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My friends, my family because they are fill my soul and gave me support to do that.

My husband engineer Moawya karfis, he came when I need.



Dedication

*To my beloved country, Sudan
To my beloved people, Sudanese.
I wish unity for my country and
welfare for my peoples.*

Abstract

The construction industry in Sudan suffers from many constrains and problems. One of the most problems is that related to the working teams. This research deals with this issue. The research addresses the following problems:

1. Delays in submission of works.
2. Lack of experience and experts.
3. Low productivity.
4. Problems throughout the project lifecycle.

These problems were discussed from the concept of teamwork.

The research depends on collected data from the field of the industry using a questionnaire as a tool. The sampling process was conducted in scientific and statistical way in a manner to give appropriate representation of the population.

The data was tabulated, analyzed and hence interpreted regarding the theoretical part of the research.

The research findings are as follows:

1. There are many problems facing the application of teamwork theories in Sudan.
2. The concept of team work should be introduced intensively within the practitioners in the field.
3. Training and educational systems should incorporate the philosophy of team works and team building.
4. The government should establish important roles of the concept of teamwork and leadership to nomination of qualified managers and administrators to lead the institutions in both the public and private sectors.
5. Encouragement of scientific research in the field in order to enhance the current situation.

Team work in construction industry in Sudan

Chapter one (Research Components)

1-1 Introduction:-

A small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves in mutually account, is a good idea especially if they grouped themselves in the right way. Therefore, the construction industry needs this concept to complete its tasks.

1-2 Research components

The research contains the following components:-

- Scope of the research.
- Problems of the research.
- Hypothesis of the research.
- Methodology of the research.
- Objectives & importance of the research.

1.2. Research scope

The research deals with construction industry issues such as:-

In site work: all stages of construction including material and how **they** are stored in site, all engineering works (civil, electromechanical, interior design...etc), human resources and communication between them.

Team work and Site organization:

- A- Entrance, gates and exits
- B- Movement.
- C- Materials in site receipt, storage and distribution.
- D- Production workshops (“like work of cutting machine and places of generators & water tanks” if need.)
- E- Accommodation: of labors, engineers and so on.
- F- Office buildings: Their location in suitable places.

A, B, C, D, E, &F are just examples of issues we need to organize in any site under construction industry. Without establishing of team works and supply labors by all information about the site and suitable ways to communicate, Could not well-organized site.

In office works: Type of organization, delegation and authority, communication, and social relationship.

G- Type of organization (Fixed as the line organization, flexible as the functional organization), which controls the core of works and determines whether team work could serve or not.

H- Leadership style has important roles in establishing good work environment.

I- The system followed in office work helps more in achieving goals.

To achieve in site and office, works should be done regard to the relationships between them during lifecycle of any project. The principles of organization should be established contains:

- Unity of command: which means the way of defining and controlling all project's stages and activities.
- Coherency: interconnection, between input process, activities and output.
- Job is to be well defined: job definition is essential avoid dispute by distributing all information between labors.
- Effective control at all levels: To do this in the right way where it is important to distinguish efficiency, effectively, command, control, operation and process. The limits understanding of the span of control should be defined, because any project has its own span of control.

Efficiency: The ratio of the output to the input of any system. Comparing of what actually produced or performed with what had been planned for (“with the same consumption of resources”(money, time,

labor, etc.). It is an important factor in the determination of productivity. Effectiveness: the capacity to produce works optimally in which the objectives are achieved and targeted problems are solved. In contrast to efficiency, effectiveness is determined without referring to costs. Whereas efficiency means "doing the thing right," effectiveness means "doing the right thing."

Operation: The act or process of operating or functioning.

Process: A series of actions, changes, or functions bringing about a result

Span of control: Span of control is often expressed as the ratio of supervisor to personnel. The number of subordinates a supervisor can effectively and efficiently manage.

These functions help in conveying information to manage control, monitor tasks during the progress of the project. On the other hand to eliminate confusion and tagged all members with individual skills:

- Delegation of authority: Including responsibilities, accountabilities witches are very important elements to make decisions.
- Flexibility in job assignment: rigid organization or rigid management plan lead to some militarism so there are no mutual experience and innovation managers cannot achieve the project goals in the same time (cost ,quality, time).
- Interaction between executive managers and workers.

1.2.2 Research problems

In Sudanese construction industry there are many problems caused by lack of the team working they could be reflected in terms of:-

- 1- Delays.
- 2- Lack of mutual experience.
- 3- Low quality.
- 4- Low productivity.

5- Low workability.

6- High Cost

1.2.2.1 Delays:

Delay, is one indication of failure in construction industry in Sudan, it causes over budgeting and hence disputes. There are many reasons for delay in construction industry coming on top is the poor management and lacks of considering teamwork.

1.2.2.2 Mutual experience:

The mutual experience is useful in maintaining within members. The achievement of goals depends highly on the commitment, cooperation and communication of the team members. The well graded experiences of members are needed.

1.2.2.3 Low quality:

The Sudanese construction industry suffers lack of quality; this might be due to is ill management and without considering human resource; it is so difficult to reach the required quality. Team work assists in having quality in all stages and processes throughout the lifecycle of the project.

1.2.2.4 Productivity:

The low productivity in running projects in the Sudanese construction industry represents a big problem. Deficiencies in productivity always lead to the deviation in schedule and cost.

1.2.2.5 Workability:

How to make the execution process run in a workable way? It a question based on problems that related to the previous stages of the project.

Teamwork with good system of communication & leadership together with planning could assist in running the project smoothly.

High Cost:-

With all previous effects lack of team work, will increase the cost.

1.2.3 Research hypothesis:

If good team work **is** established in construction industry it is expected to increase **of earned value**, improve of management, achievement and quality, save of time and cost, **and** encourage of creativity, responsibility and trust. As follows:

1.2.3.1 Increases of: Earned value

Earned value conception is a methodology to track:

1- Project schedule performance: To measure project schedule performance and determine time to complete project. It measures what is completed to date and what is expected to **be completed**.

2- Project cost performance: To measure how much is spent against **what is** expected to be spent.

3- Project progress: during lifecycle of project at any time any point.

Benefit of Earned value: for project manager:

- Reliable project costs and schedule data for more effective decision making.
- The relationship between cost, schedule and work achieved.
- Ability to avoid last minutes (surprises).
- Early identification of potential problems.
- Accurate prediction of project costs and completion.

Benefit of Earned value for PM and client: Provide ability to answer:

- What the output for money spent
- How much will the project cost to complete.
- When will the project be **completed**
- Which activities are contributing to the cost over run
- Which recourses contributing to the schedule slippage

Without distributing of the concept of earned value among team members, project manager can't measure performance and control a project because may receive poor data or wrong data.

1.2.3.1.1 Good relationship and Productivity

Productivity: is the rate of which goods are productive, so this rate during project achievement should be increased, project manager is the most one in team members in the project responsible for that and can't make high productivity at any stage or any phase without creating good relationship between him and his team and among team members the selves.

To get good relationship between project manager and team work through:

- Motivation
- Reward
- Meeting from time to time
- Don't prefer one to others.

To get good relationship between members of team work:

- Easy system to communicate
- Social relationship
- Standard of salary or bonus just related to organization chart and work not anything else.

1.2.3.1.2 How we can increase Workability?

Workability: The ease with which something can be worked or fashioned. Complication of work is like parries of achieve because it requires additional efforts, time and cost. In a healthy weather between team members, project manager makes anything possible to be done.

In construction industry to a good workability:

- Team work with good relationship.

- Tools and technique (to work)
- Infrastructure (to service like bath room, rest...)
- Responsibility and authority are very clear
- Experiences.

Mutual relationship after establishing good communication and any one can do everything in his field work can grow up experiences between members in the project.

That will be very nice when the project manager makes his field like school, and creates for example performance report for individual ones say monthly report to measure what did every one do or learned in that month.

1.2.3.2 Improvement of:

- Management:

By tracking team member performance, project manager can update management plan, and improve it.

- Achievements:

(One hand can't applaud), work achievement is improved by team works tracking.

- Quality:

One of the qualities categorizes is continuous improvement.

1.2.3.2.1 What makes quality to suffer?

1- Over working the project team in order to complete the project, may result in unacceptable work due to decline in team morale.

2- A hurry to complete the project work by speeding through quality inspections – may result to unacceptable delivery.

The project team should adopt the quality policy of the organization to guide the project implementation. The project manager should document

how the project will fulfill the quality policy in project management and deliverables. If quality policy is not adoptable to the project or the organization does not have quality policy, the project team should create a quality policy for the project.

3- Relationships: good relationships, good quality.

1.2.3.2 Talking of relationship means:

- Relationship between activities **done** by project team members: finish to start, start to start and so on, without distribution of knowledge in project works **and** between the team, project manager may **not** arrange, for example in construction industry finishing department, labors must know after plaster curing, must give walls a lot of time to start painting work
- Relationship between individuals of team members: by communication and social activities to create a **healthy** weather to achieve.
- Relationship between team **the** member and his work: firstly by **putting** a right man in a right way, every one works on his field by his tools to achieves his goals, everyone must know why has been done this job, and what his progress and his steps, **so as** to avoid conflict and meaningless of negotiating .

1.2.3.3 Saving of time and cost:

Time and cost are successful criteria when they **are** not performed against project plan; so that they should be measured as important aim of any project: finished on the time scheduled, with budget cost.

The relationship between time and cost is a mutual relationship where everyone **affects the** other. The team work must know (time cost) the soul of construction industry to help project manager to achieve his plan, also

project manager should help his team members to work by saving all team requirements.

1.2.3.4 Encouraging of:

- Creativity
- Responsibility and honesty
- Trust

In the construction industry field there are many ways to introduce especially in the site work so project manager or the leader should be clever to notice and documented team members behaviors, and let anyone feel and behave to this work is his own, that encouraging of creativity responsibility, honest and trust, above that project manager shouldn't ignore motivation moral or tangible.

1.2.4 Research Methodology:

Questionnaire was chosen as a tool to gather information, because it is a good tool if distributed to random samples.

- **Questionnaire:** showing question about all problems of construction industry and does team work technique solves it.

The research stated some problems and hypotheses briefed from the scope of the study. Comprehensive literature review was collected in the field of the construction industry. The data collection tool selected was the questionnaire technique where it was conducted through a random sample taken from the population.

1.2.5 Research objective& importance

The research aims to achieve project goals. So teamwork helps in the following:-

- 1- Increased earned value.
- 2- Decreased construction cost.
- 3- Updating quality of materials & technique of work.

4- Mutual of experiences between team members.

5- Saving time schedule of projects.

6- Help in promotion for the Value Engineering.

The collected data was tabulated, analyzed and interpreted with respect to the theoretical part. Certain recommendations were reached as a result of discussing the data and the theory.

Chapter two: Project Life Cycle Management

2.1 Introduction

The project life cycle and its processes depend entirely on the full coordination between the office work and the site work, where the work of the group key role in this coordination.

2.2 Project lifecycle

Project in the construction industry has five processes (references No 12,13,14,15,16) :

- 1-Initiating processes groups.
- 2- Planning processes groups.
- 3- Executing processes groups.
- 4- Monitoring & controlling processes groups.
- 5- Closing processes groups.

2.2.1 Initiating Processes Group:

The initiating process formally starts new project or project phase by incorporating all the needs of the organization of the project charter and preliminary project scope statement. The initiating process includes:-

- 1- Develop a business case:

It means understanding the business case

- 2- Undertake a feasibility study:

To cover initial requirements and risks, create measurable objectives and identify stakeholders

- 3- Establish the project charter:

Developing project charter, identify stakeholders and developing stakeholders.

4- Appoint the project team:

Selection of project manager, Determine company culture and existing system.

5- Setup the project office:

Collect process procedure and historical information

6- Perform phase review:

Division of large project into phases.

2.2.2 Planning Processes Group:

Planning processes groups determine project knowledge area and if the project can or can't be done because it entails wading through the project and getting it organized before it is actually done. On the other hand it is a remedy during project life cycle to save resources, time, and money. Planning processes groups include:

1- Create a project plan: Determine how to do planning, create activity list & create process improvement plan

2- Create a resource plan: Determine team & estimate resource requirements.

3- Create financial plan: Finalize requirements & develop budget.

4- Create quality plan: Determine quality standards.

5- Create a risk plan: Perform risk identification, qualitative and quantitative risk analysis and risk response plan.

6- Create an acceptance plan: Create network diagram, Determine critical path, develop schedule and develop budget.

7- Create communication plan: A plan for communications should be set.

- 8- Create a procurement plan: determine what to purchase and how to obtain them.
- 9- Contract the suppliers: Create work break down structure (WBS) & WBS dictionary.
- 10- Define the tender process: Determine all rules and responsibilities.
- 11- Issue a statement of work: Create project scope statement.
- 12- Issue a request for information: Prepare procurement documents.
- 13- Issue a request for proposal: Gain formal approval of the plan
- 14- Create supplier contract: Finalize how to execute and control& develop a final plan and performance measurement base line that are realistic.
- 15- Perform phase review: Gain formal approval of the plan& hold kick-off meeting.

2.2.3 Executing Processes Group:

The purpose of the execution processes is to complete work on the project management plan and to meet the project objectives. Executing processes groups include:

1. Perform time management: Execute the work according to the planed schedule.
2. Perform cost management: Execute the work according to the planed budget.
3. Perform quality management: Perform quality assurance& Perform quality audits.
4. Perform change management: Request change continuously improved send and receive information, Implement only approved change and give recognition and rewards

5. Perform risk management: Execute the work according to the plan and facilitate conflict resolution
6. Perform issue management: Use issue logs and ensure common understanding.
7. Perform procurement management: Select sellers and ensure quality of materials and the way of transport it in time.
8. Perform acceptance management: Use the work authorization system.
9. Perform communication management: Acquire final team and Manage people. Evaluate team and project performance and Send and receive information. Hold of meeting, give recognition and rewards& Hold team building activities.

2.2.4 Monitoring & Controlling Processes Group:

Monitoring And controlling processes mean measuring the performance of the project compared to the project management plan, approving change requests, preventive actions and defect repair, and managing changes. Monitoring and controlling processes groups include:

- 1- Take action to control the project.
- 2- Measure performance against performance baseline.
- 3- Determine variances.
- 4- Influence the factor that caused changes.
- 5- Request changes.
- 6- Approved or reject changes.
- 7- Inform stakeholders of approval changes.
- 8- Manage configuration.
- 9- Create factors.
- 10- Gain acceptance of interim deliverables from the costumer.

- 11- Perform quality control.
- 12- Report on project performance.
- 13- Perform risk audits.
- 14- Manage reserves.
- 15- Administer procurements.

