communication;
Jordan;
Construction;
Causes;
Effects.

1 Introduction

The construction industry is an essential sector that contributes to the economic growth and development of any nation. To complete the required construction project, the construction industry relies on the performance and accomplishments of numerous players, such as architects and engineers (consultants, contractors, clients, suppliers, and subcontractors). The stakeholders involved in this project required efficient communication and coordination to succeed. Effective communication is essential in any industry, and the construction industry is no exception. A successful construction project depends on effective communication to achieve its goals; it requires excellent cooperation and information sharing among its participants. Due to its nature, effective communication is required to coordinate all parties involved in construction projects such as owners, project managers, engineers, subcontractors, etc. [1]. Communication skills are one of the most significant competencies for project participants; it was identified as the most crucial competency among Palestinian construction project managers [2]. According to empirical evidence from prior studies, poor communication among stakeholders is a crucial factor responsible for poor performance on construction projects. A study [3] found that improved communication between project stakeholders is essential for achieving project performance objectives.

In the construction sector, poor communication can be characterized as ineffective, unsuccessful, and inadequate project information communication. Poor communication in the

construction industry can lead to a variety of consequences and outcomes, such as cost overruns, timetable delays, disputes, and project failure. A breakdown in communication may be one of the common problems project managers face when managing construction projects. To address poor communication in the construction industry, it is essential to establish clear and consistent communication channels among stakeholders, and to ensure that stakeholders are aware of their roles and responsibilities in terms of communication. This can be achieved through effective project management practices, such as regular meetings, clear and concise documentation, and the use of appropriate communication technologies. Additionally, it is important for project managers to be aware of the different communication styles and preferences of each stakeholder and to tailor their communication strategies accordingly. Overall, poor communication is a significant issue that can have a detrimental impact on the performance of construction projects. To mitigate the consequences of poor communication, it is essential to establish effective communication channels and practices, and to ensure that all stakeholders are aware of their roles and responsibilities in terms of communication.

This study delves into the underlying causes and effects of poor communication within the construction sector in Jordan. It aims to provide practical solutions to improve project performance by addressing the identified causes and effects. Previous research on this topic has primarily been conducted in developed countries such as the United States, Europe, and Australia, which may not be fully applicable to developing nations such as Jordan. This study aims to fill this knowledge gap by specifically examining the causes and effects of poor communication within the Jordanian construction industry. The findings of this study are expected to be relevant to other emerging nations as well. The primary objective of this study is to identify and evaluate the causes and effects of poor communication. Additionally, the study aims to determine if there is a statistically significant difference in the causes and effects of poor communication between contractors and consultants.

2 Literature review

The term "communication" has many different meanings; hence there is no single, widely-accepted definition of it. The most often used definition of communication is perhaps "communication refers to the exchange or sharing of information, feelings, and ideas between individuals in a group or inside an institution, or between groups and organizations in general" [4]. Researchers in construction management have become more interested in recent years on topics related to poor communication. Rework causes cost and schedule overruns and poor communication between construction partners, making it one of the most frequent causes of project failure [5]. The eleventh and twelfth most significant factors for Iran and Nigeria, respectively, were described as a lack of communication between construction partners. According to a study by [6], there are numerous factors that contribute significantly to poor communication in the construction industry, including inconsistent nonverbal and verbal communication, poorly stated messages, noise, job experience, suspicion, emotional reactivity, and information overload. A theoretical analysis of the causes and effects of poor communication was done by [7], which is noteworthy. A lack of effective communication between construction workers, a lack of a channel and platform for effective communication, poor communication skills, language barriers, a lack of support for advanced communication, and construction teams with varying educational backgrounds were found to be the most frequently mentioned factors in the literature. Contractors claim that time overruns, disputes between construction partners, cost overruns, rework and redesign incidents, high accident rates, project failure, and demoralized workforces are some of the most common effects of poor communication [7]. One of the main causes of construction project delays and cost overruns is poor communication among construction partners. Uncertain communication goals, weak reporting systems, hazy communication channels, inadequate communication among project stakeholders, language difficulties, and stereotyping are among the variables that contribute to ineffective communication, according to [8]. Similarly, [9] notes that unclear goals, poor leadership, workplace cultural diversity, demoralized staff, personal problems, and employee challenges are common causes of poor workplace communication. Lack of leadership abilities, disgruntled workers, undertrained labourers, unclear goals and responsibilities, constrained feedback, and virtual teams are some of the causes of poor communication on construction sites [10]. A comprehensive study on the MENA region [11] found that the most important causes of poor communication are lack of communication procedure and training, followed by lack of adequate representation for project stakeholders. Conversely, the most acute effects of poor communication are misinterpretation, followed by conflict among construction parties. Studies on the subject show that