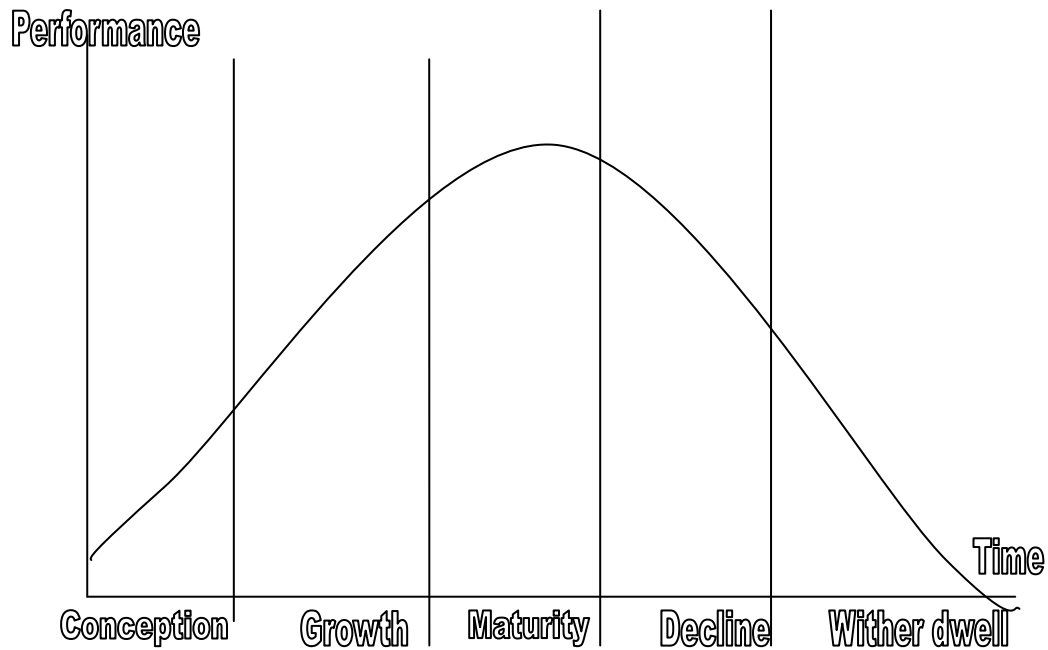
2.2.5 Closing Processes Group:

The project closing is where the project is finished. Closing processes group include:

1. Confirm what work is done to requirements.
2. Complete procurement closer.
3. Gain formal acceptance of the product.
4. Complete final performance reporting.
5. Index and archive records.
6. Update lessons learned. (Knowledge base).
7. Hand off completed (Project).
8. Release resources.

Fig No (2-1) : Project Management Life Cycle graph

The figure below shows the life cycle of the project to its processes that have been clarified various:



Project Processes groups as Project Management Life Cycle graph:

- 1-Conception - Initiating
- 2- Growth - Planning
- 3-Maturity - Executing
- 4-Decline – Monitoring and controlling
- 5-Wither well - Closing

2.3 Construction human resource

To complete project properly, should consider human and Capital resources as both in the same direction toward the same performance objectives.

On the other hand any culture does not grow up without care of human resource. Without human resource, and other available resources different goals could not be achieved.

In construction industry all works depend on art, creation, achievements in high responsibility, accountability and experience. At any level on site or in office work must focus on how to develop the common sense of learning and making more experience with more focus on relationship

between staff. When believing that human resource is the first resource to be found in any project, this will be the first step toward successful project objectives.

2.4 Project human resource management

(references No 1,2,3,4,11):

To establish a system for human resource management project managers must support the organization of the project by the following concepts:

- 1- Understanding their human resource.
- 2- Identifying of stake holders.
- 3- Develop process of project human resource.

2.4.1 Human Rights:

Many sciences study people, but each of them does so from its own particular angle.

In construction industry humanity needs values with strong desire of give and take information between labors to build experience before achieving goals.

Everyone must be known what are the laws governed the profession and protected labors rights.

2.4.2 Identification of stakeholders:

Stakeholders are people or resources that have positive or negative influences in the project. They are grouped in:

1. Internal Project requirements (people, other resources) who are to achieve the project, and /or to use the whole project or part of it at any phase or stage.
2. External Project requirements (people, other resources) who affects by mutual relationship of the project life cycle.

2.4.3 Developing process of project human resource

Project human resource processes:-

2.4.3.1 Development plan for human resource.

This is the process of identifying and documenting project's roles, responsibility, reporting relationship and create staffing management plan. Many tools and technique are used like organizational theory and network diagram.

2.4.3.2 Acquirement of project team.

Project team acquisition is the process of getting the needed resources on the project focusing on working within the policies and the procedures of the organization.

Negotiating, influencing and communicating skills play key role when acquiring a project team.

Acquire a project team is an important propriety to think of by project manager or organization manager. project staff assignment and resource calendar should be done right from the first point of the project lifecycle to save cost and time, and to avoid project management plan updates.

2.4.3.3 Development of a project team.

To improve team member's skills, to build trust and cohesiveness among team members, project managers should acquire skills to, identify, build, maintain, motivate, lead and inspire teams to achieve project objectives with optimal team performance.

The project manager should posses five types of powers to develop project team as follows:

1. Expert: The authority of the project manager comes from experience of the technology of the application area.

2. Reward: The project manager has the authority to reward the project team.

3. Formal or positional power: The project manager has been assigned by senior management.

4. Referent: The project manager has been assigned by CEO (Chief Executive Officer). A **chief executive officer (CEO)** or **chief executive** is the highest-ranking cooperater officer (executive) or administrator in charge of total management of an organization. An individual appointed as CEO of a corporation, company, organization, or agency reports to the board of directors.

5. 2.4.5 Team building Skills:

Building and developing a team follows five steps (references No 5,9,10):

1- **Forming**: Identification teams in groups. Direct the team and establish objectives clearly.

2- **Storming**: Making team like a home to encourage everyone does his best. Establish process and structure, and work to smooth conflict and build good relationships between team members.

3- **Norming**: Putting team members under individual qualification. Step back and help the team take responsibility for progress towards the goal.

4- **Performing**: tracking team achievement tasks. Once the team has achieved high performance, you should aim to have as "light a touch" as possible.

5- **Adjourning**: Ranking and developing team members according to achievement. Taking the time to celebrate its achievements, and this will be much easier if people view past experiences positively.

2.4.5.1 Managing project team:

Management of project team involved:

A- Tracking each team member's performance and providing feedback about their performance.

B- Resolving issues among team members.

C- Managing change to project and project processes to enhance project performance.

In all processes, the organizational processes assets and enterprise environmental factors are most important, to determine which are the suitable tools to manage a project team.

It should be noted that a project management plan update may change enterprise environmental factors and organizational processes assets. Identification of enterprise environmental factors and organizational processes assets come later.

2.5 Theory of Leadership

The leaders organise the labours into efficient units and monitor the distribution and use of capital assets to insure that – progress is excellent. The leaders continue to monitor and evaluate progress, making adjustments along the way to ensure the progress is maintained and efficiency increased wherever possible.

The concept of leadership does not necessarily mean the direct leadership of a person to a person less than the highest rank but it means how to produce and install the system in accordance with the principles and criteria taking into account the nature of work and the organizational assets without ignoring environmental factors.

2.5.2 Importance of leadership:

“Management is doing things right, leadership is doing the right things” (Warren Bennis and Peter Drucker –Ref Aug-2007).

The leadership is a responsibility of management, so projects plans cannot be achieved without a leadership.

Project manager is sponsored to achieve the project goals as the planner. The client is responsible to finance the project. Consultant manager also sponsored because representative the channel between the contractor and the client.

The relationship between the three parties in the project is governed by the contract. Any weakness in the contract or in the awareness there of by any part can lead to confusion.

2.5.3 Styles of leadership in the Sudanese construction industry:

Leadership depends highly on the surrounding factors and the environment of the project so in the Sudanese construction industry there are many leadership styles that developed locally in the light of local and foreign experience, as the following styles are famous:

- 1- Project manager with technical skills without personal skills.
- 2- Project manager of social relationship.
- 3- Project manager of political issue.

The above three types of managers are governing of the Sudanese construction industry, but such styles are project manager by social relationship and political issue, so this is the basic reason of most deficiencies that occur in the industry. The above types of construction managers always suffer the followings:

- 1- Absent of Accountability.
- 2- Not focus on the project performance.
- 3- Poor knowledge of team work principles.

2.5.4 Important issues for the successful project manager:

To develop leadership in general and particularly in the construction industry we should consider the following:

- 1-Project manager must be of adequate skills.
- 2- Buts the best interest of the project rather than own interest.
- 3- Has all the power to perform all the activities.

- 4- Assigned during project initiation not later in the life of the project.
- 5- The project manager should understand the processes of project management and what to do first and why
- 6- The project manager must spend time for planning, managing, assigning and controlling the scope, time, Cost, quality, risk, recourse, and customer satisfaction.
- 7- The project manager must works within the existing system and culture of a company (enterprise environmental factors).
- 8- The project manager should know what is involved in creating a real project management plan, and project documents.

More above personal skills should be considered, avoiding Autocratic and Paternalistic. Laissez-Faire and Effective Leaders behaviours are needed.

2.5.4.1 Autocratic:

This means:

- Leader makes decisions without referring to anyone else.
- High degree of dependency on the leader.
- Can created-motivation and alienation of staff.
- May be valuable in some types of business where decisions need to be made quickly and correctly.

2.5.4.2 Democratic:

This means:

- Encouraging decision making process by from different perspectives leadership throughout the organisation.
- Consultative: process of consultation before decisions were taken.
- Persuasive: Leader takes decision and seeks to persuade others that the decision is correct.
- May help motivation and involvement.
- Workers feel ownership of the firm and its ideas.

- Improves the sharing of ideas and experiences within the business .
- Can delay decision making.

2.5.4.3 Laissez-Faire:

This means:

- Let it be' – the leadership responsibilities are shared by all.
- Can be very useful in businesses where creative ideas are important.
- Can be highly motivational, as people have control over their working life.
- Can make coordination and decision making time-consuming and lacking in overall direction.
- Relies on good team work.
- Relies on good interpersonal relations.

2.5.5 Effective Leaders:-

Some properties which, if available, manager could be described as effective leader such as:-

- Focusing on Measuring Results.
- Are Responsible for the Group's Performance.
- Communicate Expectations to the Group.
- Are Life-Long Learners.
- Involve the Group in Decision-Making.
- Seek Innovative Ways to Improve Performance.
- Get Things Done Quickly.

Effective leader can led to effective teams, if the project manager focus on measuring results that means has been focusing in a whole levels and deliverables of the project, good leadership focusing on objectives mater rather than dealing with things not related to product in order to satisfy the customer.

The leadership is fully responsible to organize relationship between the employees and their duties. Leaders have to distinguished by their high skills of communication and delegation.

Types of teams: REF No 8

Team work can be divided generally and partially in the construction industry in the following:-

- **2.5.6.1 Pseudo Grouped:**

Pseudo Group: Members are

- assigned to work together but they have no interest in doing so.
- They believe that they will be evaluated by being ranked from the highest performer to the lowest performer.
- They see each other as rivals, who must be defeated.
- They block or interfere with each other's learning.
- Hide information from each other, attempt to mislead and confuse each other, and distrust each other.
- Members would achieve more if they were working alone.

This type of group affects, because no saving of time and cost and no improvement of quality. Managers can't measure the earned value to control the work during the process of the work. This type of group is resulted of poor management and failure managers. If the managers **encourage** creativity, trust, responsibility, and improve the relationships between the members successful organization could be established.

- **2.5.6.2 Traditional Group:**

In this group members are:-

- Assigned to work together and accept that they must do so.
- Assignments are structured, however, so that very little joint work is required.

- Members believe that they will be evaluated and rewarded as Individuals, not as members of the group.
- They interact primarily to clarify how assignments are to be done.
- They seek each other's information, but have no motivation to teach what they know to their group mates.
- Helping and sharing is minimized.
- Some member's loaf, seeking a free ride on the efforts of their more Conscientious group mates.
- The conscientious members feel exploited and do less.
- The result is that the sum of the whole is more than the potential of some members, but the harder working and conscientious members would perform higher if they worked alone.

- **2.5.6.3 Cooperative Groups:**

Members are:

- Assigned to work together and, given the complexity of the task and the necessity for diverse perspectives, they are relieved to do so,
- They know that their success depends on the efforts of all group members,
- The group format is clearly defined as:
 - First, the group goal of maximizing all members, learning provides a compelling Common purpose that motivates members to roll up their sleeves and accomplish something beyond their individual achievements.
 - Second, group members hold themselves and each other accountable for doing high quality of work to achieve their mutual goals.
 - Third, group members work face-to-face to produce joint work-products. They do real work together. Members promote each other's success through helping, sharing, assisting, explaining, and encouraging each other. They provide both academic and personal support based on a commitment and caring about each other

– Fourth, group members are taught teamwork skills and are expected to use them to coordinate their efforts and achieve their goals. Both task and teambuilding skills are emphasized. All members share responsibility for providing leadership.

– Finally, groups analyze how effectively they are achieving their goals and how well Members are working together. There is an emphasis on continual improvement of the quality of learning and teamwork processes.

All stages depend on good planning and good selection of the members involved in a team work so this type of group is suitable to control and improve team works.

- **2.5.6.4 High-Performance**

Members are:

- This is a group that meets all the criteria for being a cooperative learning group and outperforms all reasonable expectations.
- What differentiates this type from the cooperative group is the level of commitment members have to each other and the group's success.

If organization management established type (Cooperative Groups) with a good foundation plan, control, monitor, and so on it can automatically gain high performance and reached type (High-Performance group).

Generally, We can reach the concept of the most effective team or type (High-Performance group) By:

1- Share information openly.

Sharing information is a team responsibility.

2- Participate in the team's task:

Identifying of task is a very important of team work.

3- Encouraging each other

4- Usage of team's resources.

2.6 Communication

Introduction:

Communication in construction industry is very essential and the lack of it could affect the achievement of the goals. It is a main issue to establish a good system of communication to tag team and assist it to perform in low cost, high quality and time schedule.

2.6.1 Communication management plan:

Comprises of three stages:

- a. Creating communication plan processes.
- b. Distribution of information.
- c. Reporting project performance.

2.6.2 Creating communication plan processes:

There are three elements should be found to create communication plan:

- 1- Identifying of stakeholders.
- 2- Enterprise environmental factors.
- 3- Organizational processes assets.

2.6.3 Identifying of stakeholders:

To identifying stakeholders a complete project charter should be contains all stakeholders affects during project lifecycle without ignoring of enterprise environmental factors and organization processes assets.

With stakeholders registrations, good strategy to control their relationships could be made, it can help the project manager to find suitable way to communicate them when have been needed.

Project Stakeholders are: individual of organization who are actively involved in the project, or whose interest may be positively or negatively affected as a result of the project execution. The stakeholders comprise of:

- Customer.
- Project manager.

- Performing organization.
- Project team.
- Project management team.
- Sponsor.
- Influencers (positive and negative).
- Project management office.

2.6.4 Enterprise environmental factors:

In construction industry there are many environmental factors that affect the project in issues like time, location and policy.

Enterprise environmental factors consist of:

- Organizational structure.
- Organizational culture.
- Governmental industry standard.
- Infrastructure.
- Existing human resource.
- Personal administration.
- Organization's work authorization system.
- Market place conditions.
- Stakeholders risk tolerance.
- Project management information system.

2.6.5 Organizational processes assets:

It depends on the size of the project and the type of works but in general they are:

- A- Organizational processes, standards.
- B- Templates.
- C- Organizational communications requirements.
- D- Financial control procedure.
- E- Issues and defect management procedures.

- F- Change control procedures.
- G- Risk control procedures.
- H- Procedures for approving and issuing work authorization.
- I- Organizational knowledge base.