poor communication is frequently to blame for construction time and cost overruns. Time overrun is a common issue in the construction sector, and it has a negative impact on project success. Ineffective channels for communication, a lack of information flow, incorrect interpretation, and reworks are just a few examples of the delays brought on by poor communication [2]. Poor communication between building partners is one of the main causes of cost overruns [7]. Cost overruns have a disproportionately large negative impact on the Egyptian construction sector during the design stage, and they are a result of improper coordination and communication between design players with diverse backgrounds [15]. Cost overrun, high workplace stress, disagreements or overlaps of information among construction parties, incorrect execution of project activities, inadequate project information management, and deteriorating relationships among construction personnel are the top effects of poor communication, according to a Malaysian study [16]. Another significant study conducted in Saudi Arabia [17] found 41 causes of cost overruns in various road construction projects, with poor communication among construction partners being the main culprit. According to a research in the Egyptian construction sector [18], coordination between design participants from various backgrounds and a lack of communication had a more proportional impact on cost overruns throughout the design process.

Effective communication has a variety of positive consequences on project performance, including time savings, increased productivity, and increased client satisfaction. The inability of construction partners to communicate has been identified as one of the primary causes of conflict [19]. In addition, failures in communication and insufficient communication among the various stakeholders are the root causes of defects in quality requirements and variations in material delivery [20]. There are a number of obstacles to effective communication on construction projects, including a dearth of appropriate data channels, use of inappropriate data channels, and inaccurate data transmission [21].

3 Research method

This study utilized a questionnaire survey to gather data from various construction stakeholders in Jordan. The survey was composed of 53 criteria, with 32 for causes and 21 for effects, which were developed through a literature review and input from regional experts. It consisted of two sections, one examining the effects and causes of poor communication on construction projects in Jordan using a five-point Likert scale, and the other gathering information about the respondent's company and personal details. The survey was distributed to contracting and consulting construction firms and completed by project managers with over five years of experience. The study specifically targets Jordanian civil engineers in the construction industry, of which there are 51,348 registered with the Jordan Engineers Association (JEA) as of 2020, and a sample size was determined using equation (1).

$$N_o=(t^2 * S^2)/(d^2) , \quad (1)$$

where t - the value of the chosen 0.025 level in each tail, 1.96, S - the estimated standard deviation in the population, 1.25, d = the allowable error for the estimated mean, 0.15, N_0 = 266.

Equation (2) shall be used to make the correction

$$N=\frac{No}{\left[1+\left(\frac{No}{pop}\right)\right]} . \quad (2)$$

In total, 263 questionnaires were distributed, and 143 responses were received, yielding a response rate of 55 %.

3.1 Reliability

A pilot study was done to evaluate the reliability of the questionnaire. The reliability of the tool shows that the research results are consistent and can be replicated in a similar study. The Cronbach's coefficient, a measure of reliability, was used to calculate the reliability of the questionnaire. A coefficient of 0.7 or higher indicates a reliable tool. Using SPSS version 17.0, the Cronbach's coefficient alpha was determined for the causes and effects of poor communication, as shown in Table 1, and found to be 0.952 and 0.953 respectively. These values being above 0.7, the questionnaire is considered reliable.

Table 1: Reliability of the survey instrument.

Subscale	# of items	Reliability (Cronbach's alpha)
Causes	32	0.952
Effects	21	0.953
Total scale	53	0.841

The analytical procedures included:

- Transforming the completed survey instrument data into a usable format,
- Loading the data into the statistical analysis software SPSS Version 17.0 for data analysis,
- Assessing the outcomes.

Following data entry into the statistical analysis application, descriptive statistics such as means and frequencies were utilized to examine the overall profile and background of the respondents' firms.

4 Results and discussion

4.1 Demographic description

The respondents were questioned about their years of experience, firm type, and firm specialty. Percentages are illustrated in Table 2. The table shows the breakdown of the respondents by the type and specialization of their organization, as well as their experience in years. It indicates that 45 % of the respondents work for contracting organizations, while 55 % work for consulting organizations. In terms of specialization, 60 % of the respondents' organizations specialize in buildings, 2 % in water and sanitation, 13 % in highways, and 25 % in other areas. The respondents' experience ranges from 6 to 10 years for 59 %, 11 to 15 years for 14 %, 16 to 20 years for 12 %, and more than 20 years for 15 %.

Table 2: Background of respondents and construction firms.

Item	Percent
Type of the organization	
Contracting	45
Consulting	55
Specialization of organization	
Buildings	60
Water & sanitation	2
Highway	13
Other	25
Respondents` experience in years	
6 – 10	59
11-15	14
16 – 20	12
More than 20	15

4.2 Ranking of causes and effects

In this study, rating data that employs integers was ranked in either ascending or decreasing order using an ordinal measurement scale. An ordinal scale was utilized to examine the data using a relative importance index (*RII*). The *RII* is a popular method in construction research for assessing attitudes toward measured variables since it is straightforward but effective. Respondents were asked to assess the significance of the causes and effects factors on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = highly agree). Using the *RII* equation [2, 22, 23] and the survey answer, the *RII* was determined, as stated in the following Eq. (3):

$$RII=\frac{\sum W}{(A*N)}, \quad (3)$$

where *RII* - denotes relative importance index, *W* - denotes respondents' weighting of each factor (ranging from 1 to 5), *A* - denotes the highest weight (in this case, 5), *N* - denotes the total number of respondents. The RII values are used to rank the causes of poor communication in the construction industry. The higher the RII, the more important the cause is considered by the respondents. The *RII* values in the table range between 0.709 and 0.503, with the top-ranked cause having an *RII* of 0.709, and the lowest-ranked cause having an *RII* of 0.503. This suggests that all of the causes listed in the table are considered important by the respondents, but the last five causes have relatively lower *RII* values and are considered less important.

Table 3 lists various causes of poor communication, along with a *RII* (Relative Importance Index) and an overall ranking. According to the findings in table 3, the top ten poor communication causes are:

1) Possessing different levels of education among construction teams: This can result in a lack of understanding and a lack of common language among team members, leading to difficulties in effectively communicating and coordinating efforts.

2) Lack of communication plan: Without a clear communication plan, stakeholders may not know who to communicate with, when to communicate, and what to communicate, leading to confusion and misunderstandings.

3) Lack of appropriate communications medium: Different stakeholders may prefer different forms of communication, such as verbal or written, and without an appropriate medium, communication may be ineffective.

4) Lack of communication procedure and training: Without proper training, team members may not have the necessary skills to effectively communicate and coordinate efforts, leading to delays and mistakes.

5) Slow information flow between construction parties: Slow information flow can lead to delays in decision-making and actions, resulting in project delays and cost overruns.

6) Diversity of culture and ethics among construction teams: Cultural and ethical differences can lead to misunderstandings and conflicts, hindering effective communication and coordination among team members.

7) Possessing differed skills levels among construction teams: Team members with varying skill levels may not understand each other's contributions, leading to misunderstandings and difficulties in coordinating efforts.