2.6.6 Distribution of information:

The distribution of information between the project team members is considered to be an important factor. It reflects:

- 1- Values.
- 2- Project manager's interpersonal skills. Communicating skills should be 90% of this skill and should have negotiation skills, problem solving skills, conflict management skills, leadership and motivating skills. More above that should have team building skills
- 3- Communication system.
- 4- Type of organization: it might be functional, matrix, project zed or any other type. These necessitate organizational chart and influence of information with clear responsibilities, authorities and accountabilities. In other way this definition could be perceived using communication model (sender- message- receiver).
- 5- Team culture: to establish organization policies and procedures, view of authority relationships, work ethics and work hours. The studies of team culture help project manager to find good communication plan.

2.6.7 Reporting project performance:

Through this process project manager could check his system of communication and his team.

Collecting data from the team members and the distribution of performance information in terms of report models to stakeholder will

show the situation of scope, schedule, cost and quality of the project, and can make change request or updated of management plan.

Chapter Three: Team Building Techniques

3-1 Introduction:

The construction industry faces real challenges, such as mobilization to start a new job, site organization, millstones of project, project deliverable and so on. Some people may have worked together on their jobs, but there are always new players to cooperate in other jobs, and every job is different.

Taking few hours to get the new team together before the job started can make difference between the job to be delivered safely, on-time, and on-budget, and a job that fails.

Some principles To Build Teamwork in construction industry

references No 8,7,6): :

1. Get the team members familiar with each other's background so prior talents are known and can be used in the new job.
2. Help team members learn each other's style of working and approach to conflict resolution.
3. Develop a common understanding of the job's "big picture" - especially the potential problem areas which will have to be managed.
4. Agree upon a set of teamwork and communication protocols to guide the team throughout the job.
5. Establish accountability within the team through the use of an "internal partnering charter" process.
- 6- Don't make levels in team members according to just your sense, you must established a systematic way to distinguish team members' experiences and their ethics.
- 7- Encourage team members to learn their self's, for example by opening opportunities of training courses and so on.

8- Let them feel the organization is theirs. By for example sharing them in different decisions, and led all services which are they need available.

9- Don't forget the motivations, social relationships.

10- Don't punish anyone in front of colleges.

Building the Construction Team process, can also be modified to include team members from multiple contracting companies who will be working together on a common job.

3-2 Existing methods of Team building in the Construction Industry

William J. Bender and Darlene Septelka's – Aug-2009- dressed this issue in his paper which focuses on the team building in the construction industry so the paper is about:

- Team work.
- Define team goals.
- To Establishing respect and trust.
- Duties, Rights and responsibilities.
- Risk allocation.
- Monitor team health.
- Team communications.

The focus of William J. Bender and Darlene's paper is to present teambuilding concepts that can be implemented by the individuals involved in a project. Particularly for the construction industry all projects has the constraints of time, money, scope, and quality. If relationships between the participants becomes strained this may result in a project becoming unsuccessful in terms of cost, schedule, quality and ability to obtain future work. The paper discusses existing methods of teambuilding and augments these ideas with common sense and project proven techniques for all projects participants to employ. Specific areas

of discussion are establishing a team environment, defining goals, developing trust, risk allocation, and communications.

3.2.1 Introduction of William J. Bender and Darlene Septelka's – Aug-2009

The team members share the common goal of constructing a project, but because of conflicting and competing interest a project may suffer from a lack of teamwork. These separate interest are due to the fractured nature of the industry, having new team members for each project, and the different perspectives or priorities that manifest to some degree on all projects.

The construction process is a very competitive environment for the owner, design team, and contractor. The owner desires the best value and highest quality for their money. The design team strives to achieve this for the owner and is under the constraints to operate a successful business. The contractor works in a very competitive industry where profit margins are low and risk are high. The competitive nature of these participants may cause a breakdown of the teamwork crucial to a highly successful project. This breakdown causes; untimely information flow, distrust, excessive documentation, expensive delays, reduced quality, and ultimately impacts to the cost and schedule of a project.

3.2.2 Teamwork

Teamwork is defined as “cooperative effort by the members of a group or team to achieve a common goal”. This paper identifies successful practices team members can employ to create a better cooperative effort among members of the project team or teambuilding in the construction industry. We define teambuilding as a process designed to improve a project’s performance. Improving the performance is delivering a project

with high quality, under budget, on schedule and without any claims or disputes.

Teambuilding involves certain activities that are typically part of the construction process but are performed with the intent to create a team. The objectives of these activities are to foster communications, encourage coordination and cooperation, avoid potential problems, disputes and keep moral high.

Teambuilding requires a determined effort on somebody's part, this is typically performed by the owner representative or a Construction Manager (CM). The owner's representative or CM typically has construction contracting experience and their background is either from the design professional's or builder's perspective. These members of the team should make it their mission and take a leadership role to create and foster teambuilding because it is in their and the projects best interest. This leadership cannot work as a top down mandated approach but should be more of a coach or even cheerleader serving as the role model and providing tools to foster teambuilding. The leader of the teambuilding efforts should know the strengths of individuals and organizations and use this to help make the team more cohesive.

3.2.3 Defining Team Goals

The first step in teambuilding is to assemble the team and defines mutual project goals. This can be as simple as a preconstruction meeting or as formal as a facilitated partnering session (AGC 1991) Associated General Contractors of America (AGC) is a membership organization dedicated to furthering the ever-changing agenda of commercial construction contractors, improving job site safety, expanding the use of cutting edge technologies and techniques and strengthening the dialogue between contractors and owners within the construction industry.

All the project stakeholders should be present at this kick-off meeting. A team operates efficiently when everyone agrees upon mutual project goals and objectives. This meeting also serves as a process for the players to get to know one another and develop a team “win-win” attitude rather than we/they attitudes.

Collectively the team should define and agree upon common team and project goals that provide purpose, focus, and direction. Goals should be specific, measurable, attainable, relevant, and time-bound. Through the identification of stakeholders’ respective goals for the project, mutual objectives can emerge (Eicholz1997 third edition Publications by Robert E Eicholz).

A simple example of a team goal is the project schedule. The builder makes a profit by finishing as soon as possible. The owner may need a facility by a specific date. The design team only has a limited amount of time for the construction phase budgeted. A win-win attitude will incorporate each of the participant’s objectives i.e. builder wants fast replies to request for information, owners want; extensive coordination and cooperation, and the designer wants; help with field solutions to problems versus redesign.

3.2.4 Establishing Respect and Trust

When design and construction professional come together to work on an issue or project they must maximize and build on the different strengths that each stakeholder can bring to solving a problem. Often when people from different professions work together on a team they tend to look or approach an issue from different points of views. Teamwork is not possible where there is cynicism about the motives of others. Better understanding is reached through the development of personal relationships and learning about each team member’s strength and what

they can bring to the table. With understanding comes trust and with trust comes the possibility of a successful relationship and project. Learning to respect and trust one another's' respective role in the construction process and recognizing the risk inherent with those roles is important for team synergy and project success.

3.2.5 Duties, Rights and Responsibilities

An important function of every team member is to understand their individual or organizations duties, rights and responsibilities. This avoids problems by everyone on the team clearly understanding what is required of them. Team members must understand their legal responsibilities not only for their protection but to avoid unnecessary miscommunications and expenditures.

Early in the teambuilding process team members should state their duties, responsibilities and authority levels to the other members. This exercise provides other team members with firsthand knowledge of who they need to work with to solve a particular issue. Participants need to explain why they have particular duties and responsibilities. For example, the design engineer is not required to make field visits only to be an enforcer for contract compliance but to verify the design they are liable for is being carried out.

3.2.6 Risk Allocation

In a team environment risks must be identified early in the project process and assigned to those best able to control it. Additionally those that take on added risk should be adequately compensated. The assignment of risk may require a different contracting approach, for example, a negotiated time and materials instead of lump sum contract should be used when risk with an unknown magnitude is difficult to quantify.

Early in the project process the team should meet to specifically discuss and plan for project risks. This process is called risk management and

should be used as a teambuilding exercise. The risks must be identified, quantified, prioritized and a plan developed to mitigate and assign responsibilities of specific risks. A simple method to identify risks can be performed by using a checklist or brainstorming. For most projects risks can be qualitatively assigned based on a linguistic expression for the likelihood and consequence of the specific risk event.

A simple risk tool that can be employed by the team to quantify and prioritize risk is a risk assessment matrix table (Wiggins 1985). A sample risk assessment matrix table is shown in Table 1. Once high risk issues are quantified the team should develop plans and action items for the mitigation or reduction of these risks. For example the team may identify on time schedule completion as a high risk because of labor shortages. Using Table 1, if the team decides the likelihood of a labor shortage is medium and the consequence of a labor shortage means a delayed schedule is high, the risk is classified as high. The team must discuss methods to mitigate this risk and alternatives selected by those best able to control the risk.

3-6-2-1 Table 1 : Risk Assessment Matrix Table

		Consequence of a Risk Event		
		High	Medium	Low
Likelihood of Occurrence	High	High	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Low

The risk assessment matrix table shows the relationship between Consequence of a risk event and likelihood of occurrence.

3.2.7 Monitor Team Health

Any team will have its ups and downs, for example in certain stages of a project teamwork may start to slip over a difficult problem. Therefore it is important to recognize when teamwork is slipping and midcourse corrections are needed. Any team member can initiate the efforts to get the team back on track. The team wants to avoid entities getting into a letter writing battles and an overly restrictive interpretation of the specifications. Also too much effort documenting “what happened” and “who did what to who” instead of reaching compromise and moving forward are counterproductive to a smooth project. When a battle between team members occurs all sides lose because the focus is on the battle at hand instead of anticipating problems and working through them. All the team members should be cognizant of the team’s health but the owner or their representative should take a leadership role in improving the team environment when issues go astray. The following are several methods for doing this:

- View a problem from understanding versus being understood (Covey 1989).
- Understanding the other person’s position or empathizing with them provides the necessary background to reach a solution.
- Keep the focus on the problem at hand and not on the personalities or people.
- The relationship between team members needs to be open and honest.
- Talking behind each other’s backs or creating alliances only acerbates problems, If a team member is talking bad about another team member offer to discuss the issue with the individual

immediately. This will either curtail negative talk or get issues out in the open where solutions can be found.

- A change of venue may be necessary to create a new atmosphere. For example, only the three principals from the designer, owner, and contractor could meet for lunch and discuss the project. This gets everyone on neutral ground and decision-makers are left to their own thoughts and opinions.
- Sometimes issues or battles that have been waged at lower levels are solved when personalities are removed from the problem.

3.2.8 Team Communications

Ref No 17:

Ineffective communication can produce undue stress and tension among team members, which lowers both moral and productivity that can lead to loss of time and money. Effective teams work through breakdowns in communications by developing and promoting open and clear communication amongst its team members. The three key elements to effective project communications are relevance, responsiveness, and occurrence. Relevant communication is focused, concise, and task-oriented. Responsive communication involves the willingness to gather information from others, active listening, and building on ideas and views from others. Occurrence is established communication methods and timely responses. Procrastinating upon needed communication among team members can only cause issues to fester and lead to a breakdown of the team and its performance.

Good team discussions depend on how well team members are able to communicate with each other. By understanding others and conveying your thoughts you will help breakdown communication barriers. Guidelines for practicing open communications are:

- Be willing to express yourself and your views fully.

- Avoid becoming angry or annoyed when another person's view differs from yours.
- Be willing to change your views as new information becomes available.
- Think win-win by seeking to find common ground on issues.
- Practice pro-active listening.

Pro-active listening is exploring others ideas rather than debating their ideas. There are five steps in practicing pro-active listening:

- Encourage the person to communicate their ideas, thoughts, and views.
- Observe and listen to what the other person thinks, feels, intends and does.
- Check out what the other said by using open-ended questions.
- Acknowledge by paraphrasing and playing back what the other said without judgment or problem solving.
- Interpret what they said and watch and listen, or ask for verification, that you correctly interpreted their ideas, thoughts, and views.

Some wrong practices in the communication processes:

- 1- Judging a person idea by, criticizing.
- 2- Sending solutions by ordering, ultimatums, threatening, moralizing, advising, or excessive and inappropriate questions.
- 3- Avoiding the other's persons concerns by diverting, using logical arguments, or reassuring.
- 4- "Silent treatment" avoiding calls, delayed responses, avoiding uncomfortable issues.

How can make the meeting effective as a communication tool:

Weekly team meetings are an effective communication method to discuss project issues. All the stakeholders need to be in attendance and the

meeting needs to be organized to be effective. The meeting should have a designated facilitator that keeps the meeting on time, facilitates open discussions so that everyone is heard, and records decisions made in the meeting. Everyone on the team is busy and most meetings can be held effectively within an hour. The meeting agenda should be sent out prior to the meetings and meeting minutes with assigned action items should promptly follow all meetings. In a meeting it is easy to misinterpret what was said and a formal recording will allow everyone to read the same interpretations thus saving the project time and money. A method needs to be in place to allow corrections to be made to the minutes if there is a discrepancy in what was recorded.

New technologies are a communication tools:

Communication between team members has never been so easy and quick. Email, cell phones, the internet, and extranets all allow projects to be managed. Some caution comes with using these new technologies that allows instant communications. With the loss of personal contact we lose the ability to observe and check the sender's body language. Email can be hastily written and can communicate wrong intentions when not enough time is allowed for the sender or receiver to view the communications or problem in full perspective. Email can be quickly forwarded to others without the sender's knowledge, so make sure what you write is intended for anyone's eyes. It is important that you think first and make sure you are not emotional over the issue and it is recommended to clarify any issues by calling first before writing.

3.2.9 Conclusion of William J. Bender and Darlene Septelka's paper – Aug-2009

Teambuilding is important for successful accomplishment of any project. The objective of the team is to deliver a project that completes on time, on or under budget, is profitable to all team members, void of claims, and

results in a satisfied owner. Rivalries, documentation battles, doing harmful actions out of spite, and other distracting actions may result in at least an unpleasant work environment and more likely an unsuccessful project.

The owner plays a leadership role in fostering and maintaining the team environment. Building and establishment of teams depends highly on members' best interest. Methods of team building begin with establishing common goals, understanding and establishing mutual respect among team members.

A simple method has been introduced to assess risks on a project, where it is important to ensure proper team balance risk to be assigned to those best able to control it. Several tips and strategies have been provided to foster communications in relevant, responsive, and provide occurrence. How effective could team members communicate with each other will set the tone for a project that is fun and profitable to work on.

3-3 Team building in Sudanese construction industry

3-3-1 Introduction:

Since the construction of the pyramids, construction industry in Sudan was known in different forms, according to the environment and location. In the north of Sudan the buildings made of mud, because it is the appropriate to the natives in both economical and environmental conditions. In the east, west and southern Sudan, Sudanese knew the various forms of construction which suit their environment represented in the forms of domes made from local materials. Recently a boom in construction industry in the Sudan was created, particularly in large cities such as Khartoum in which all forms of modern construction in different

materials were used. Most of structures in Khartoum are made of Concrete and steel frames. Infrastructure such as roads, bridges, dams e.t.c are also took place in government plans.

Construction requires team work policies in various forms according to the nature of projects. Sudanese people have the culture of team works which help allot in getting various goals practically in construction. Some of these goals are:

- 1 - Construction buildings.
- 2 - Strengthening social bonds.
- 3 - Exchange of experiences.
- 4 – Encouragement and exploration of new environment.
- 5- Low cost buildings.

3.3.2 Types of buildings and related problems in Sudanese construction industry:

The types of building in Sudan are:

1- Ordinary residential buildings that do not exceed 3 floors. They represent the most types of modern buildings in Sudan and are carried out by engineers or contractors.

2- Specialized buildings such as schools, hotels - Banks - hospitals, factories –warehouses, where in these types of buildings modern techniques are introduced in the field of construction such as steel frames.

3- Infra structure building such as Roads, bridges, dams and reservoirs.

Problems facing the construction industry are different, especially in developing countries such as Sudan because of unstable market conditions, particularly in recent years. Some of the common problems are:

- The absence of clear data to help in the start-up phase, and accordingly applying the required treatment.

- In planning stage, engineers suffer lack of experience.
- Problems during implementation and execution of project.
- Since there is no clear planning it is expected to result wrong outcome.
- Problems resulting from the material, availability, quality and changes in prices.
- Problems resulting from the material, and the possibility of transferring and storage on the right way.
- Problems resulting from the workers and their culture, experiences and productivity.
- Communication problems due to poor planning, poor ability to have communication tools and the cultures of labors.
 - Problems that result from unclear contract.

Is the concept of working in team might solve or mitigate these problems?

Looking for the previous problems they could be put in different groups for solution as following-:

1. Planning problems.
2. Execution problems.
3. Monitoring and controlling problems.

So let say by using teamwork could be solving a big ratio of above problems.

Chapter Four: Data Collection Analyses

4.1 Data collection:

The procedures of data collection

Introduction:

This section contains a method that was followed in the analysis of the research. And includes the study population and sample size that was chosen and the way chosen, the type of tool used in data collection and how to collect.

Population of the study

Research methodology is a questionnaire. A questionnaire was distributed to random samples of engineers, manually and by emails and the questionnaire was collected in the same way again. Samples are available in the (Sudan University Science & Technology –College of graduates Studies) and various companies.

Size of the sample

Size of the sample taken at random is fiftieth samples.

How to prepare the questionnaire

Questions were divided into two parts, the first section (yes, no) targeted specific information about the sample, the second section (multi choice) targeted the private information search on the basis of assumptions.

Method of analyzing the questionnaire

Questionnaire was analyzed by Excel program, which gave the results below for each question and its attachment frequency tables and graphs.

Part one:

Questions No.	A	B
4	41	3
5	26	15
6	39	2
7	38	2
8	40	1
9	28	15
10	27	10
11	42	1
12	30	2
13	44	0
14	39	2

4.2 Part one:

4.2.1 Total analyses:

4.2.2 The details of answering, part one:

The answers to the questions were analyzed and interpreted as following: -

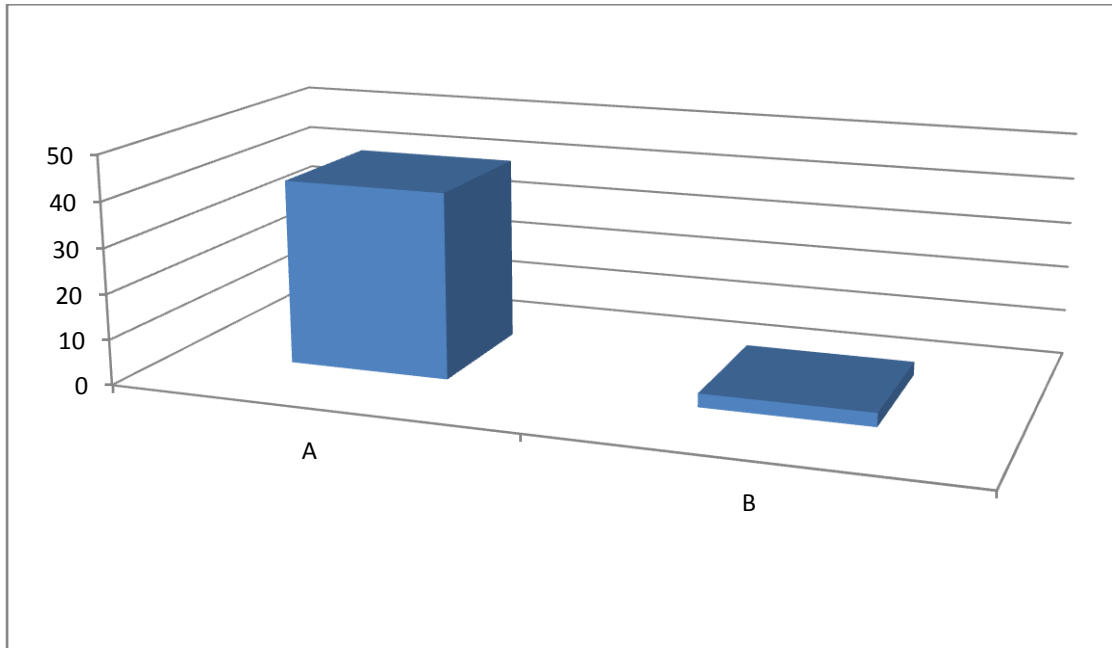
Note:

- Question 1 : Name
- Question 2 : profession
- Question 3: years of experiences.
- About question 3 : all audience experiences between 5-10 years.

- **4.2.2.1 Questions No. 4:**

Where was location of previous experience?

- A. In Sudan.
- B. Out Sudan

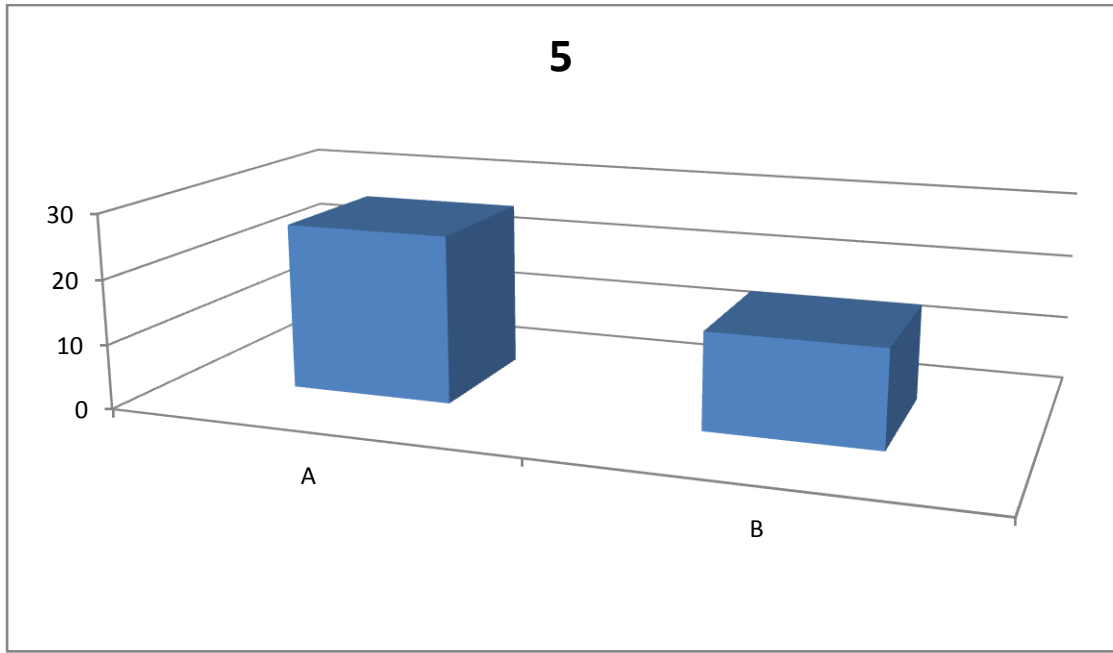


<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	Working in Sudan	41	93.18%
B	Working out of Sudan	3	6.82%

4.2.2.2 Questions No. 5

Sector of work:

- A. Private
- B. Public

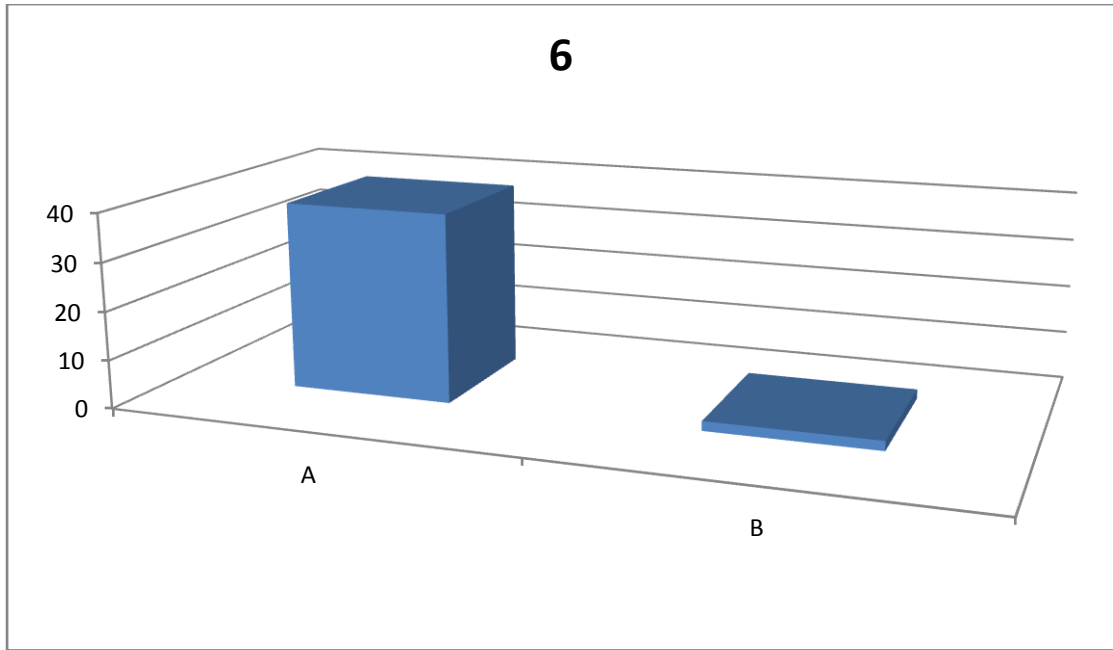


<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	Working in privet Sector	26	59.09%
B	Working Public Sector	15	34.09%

4.2.2.3 Questions No. 6:

Have you work as a team?

- A. Yes
- B. No

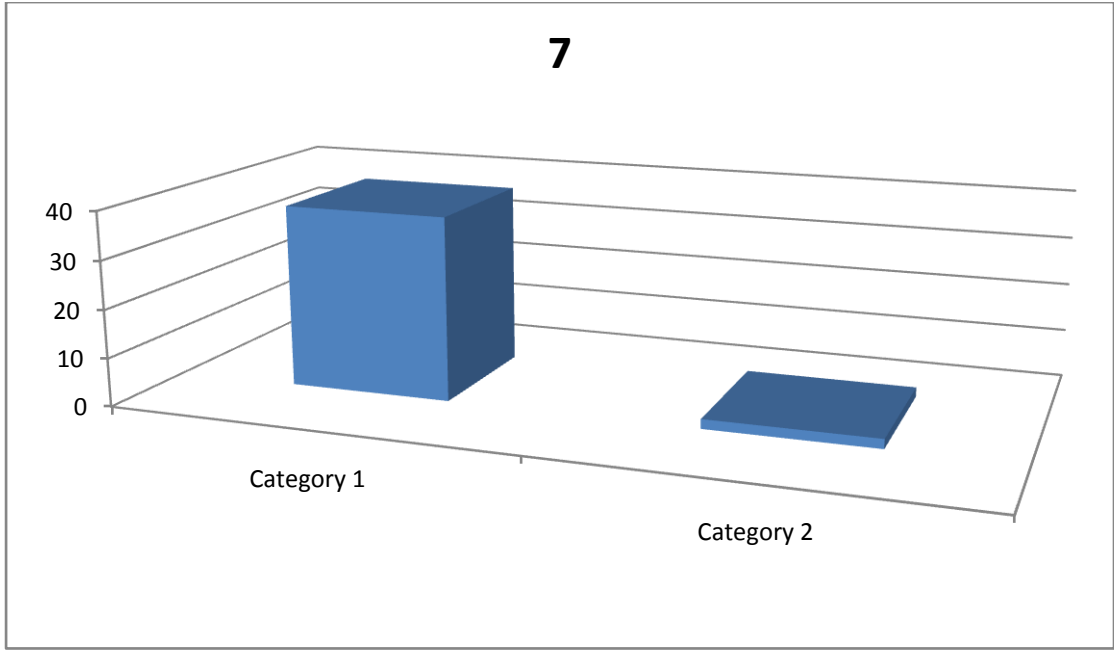


<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	have worked in team work through their life experiences	39	88.64%
B	don't work as teams	2	2.27%

4.2.2.4 Questions No. 7:

Do you have a desire to work in a team?

- A. Yes
- B. No



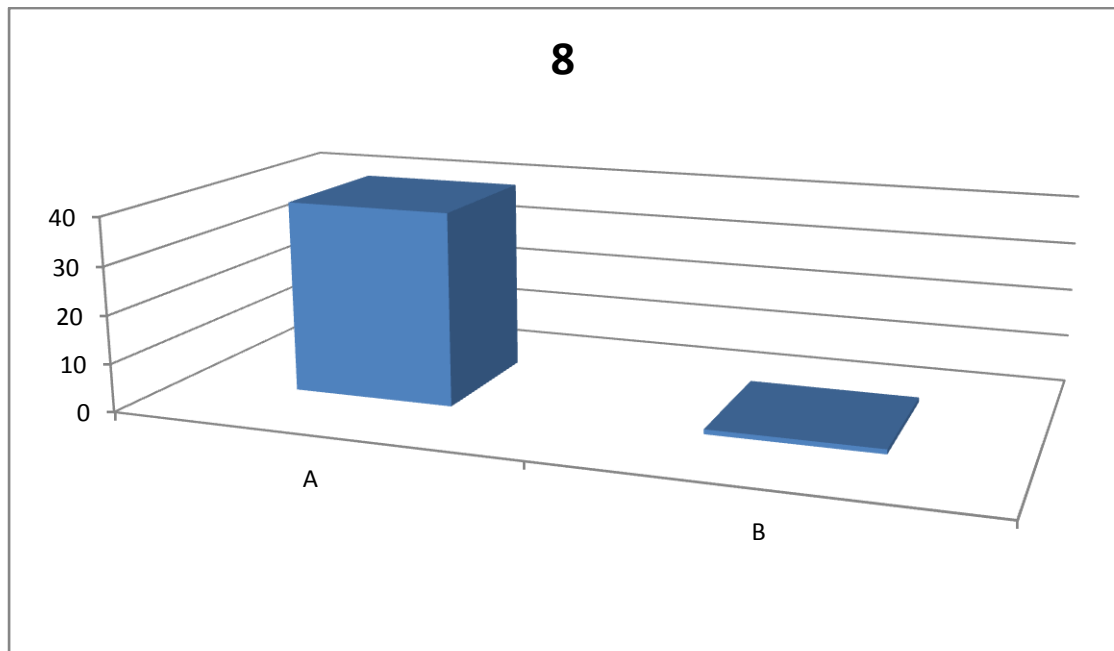
<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	Prefer team work in their organization	38	86.36%
B	Don't prefer team work.	2	2.27%

4.2.2.5 Questions No. 8

Do you think the work of team, a good idea to carry out and complete tasks?