8) Contractual barrier: Contracts may not clearly define communication responsibilities and procedures, leading to confusion and ineffective communication among stakeholders.

9) Unavailability of information in the time of need: Without access to the necessary information, stakeholders may be unable to make informed decisions, leading to project delays and cost overruns.

10) Lack of understanding among parties: Without understanding each other's roles and responsibilities, stakeholders may not know who to communicate with or what information to communicate, leading to ineffective communication and coordination.

Also, results from table 4 show that the top ten poor communication effects are:

1) Cost overrun: Poor communication can lead to delays in decision-making, misunderstandings, and mistakes, all of which can contribute to increased project costs.

2) Frequent remedies in design and planning schedule: Poor communication can lead to misunderstandings and errors, requiring additional time and resources to correct.

3) Poor planning: Without effective communication, stakeholders may not have access to the necessary information to make informed decisions, resulting in poor planning and project delays.

4) Poor teamwork: Poor communication can lead to conflicts and misunderstandings among team members, hindering effective collaboration and coordination.

5) Misinterpretation: Poor communication can lead to misunderstandings and incorrect interpretations of information, resulting in errors and delays.

6) Conflict among construction parties: Poor communication can lead to misunderstandings and conflicts among stakeholders, hindering effective coordination and collaboration.

7) Rework and redesign occurrence: Poor communication can lead to errors and misunderstandings, requiring additional time and resources to correct.

8) Misunderstanding: Poor communication can lead to misunderstandings and confusion, resulting in errors and delays.

9) Design errors: Poor communication can lead to misunderstandings and errors in design, requiring additional time and resources to correct.

10) High accident rate: Poor communication can lead to misunderstandings and errors, increasing the risk of accidents on construction sites.

It's worth mentioning that a number of research, including [10, 19], rated the same causes and effects among the top ten but in somewhat different order.

Along with RII, the coefficient of variation (*CV*) was computed to assess the relative variability of various responses. It illustrates the standard deviation as a share of the mean and assesses how predictable the evaluation of bias is. A large *CV* indicates that the evaluated bias is unpredictable and dispersed. The following Eq. (4) was used to calculate *CV*:

$$CV=\frac{S}{\mu}, \quad (4)$$

where S - the standard deviation, μ - the mean.

As shown in Table 3, the *CV* for poor communication causes ranged between 0.524 and 0.302, showing that respondents' perceptions toward poor communication causes were relatively consistent. Similarly, the *CV* values in Table 4 ranged between 0.496 and 0.273, showing that respondents' perceptions toward the effects of poor communication were somewhat consistent. This is a favourable indicator, indicating a high degree of agreement among responders.

Table 3: Descriptive analysis and ranking of poor communication causes.

Cause	*μ*	*S*	*CV*	*RII*	Overall ranking
Possessing different level of education among construction teams	3.114	1.189	0.3820	0.709	1
Lack of communication plan	3.229	1.332	0.4128	0.697	2
Lack of appropriate communications medium	3.057	1.217	0.3983	0.697	3
Lack of communication procedure and training	2.829	1.298	0.4589	0.686	4
Slow information flow between construction parties	2.914	1.295	0.4445	0.680	5
Diversity of culture and ethics among construction teams	3.543	1.104	0.3117	0.674	6
Possessing differed skills levels among construction teams	3.171	1.275	0.4023	0.674	7
Contractual barrier	3.371	1.016	0.3015	0.674	8
Unavailability of information in the time of need	2.943	1.329	0.4518	0.669	9
Lack of understanding among parties	2.971	1.133	0.3815	0.663	10
Poor planning and coordination	3.371	1.097	0.3256	0.657	11
Lack of adequate representation for project stakeholders	3.086	1.180	0.3824	0.657	12
Frequent changes of project contract	3.486	1.338	0.3841	0.651	13
Improper communication time management	3.486	1.180	0.3386	0.651	14
Poor communication management	3.114	1.213	0.3897	0.651	15
Lack of effective communication system and platform	3.400	1.175	0.3459	0.646	16
Lack of mutual respect and trust among construction teams	3.257	1.179	0.3621	0.640	17
Lack of support for advanced communication technologies	3.257	1.129	0.3469	0.634	18
Incorrect instructions or technical information	3.286	1.135	0.3456	0.634	19
Inaccurate delivery of project information	3.257	1.179	0.3621	0.629	20
Lack of effective communication between construction parties	3.114	1.213	0.3897	0.623	21
Inaccessibility of information	3.200	1.369	0.4278	0.623	22
Lack of clear objectives	2.971	1.230	0.4140	0.623	23
The complexity of the construction industry	3.143	1.099	0.3497	0.617	24
Poor communication skills	3.343	1.351	0.404	0.611	25
Poor detailed drawing	3.429	1.102	0.3217	0.606	26
Technology malfunction	3.371	1.1486	0.3407	0.594	27
Weak organizational structure	3.286	1.208	0.3679	0.594	28
Personal barrier	3.314	1.282	0.3869	0.589	29
Improper communication channels	3.029	1.133	0.3743	0.583	30
Language barrier	3.171	1.253	0.3952	0.566	31
Gender differences	2.514	1.317	0.5240	0.503	32