A. Yes

B. No

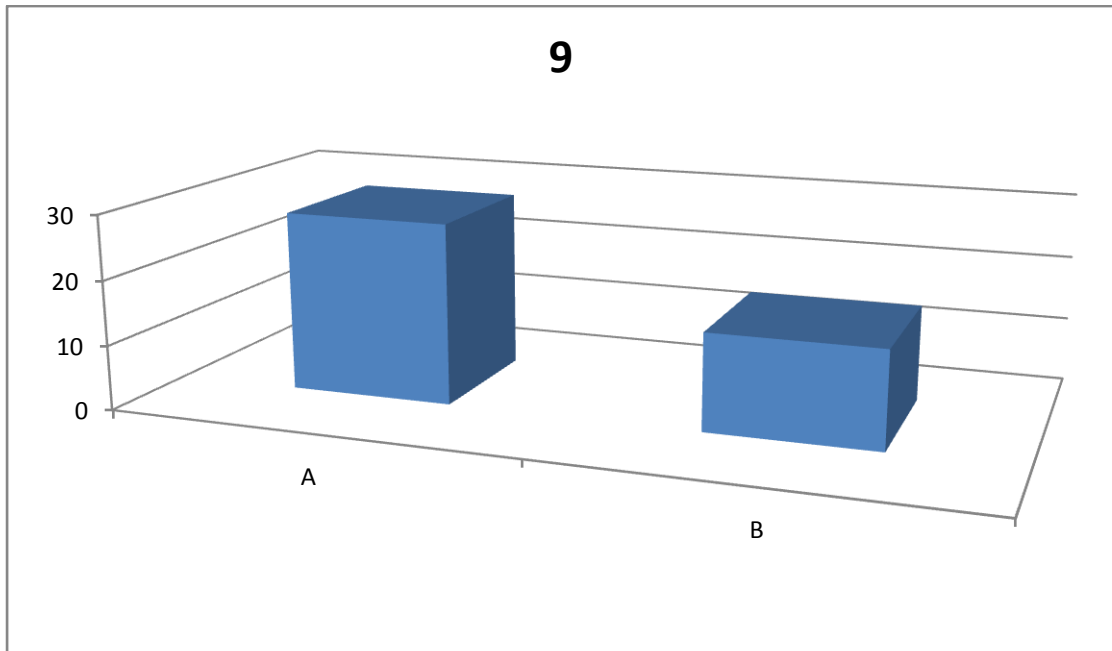


	<u>Answers</u>	<u>Number of Audience</u>	<u>Percentage%</u>
A	agree that team work is a good system to complete the work	40	90.91%
B	Don't agree team work is a good system to complete the work.	1	2.27%

4.2.2.6 Questions No. 9

Do you think that the work in Sudan hinders the work of team? Please justify.

- A. Yes
- B. No

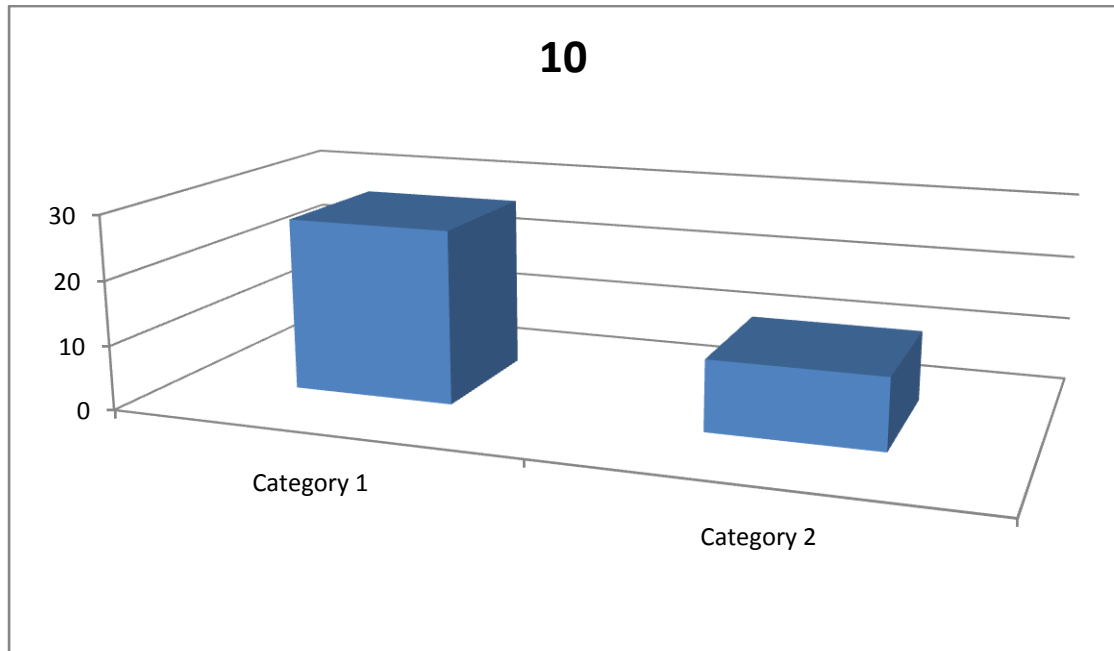


<u>Answers</u>	<u>Number of Audience</u>	<u>Percentage%</u>
A-Thinks the way of working in Sudan hinder team work.	28	63.64%
Don't agree : the way of working in Sudan hinder team work.	15	34.09%

4.2.2.7 Questions No. 10

Outputs of the work in the construction industry in Sudan are not equal to inputs?

- A. Yes
- B. No

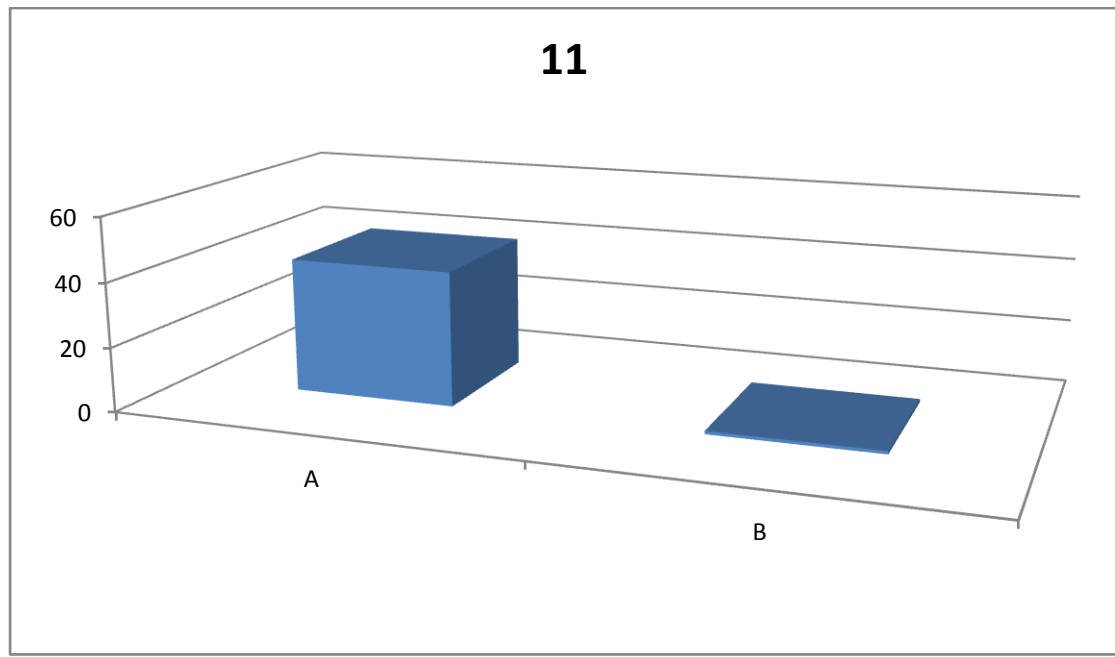


	<u>Answers</u>	<u>Number of Audience</u>	<u>Percentage%</u>
A	Believe that the output of Sudanese construction industry is less than the input hinders team work.	27	61.36%
B	Don't believe: the output of Sudanese construction industry is less than the input	11	25.00%

.4.2.2.8 Questions No. 11

The concept of team work lead to the completion of a high-level?

- A. Yes
- B. No



<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	agree that defusing of the concept of team work within the organization contributes in attainting high-mass work	42	95.45%
B	don't agree on that	1	2.27%

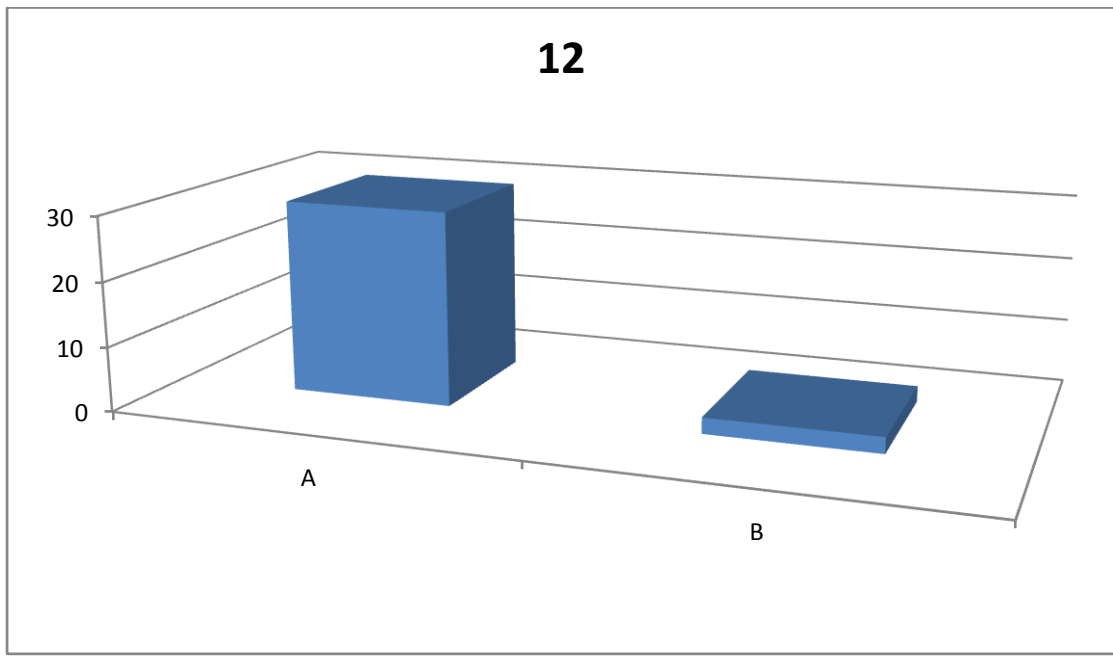
4.2.2.9 Questions No. 12

Appointment or selection of managers in the construction industry in Sudan as follows, (Please comment):-

- **special relationships**
- **political reasons**
- **qualification**

A. Yes

B. No



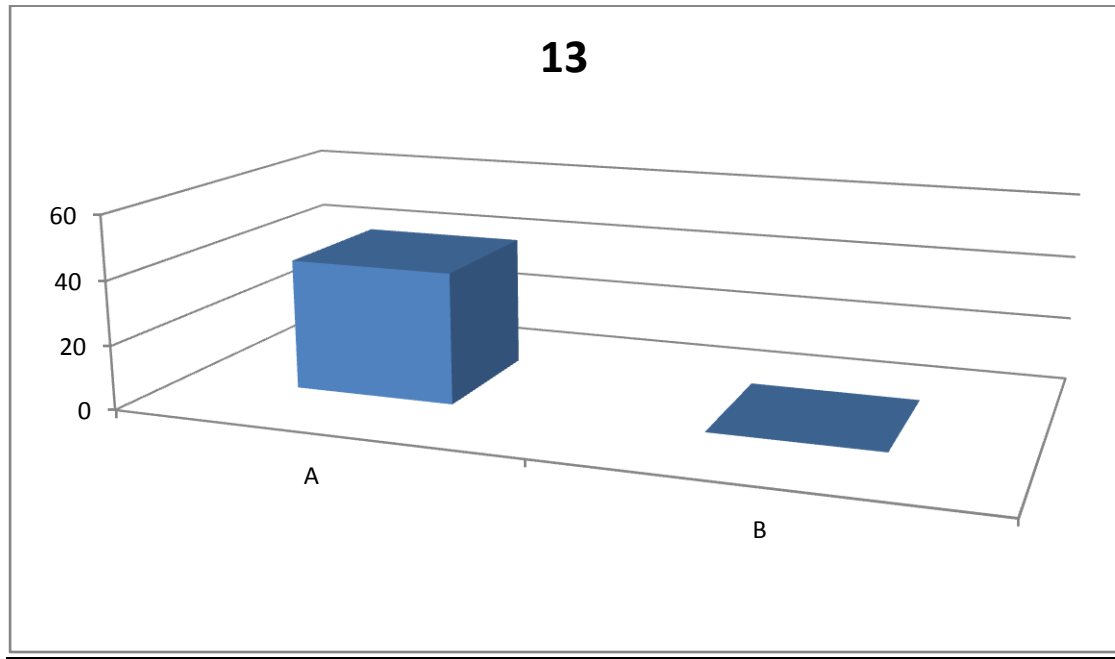
<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	Agree that the types of managers in Sudanese construction industry are appointed either by: special relationships, political reasons, or qualification.	30	68.18%
B	don't agree on that	2	4.50%

4.2.2.10 Questions No. 13

Effective leader leads to effective team?

A. Yes

B. No

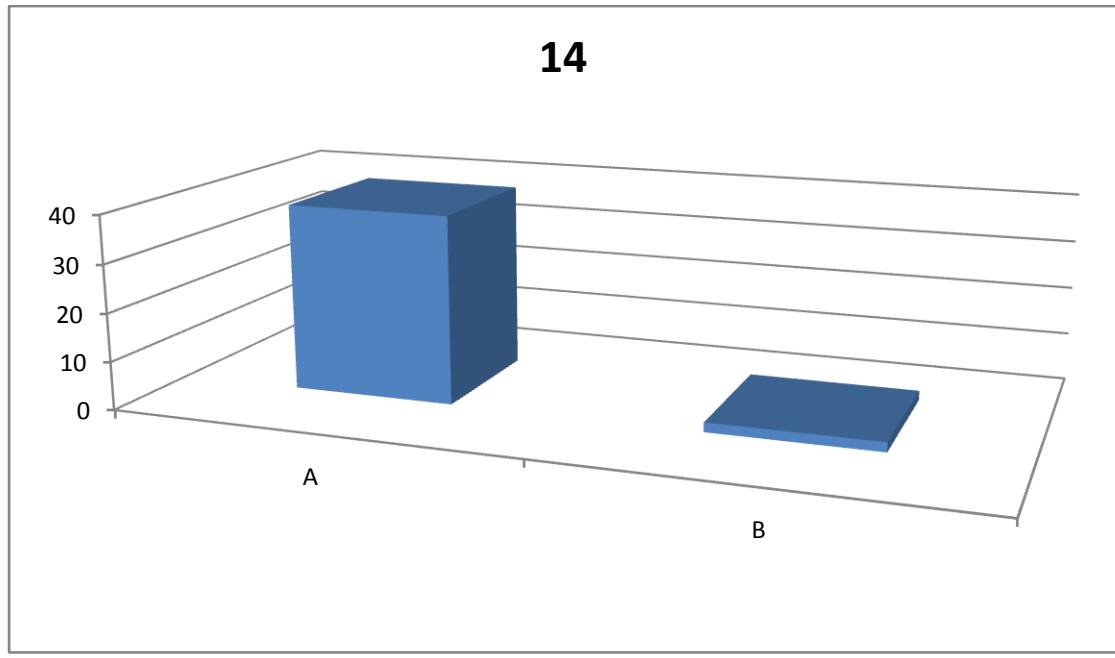


<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	Agree the effective leader lead to effective team.	44	100.00%
B	don't agree on that	0	0.00%

4.2.2.10 Questions No. 14

Dissemination of knowledge of human rights among construction team, could be lead to the good team work:

- A. Yes
- B. No.



<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	agree that the awareness of (human being) can contribute in establishing good team in organization	39	88.64%
B	don't agree	2	4.50%

4.3 Part two :

	Questions No.	A	B	C	D	E	F	G
1	1	9	1	1	9	25	1	
2	2	14	1		4	5	6	22
3	3	9	12	6	10	9		
4	4	4	10	24				
5	5							
6	6	15	16	4	8	1		
7	7	25	7	8	4			
8	8	5	1	4	30			
9	9	2	3	2	1	33		
10	10	1	5	0	0	0	34	0
11	11	0	1	3	40			
12	12	5	2	1	36			
13	13	2	2	3	2		33	
14	14	16	6	6	9	19	2	
15	15	15	9	3	3	5	21	2
16	16	13	3	3	6	7	2	24
17	17	10	7	4	4	7	25	2
18	18	7	11	5	25	4		

4.3.1 Total Analyses:

4.3.2 The details of answering, Part two:

The answers to the questions were analyzed and interpreted as following: -

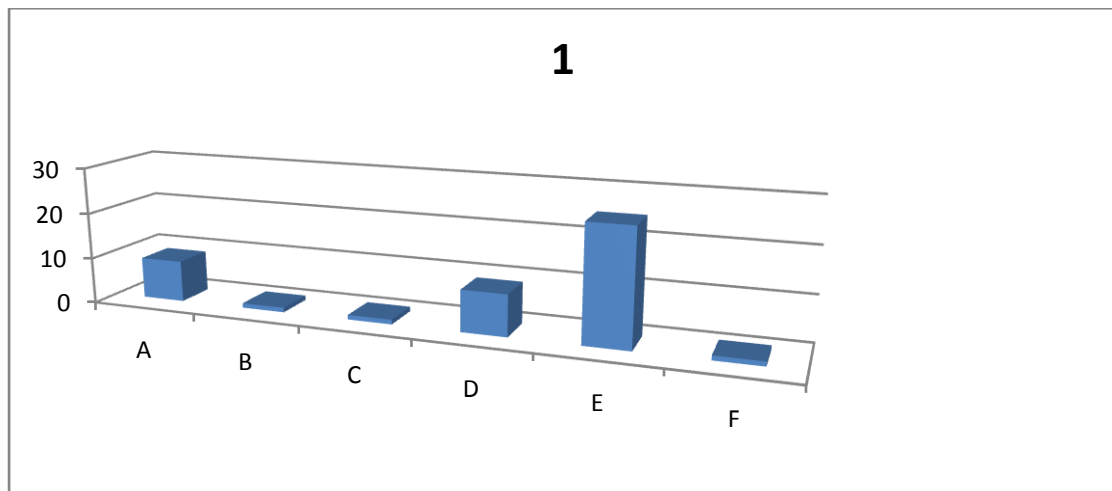
Note:

In This part, could be chosen more than one by putting a circle, or arrangement respectively.

4.3.2.1 Question No.1

Difficulties facing engineering work in Sudan are:

- A. Management and Managers
- B. Market and **its** requirements
- C. plants and equipments
- D. Planning
- E. All of the above
- F. Others

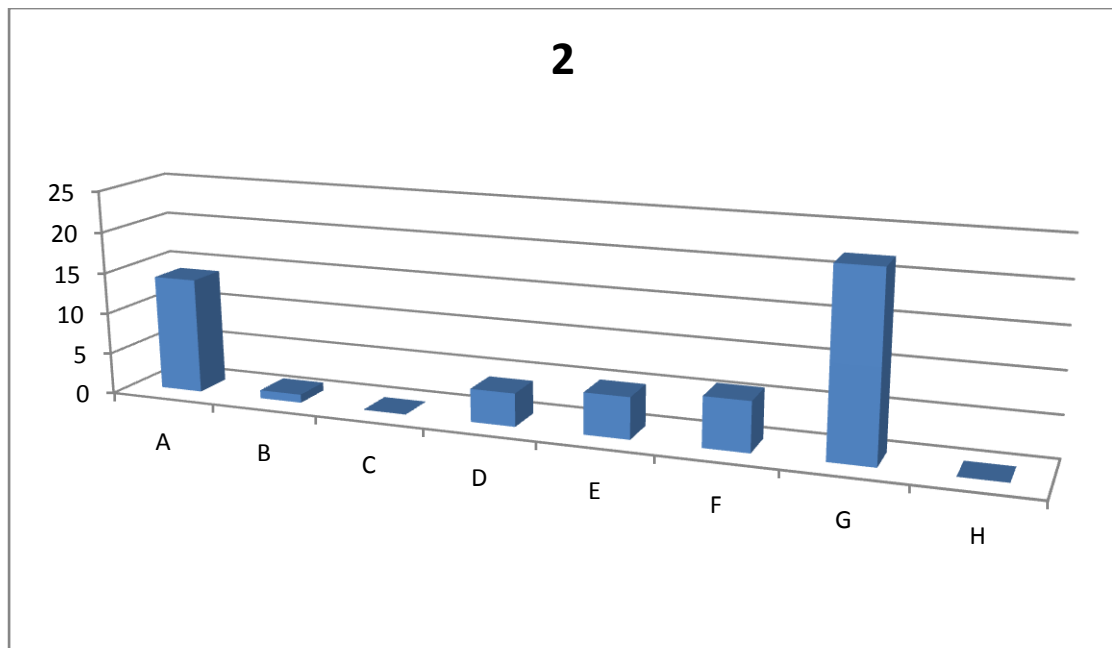


<u>Answers</u>		<u>Number of Audience</u>	<u>Percentage%</u>
A	Management and Managers	9	20.45%
B	Market and its requirements (demand, supply).	1	2.27%
C	plants and equipments	1	2.27%
D	Planning	9	20.45%
E	All of the above	25	56.82%
F	Others	1	2.27%

4.3.2.2 Question No.2:

Work in construction industry in Sudan is often beyond the budget and behind schedule. This is due to:

- A. false planning
- B. New or unexpected legislations
- C. Labors and their culture
- D. Management of contracting companies.
- E. unclear contract
- F. Financial problems caused delay in payments.
- G. All of the above
- H. Others.



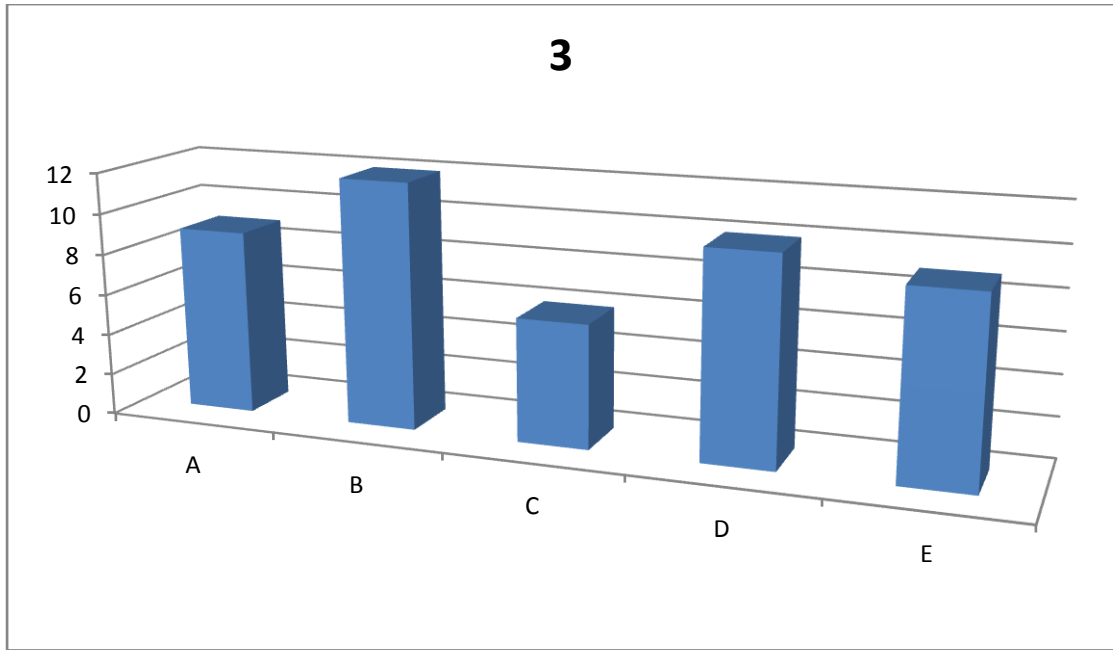
	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	false planning	14	31.82%
B	New or unexpected legislations	1	2.27%

C	Labor ^s and their culture	0	0.00%
D	Management of contracting companies.	4	9.09%
E	Unclear contract	5	11.36%
F	Financial problems caused delay in payments.	6	13.64%
G	All of the above	22	50.00%
H	Others	0	0%

4.3.2.3 Question No.3:

Types of companies in the construction industry in Sudan in terms of organization:

- A. Line organization
- B. Functional organization
- C. Matrix organization
- D. Fixed organization
- E. Others.

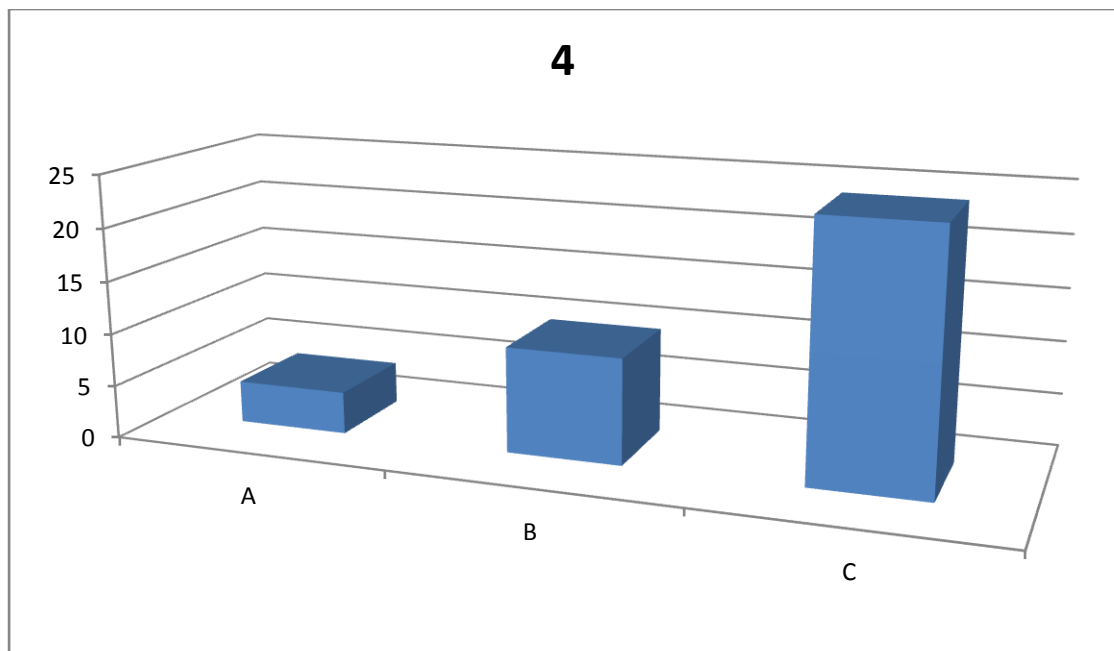


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Line organization	9	20.45%
B	Functional organization	12	27.27%
C	Matrix organization	6	13.64%
D	Fixed organization	10	22.73%
E	Others	9	20.45%

4.3.2.4 Question No.4:

Sudanese knew the construction industry since the construction of the pyramids. Since that time:

- A. A remarkable development in the Sudan **has** happened
- B. slow development
- C. Developments occur in periodic manner related to different governments.

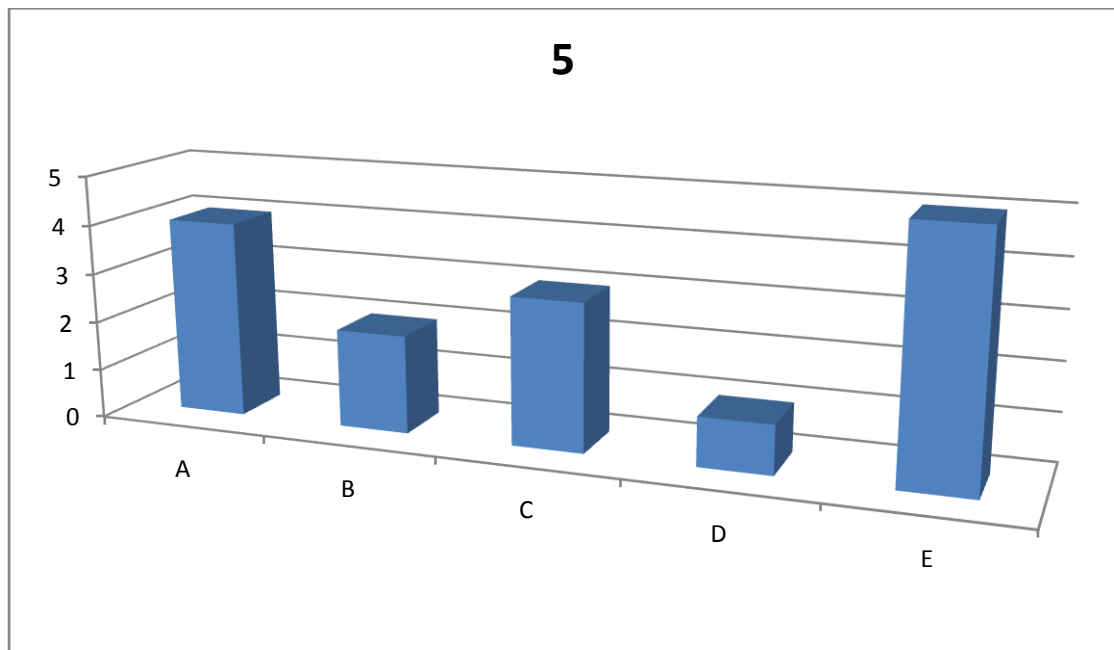


	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	A remarkable development in the Sudan has happened.	4	9.09%
B	slow development	10	22.73%
C	Developments occur in periodic manner related to different governments.	24	54.55%

4.3.2.5 Question No.5:

Arrange ascending the factors that control the distribution of information between team members:

- A- Values
- B- Communication system
- C- Personal skills
- D- Type of organization
- E- Team culture



<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Values		
Audience say it is No 1		5	
Audience say it is No 2		6	
Audience say it is No 3		9	
Audience say it is No 4		14	31.82%
Audience say it is No 5		2	
B	Communication system		
Audience say it is No 1		5	
Audience say it is No 2		12	27.27%
Audience say it is No 3		4	
Audience say it is No 4		9	
Audience say it is No 5		6	
C	Personal skills		
Audience say it is No 1		7	
Audience say it is No 2		11	
Audience say it is No 3		10	22.73
Audience say it is No 4		6	
Audience say it is No 5		4	
D	Type of organization		