Table 4: Descriptive analysis and ranking of poor communication effects.

Effect	*μ*	*S*	*CV*	*RII*	Overall ranking
Cost overrun	3.143	1.2454	0.3963	0.720	1
Frequent remedies in design and planning schedule	3.343	1.1198	0.3350	0.714	2
Poor planning	3.600	1.1006	0.3057	0.691	3
Poor team work	3.343	1.0940	0.3273	0.686	4
Misinterpretation	3.286	1.1357	0.3456	0.686	5
Conflict among construction parties	2.771	1.3750	0.4961	0.669	6
Rework and redesign occurrence	3.200	1.2375	0.3867	0.669	7
Misunderstanding	3.429	1.3997	0.4082	0.669	8
Design errors	3.143	1.3762	0.4379	0.669	9
High accident rate	3.257	1.2726	0.3907	0.657	10
Waste generation	3.343	1.1939	0.3571	0.657	11
Negatively affects design process	3.429	0.9346	0.2726	0.657	12
Low productivity	3.343	1.3081	0.3913	0.651	13
Low Level of satisfaction among construction parties	3.257	1.1044	0.3391	0.651	14
Poor risk management	3.571	1.0767	0.3015	0.646	15
Demotivated workforces	3.286	1.0302	0.3135	0.640	16
Unclear channels	3.171	1.1335	0.3574	0.634	17
Poor project documentation	3.229	1.2209	0.3782	0.634	18
Time overrun	3.171	1.2302	0.3879	0.629	19
A late response to disaster	3.457	1.3383	0.3871	0.629	20
Failure of the project	3.286	1.1606	0.3532	0.554	21

4.3 Hypothesis testing

The main hypothesis was developed in order to achieve the study's second goal. The Mann-Whitney test, a non-parametric test, was used to test this hypothesis. The Mann-Whitney test was used to see a significant difference in ranking the poor communication causes at the 0.05 level.

The first hypothesis is H1. There is no significant difference between contractors and consultants toward the ranking of poor communication causes.

This category contains 32 variables. Contractors perceived these elements to have a *RII* of between 0.756 and 0.522, whereas consultants perceived them to have a *RII* of between 0.675 and 0.462. Both contractors and consultants have moderately high *RII* values, indicating that these variables have a considerable impact on the causes of poor communication.

As indicated in Table 5, the Mann-Whitney = 82 and the *p*-value = 0.496 indicate that the p-value is greater than the 0.05 significance level. As a result, the null hypothesis is accepted, and there is no statistically significant difference in how contractors and consultants assess the causes of poor communication.

Table 5: The results for the first hypothesis.