Audience say it is No 1		16	36.36%
Audience say it is No 2		3	
Audience say it is No 3		9	
Audience say it is No 4		4	
Audience say it is No 5		4	
E	Team culture		
Audience say it is No 1		4	
Audience say it is No 2		5	
Audience say it is No 3		5	
Audience say it is No 4		3	
Audience say it is No 5		18	40.91%

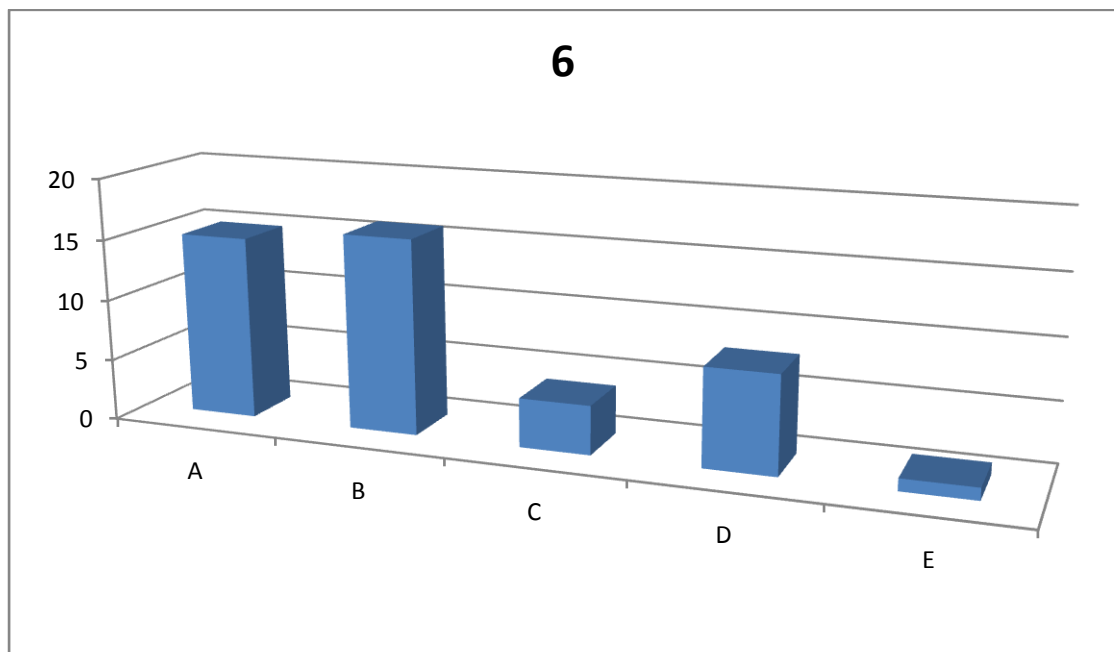
So, the arrangement as:

- 1- Type of organization
- 2- Communication system.
- 3- Personal skills
- 4- Values
- 5- Team culture.

4.3.2.6 Question No.6:

What is the factor that controls the team work in offices?

- A. Type of organization
- B. Management
- C. Values
- D. Project manager
- E. Others.

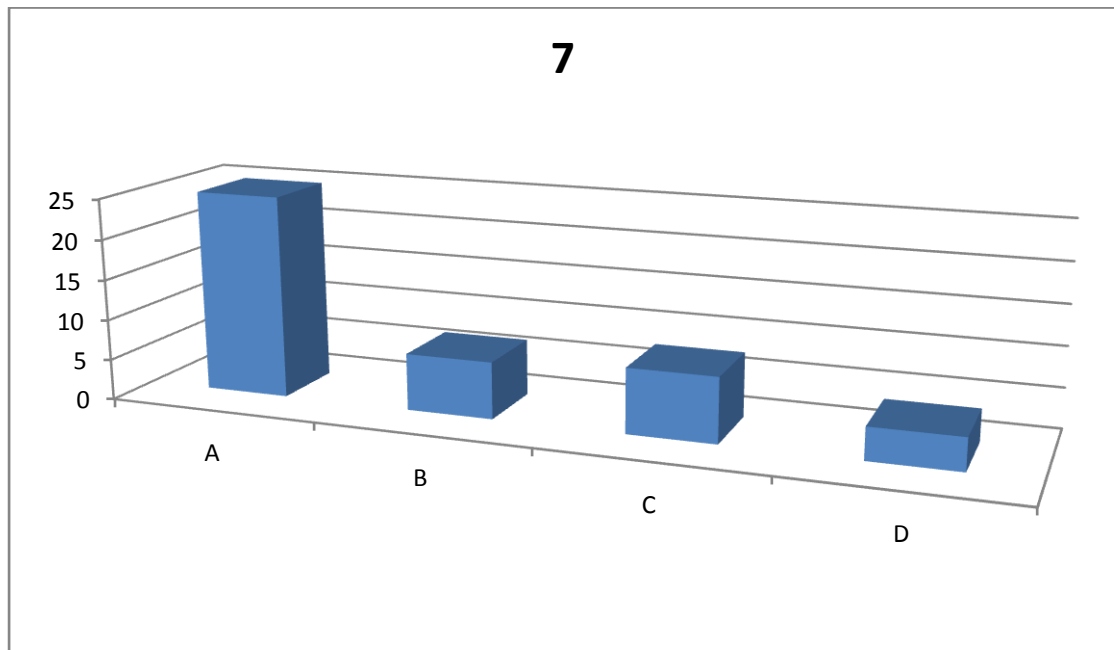


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Type of organization	15	34.09%
B	Management	16	36.36%
C	Values	4	9.09%
D	Project manager	8	18.18%
E	Others	1	2.27%

4.3.2.7 Question No.7:

What is the factor that controls the team work in sites?

- A. Planning
- B. The culture of labors
- C. motivation and sanction
- D. Others.

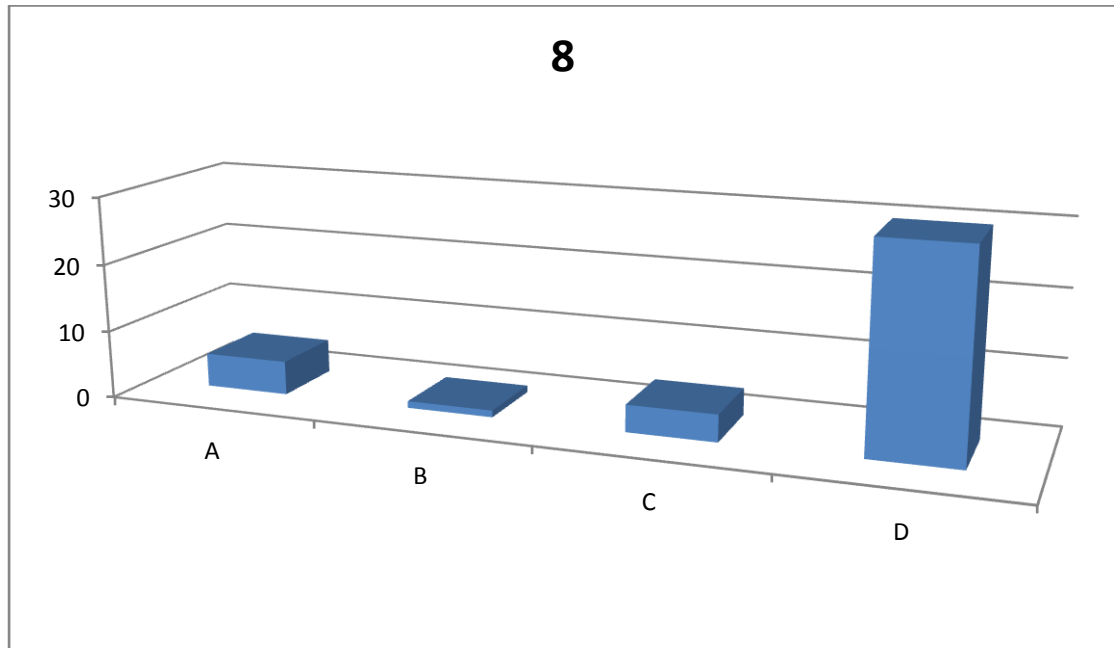


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Planning	25	56.82%
B	The culture of labors	7	15.91%
C	motivation and sanction	8	18.18%
D	others	4	9.09%

4.3.2.8 Question No.8:

Shortage in the work of team leads to:

- A. Delay
- B. Lack of mutual experiences
- C. Leads to low out buts (quality, productivity, workability).
- D. All above.

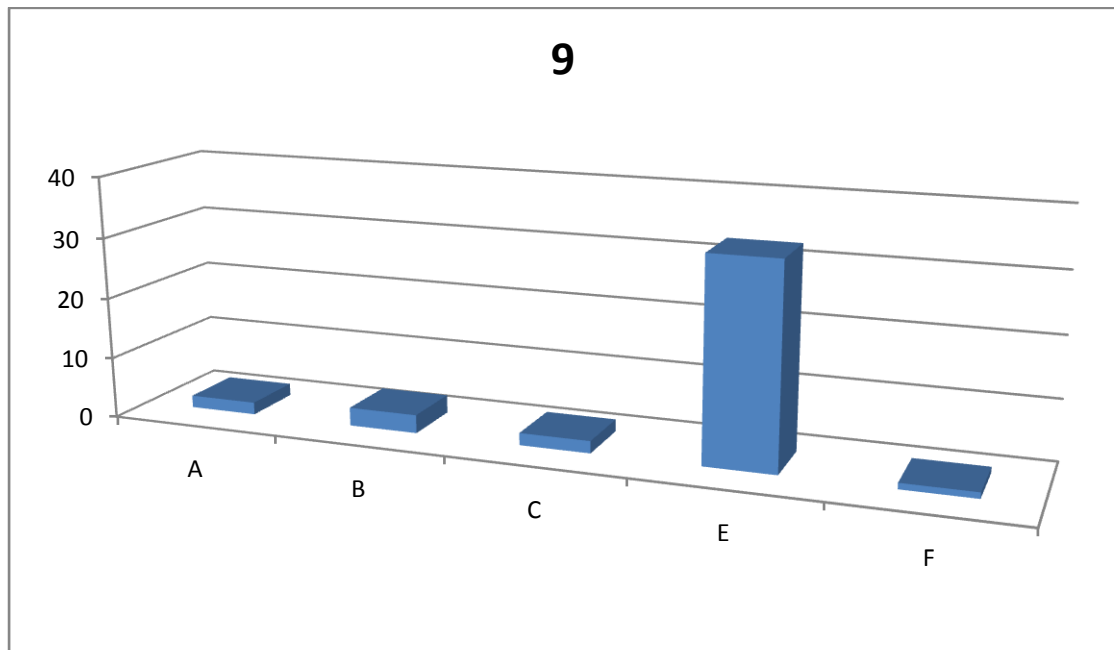


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Leads to delay	5	11.36%
B	Lack of mutual experiences	1	2.27%
C	Leads to low out buts (quality, productivity, workability).	4	9.09%
D	All above	30	68.18%

4.3.29 Question No.9:

Work in a team, leads to increase of:

- A. Rates of Project Schedule Performance Index
- B. Rates of individual Achievement during project lifecycle
- C. Project progress
- D. Cost control
- E. All above.

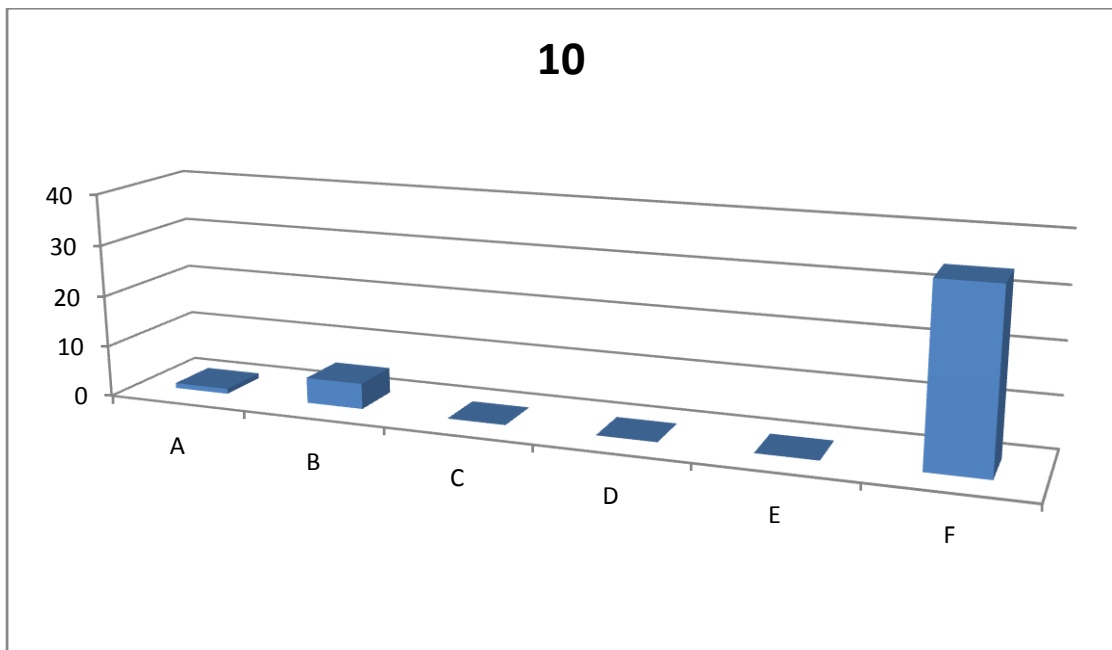


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Project Schedule Performance Index	2	4.55%
B	Rates of individual Achievement during project lifecycle	3	6.82%
C	Project progress	2	4.55%
D	cost control	1	2.27%
E	All above	33	75.00%

4.3.2.9 Question No.10:

Work in a team, leads to improve of:

- A. Management as general.
- B. Achievement as general
- C. Quality
- D. Social relationship
- E. The work environment
- F. All above

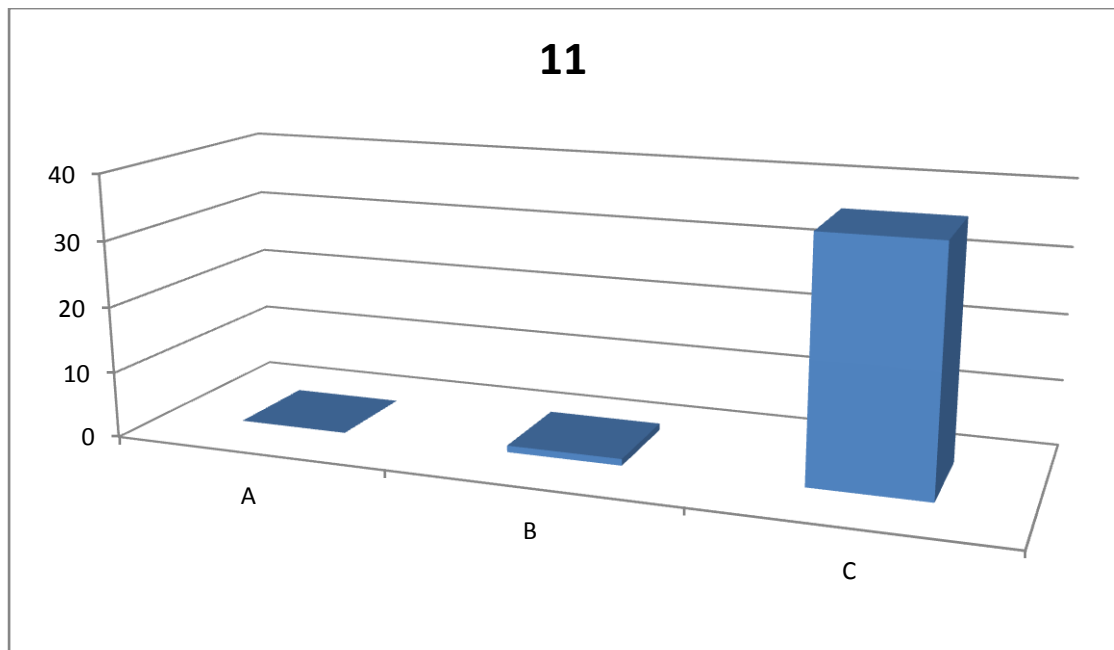


	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	Management as general	1	2.27%
B	Achievement as general	5	11.36%
C	Quality	0	0.00%
D	Social relationship	0	0.00%
E	The work environment	0	0.00%
F	All above	34	77.27%