#	Factors	Contractors		Consultants	
		RII	**Rank**	***RII***	**Rank**
1	Lack of effective communication between construction parties	0.667	19	0.6	15
2	Lack of effective communication system and platform	0.700	10	0.612	12
3	Poor communication skills	0.644	20	0.587	18
4	Language barrier	0.600	29	0.537	30
5	Improper communication channels	0.589	31	0.587	19
6	Possessing different level of education among construction teams	0.722	4	0.675	1
7	Lack of support for advanced communication technologies	0.611	28	0.637	6
8	Diversity of culture and ethics among construction teams	0.678	15	0.662	3
9	Personal barrier	0.622	26	0.55	6
10	Technology malfunction	0.622	27	0.562	25
11	Possessing differed skills levels among construction teams	0.700	11	0.637	7
12	Complexity of the construction industry	0.633	24	0.587	20
13	Lack of communication plan	0.722	5	0.662	4
14	Lack of appropriate communications medium	0.756	1	0.625	10
15	Inaccessibility of information	0.689	12	0.55	27
16	Slow information flow between	0.756	2	0.575	23
17	Frequent changes of project contract	0.633	25	0.65	5
18	Improper communication time management	0.689	13	0.587	21
19	Poor planning and coordination	0.678	16	0.637	8
20	Poor communication management	0.711	7	0.575	24
21	Lack of clear objectives	0.644	21	0.6	16
22	Lack of mutual respect and trust among construction teams	0.722	6	0.55	28
23	Weak organizational structure	0.644	22	0.525	31
24	Inaccurate delivery of project information	0.689	14	0.55	29
25	Unavailability of information in the time of need	0.711	8	0.6	17
26	Lack of communication procedure and training	0.678	17	0.675	2
27	Contractual barrier	0.711	9	0.612	13
28	Lack of adequate representation for project stakeholders	0.678	18	0.612	14
29	Lack of understanding among parties	0.733	3	0.587	22
30	Poor detailed drawing	0.600	30	0.625	11
31	Incorrect instructions or technical information	0.644	23	0.637	9
32	Gender differences	0.522	32	0.462	32
	Overall	0.641		0.598	
	Mann-Whitney (U)	82			
	Sig	0.496			

The second hypothesis H2. There is no significant difference between contractors and consultants toward the ranking of poor communication effects.

This category contains 21 variables. Contractors perceived these elements to have *RII* values ranging from 0.767 to 0.578, whereas consultants perceived them to have *RII* values ranging from 0.70 to 0.525. Both contractors and consultants have relatively high *RII* values, indicating that these factors have a relatively high degree of influence on poor communication effects. The factors are ranked in order of overall ranking, with "Cost overrun" being the most impactful for both contractors and consultants, and "Failure of the project" being the least impactful for both groups. The table also includes a Mann-Whitney (U) test statistic, which is a nonparametric test used to compare two groups' rankings of the factors. The test statistic is 95, and the significance level (Sig) is 0.92. This suggests

that there is not a significant difference in the rankings of the factors as perceived by contractors and consultants.

Hypothesis testing revealed a high level of agreement between contractors and consultants in the ranking of poor communication causes and effects. This supports the idea that poor communication is a prevalent issue in the construction industry, and that both contractors and consultants are affected by it.

Table 6: The results for the second hypothesis.

#	Factors	Contractors		Consultants	
		RII	**Rank**	***RII***	**Rank**
1	Time overrun	0.711	10	0.525	21
2	Conflict among construction parties	0.767	1	0.562	16
3	Cost overrun	0.722	7	0.7	1
4	Rework and redesign occurrence	0.667	18	0.675	4
5	High accident rate	0.678	17	0.612	10
6	Failure of the project	0.578	21	0.55	17
7	Demotivated workforces	0.700	12	0.55	18
8	Poor team work	0.744	3	0.65	6
9	Late response to disaster	0.722	8	0.55	19
10	Low productivity	0.767	2	0.55	20
11	Misunderstanding	0.722	9	0.637	8
12	Misinterpretation	0.744	4	0.637	9
13	Design errors	0.700	13	0.65	7
14	Low Level of satisfaction among construction parties	0.700	14	0.612	11
15	Frequent remedies in design and planning schedule	0.733	6	0.7	2
16	Waste generation	0.633	20	0.7	3
17	Unclear channels	0.667	19	0.612	12
18	Poor risk management	0.711	11	0.6	14
19	Poor project documentation	0.689	15	0.57	15
20	Poor planning	0.744	5	0.662	5
21	Negatively affects design process	0.689	16	0.612	13
	Overall	0.704		0.615	
	Mann-Whitney (U)	95			
	Sig	0.92			

5 Conclusions

This study aimed to determine the factors that contribute to poor communication on construction projects and examine the effects of poor communication on these projects. The study used the relative importance index *RII* technique to identify and rank 53 causes and effects of poor communication. The results showed that all causes and effects are highly important except the last five causes have relatively lower *RII* values and are considered less important. In conclusion, poor communication in construction projects can be caused by a variety of factors, including differences in education and skill levels among team members, lack of communication plans and procedures, lack of appropriate communication mediums, slow information flow, cultural and ethical differences, contractual barriers, unavailability of information, and lack of understanding among parties. These issues can lead to delays, misunderstandings, and increased costs.

Additionally, poor communication in construction projects can have a variety of negative effects, including cost overruns, frequent remedies in design and planning schedule, poor planning, poor teamwork, misinterpretation, conflicts among construction parties, rework and redesign occurrence, misunderstanding, design errors and high accident rate. These issues can cause delays, increase project costs, and compromise the safety and quality of the final product.

The study identified the main causes and effects of poor communication on construction projects by using a questionnaire given to construction industry professionals. Hypothesis testing revealed a high level of agreement between contractors and consultants in the ranking of poor communication causes and effects. This supports the idea that poor communication is a prevalent issue in the construction industry, and that both contractors and consultants are affected by it. These findings highlight the need for improved communication in the construction industry to mitigate the negative effects of poor communication.

The results showed that effective communication is critical to project success, but that construction organizations in Jordan are still trailing behind when it comes to the practice of effective communication. The study suggests that numerous measures need to be taken to address the causes and effects of poor communication in the construction industry. The study also highlights that since effects are the product of their causes, eliminating the causes can have no effect at all. It emphasizes the importance of the construction sector to immediately address the current state of communication in order to mitigate the negative effects of poor communication on construction projects.

6 Recommendations

The study recommends several measures to improve communication and reduce the causes and effects of poor communication in Jordanian construction projects. These recommendations include providing proper training on effective communication for all stakeholders, setting aside a sufficient budget for the acquisition of advanced communication technology, prioritizing the creation and clarification of communication protocols and channels, accommodating the cultural diversity of the parties involved in the project, having a clear and suitable ways and channels of communication, and having a communication strategy in place to manage and regulate the flow of information on the site. These suggestions are expected to result in the absence of misunderstandings, incorrect interpretations, and conflicts, and greater satisfaction for all parties involved in the project.

Other potential recommendations to improve communication in construction projects could include:

Establishing clear roles and responsibilities for all stakeholders, including communication responsibilities, encouraging regular meetings and check-ins between stakeholders to ensure effective communication is taking place, creating a culture of open communication, where all stakeholders feel comfortable raising concerns or asking questions, providing incentives for effective communication, such as bonuses or recognition for successful communication efforts, utilizing project management software to facilitate communication and information sharing among stakeholders, and finally, regularly evaluating the effectiveness of communication efforts, and making adjustments as necessary. It's also important to note that the communication plan should be customized to the project, it should be considered as part of the project management plan and it should be implemented from the beginning of the project and to be updated throughout the project life cycle. It is also important to consider that effective communication is not just about technology and procedures, it also requires a change in attitude and culture. It's important to create an environment where all team members feel safe and encouraged to communicate openly and honestly, this can be achieved by promoting a culture of respect, trust and open-mindedness.

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