4.3.2.10 Question No.11

Work in a team, leads to save of:

- A. Time
- B. Cost
- C. Quality
- D. All above

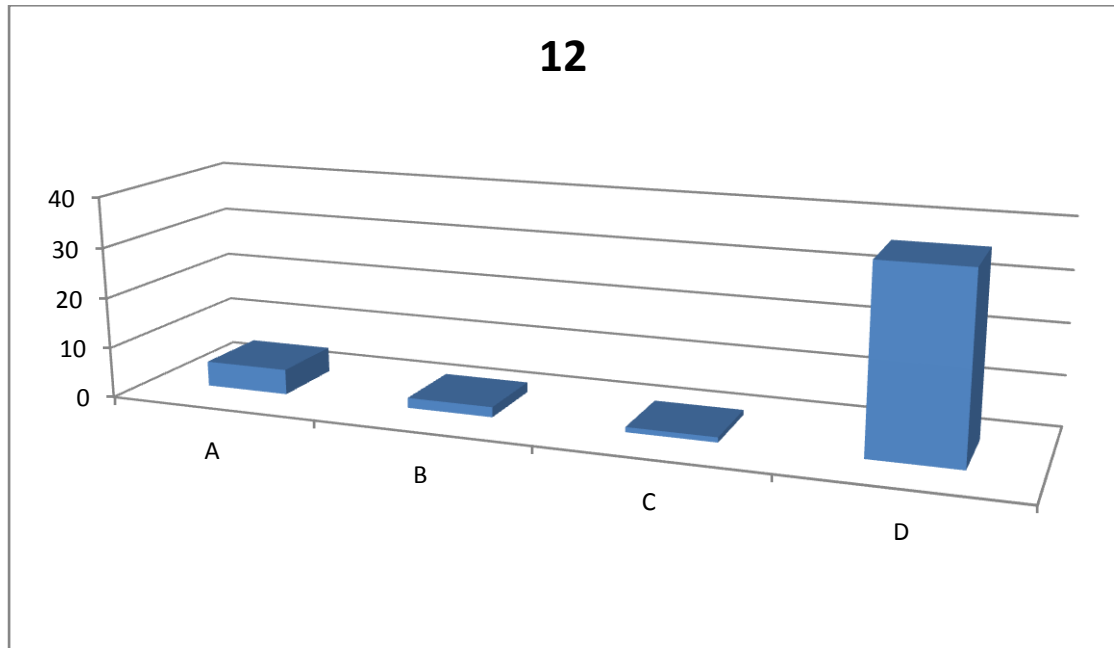


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Time	0	0%
B	cost	1	2.27%
C	Quality	3	6.82%
D	All above	40	90.91%

4.3.2.11 Question No.12

Work in a team, leads to encourage of:

- A. Innovation
- B. Responsibility
- C. Trust
- D. All above

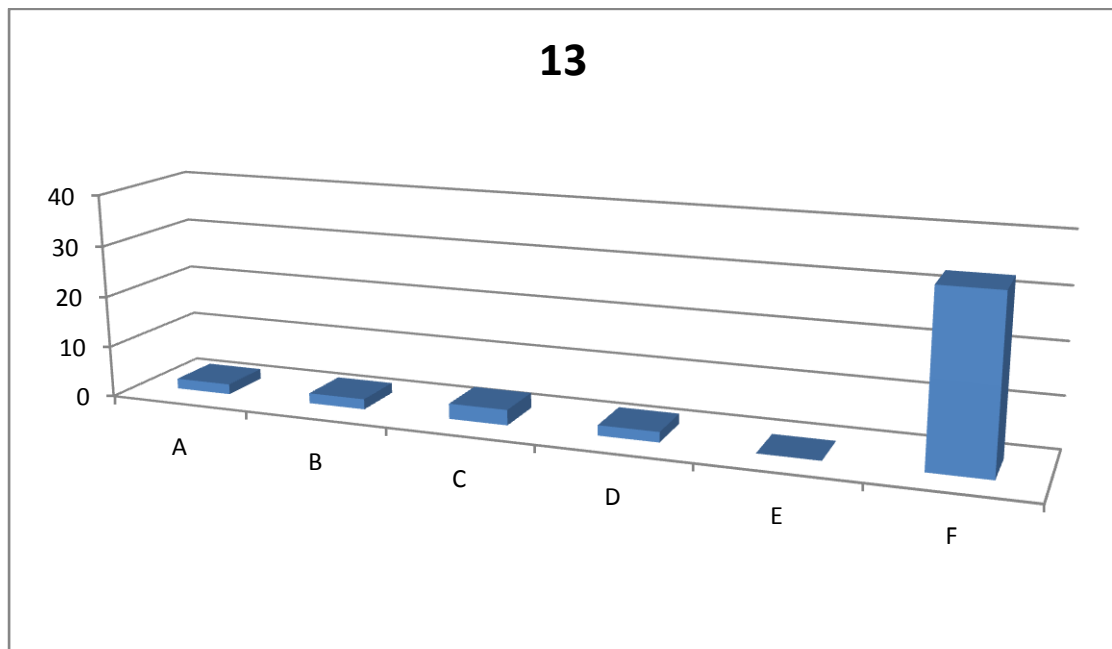


	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	Innovation	5	11.36%
B	Responsibility	2	4.55%
C	Trust	1	2.27%
D	All above	36	81.8200%

4.3.2.12 Question No.13:

What are the processes that require the work of the team during the project life cycle?

- A. Initiation processes
- B. planning processes
- C. Execution processes
- D. Mentoring and Controlling processes
- E. Closing process.
- F. All above

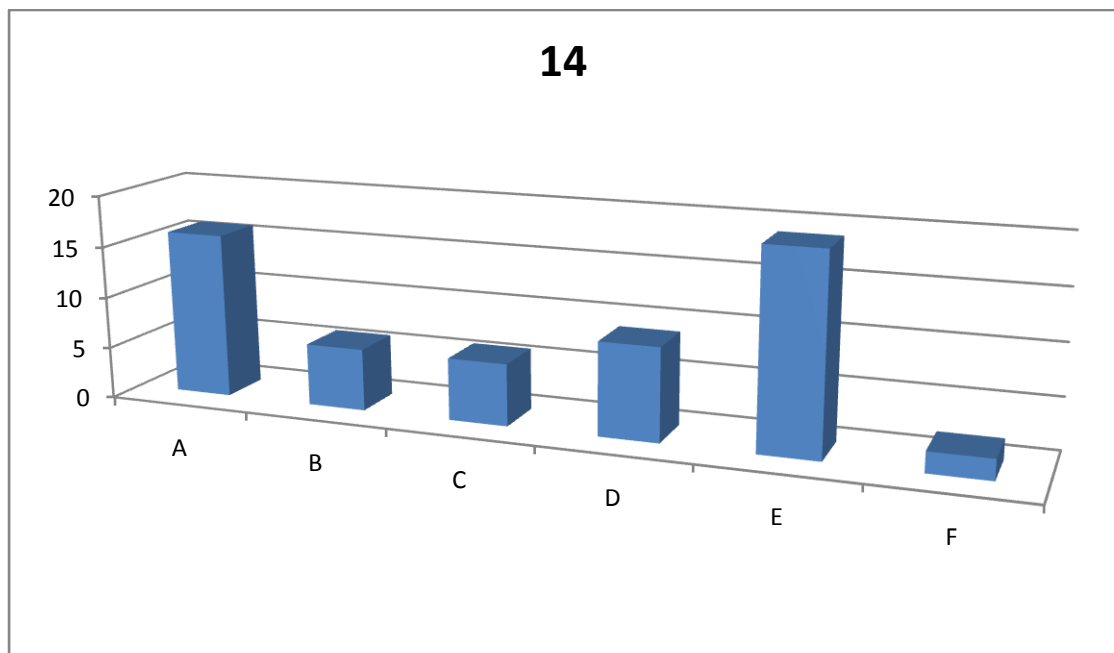


	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	Initiation processes	2	4.55%
B	planning processes	2	4.55%
C	Execution processes	3	6.82%
D	Mentoring and Controlling processes	2	4.55%
E	closing process	0	0.00%
F	All above	33	75.00%

4.3.2.13 Question No.14

In Initiating process, what is the phase that need to team work?

- A. Study of business case
- B. Collecting project charter
- C. Setup the project office work
- D. Dividing large projects into phases
- E. All above
- F. Others

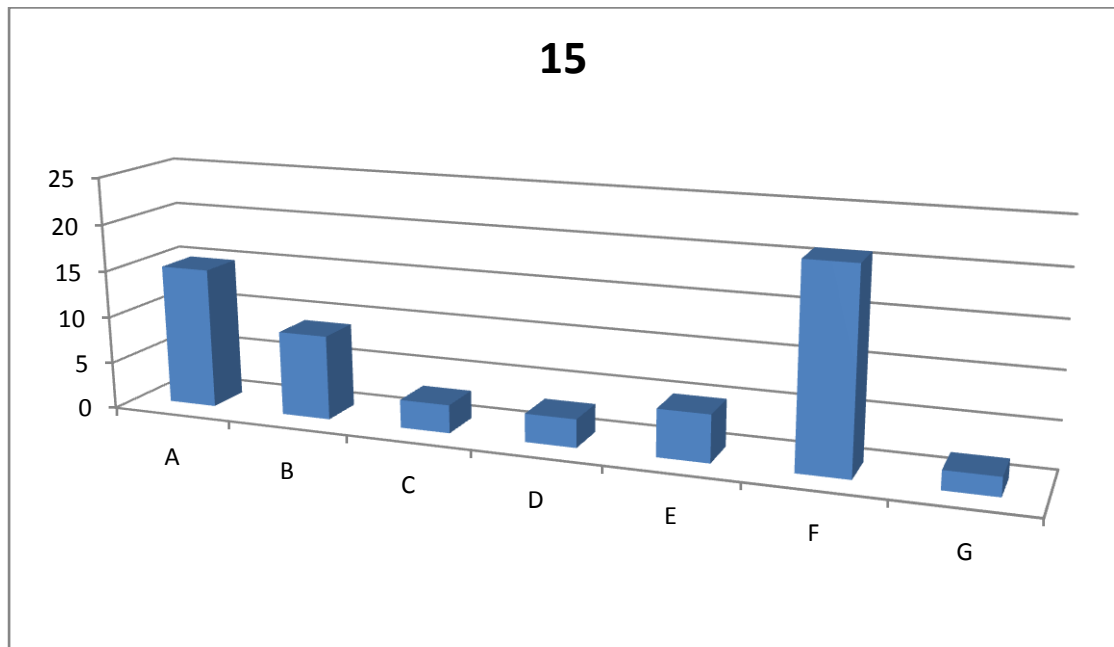


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Study of business case	16	36.36%
B	Collecting project charter	6	13.64%
C	Setup the project office work	6	13.64%
D	Dividing large projects into phases	9	20.45%
E	All above	19	43.18%
F	Others	2	4.55%

4.3.2.14 Question No.15

In planning process, what is the phase that need to team work?

- A. Create how to do planning
- B. Create recourses, Finance, Quality, Risk, and Procurement
- C. Create communication plan
- D. Determine all rules and responsibility
- E. Create project scope statement
- F. All above
- G. Others



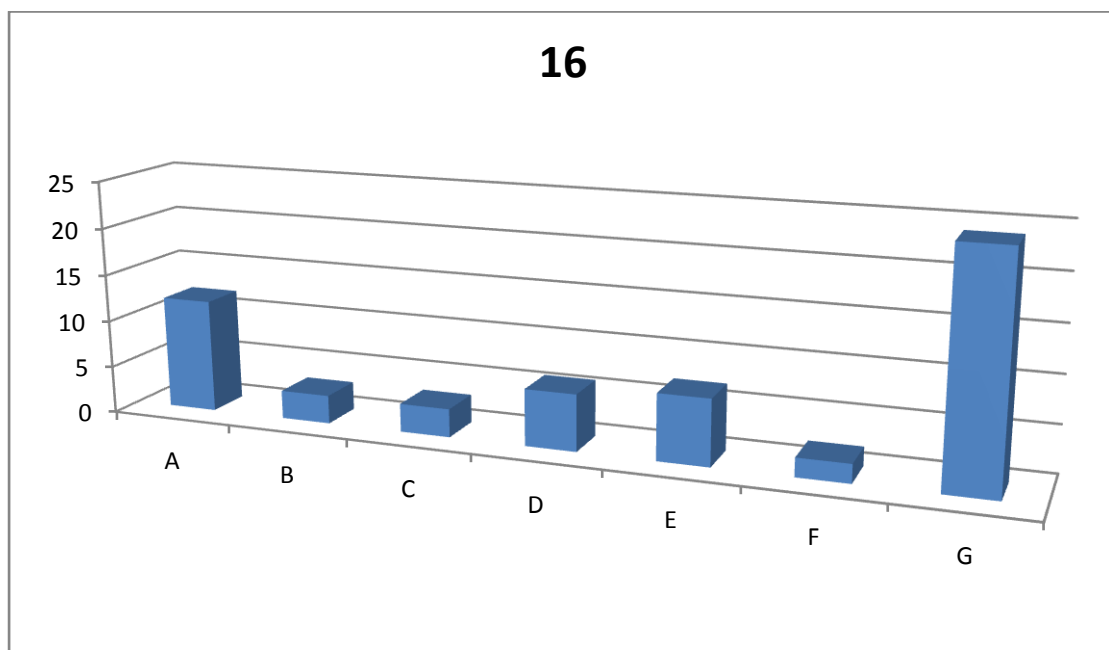
	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	Create how to do planning	15	34.09%
B	Create recourses, Finance, Quality, Risk, and Procurement.	9	20.45%
C	Create communication plan	3	6.82%
D	Determine all rules and responsibility	3	6.82%

E	Create project scope statement.	5	11.36%
F	All above.	21	47.73%
G	Others	2	4.55%

4.3.2.16 Question No.16:

In execution process, what is the phase that need to team work?

- A. Perform time management
- B. Perform cost management
- C. Perform quality management
- D. Perform change management (continuously improved, send and received information, implement only approved change, Give recognition and reward
- E. Perform risk management
- F. Perform procurement management
- G. All above
- H. Others

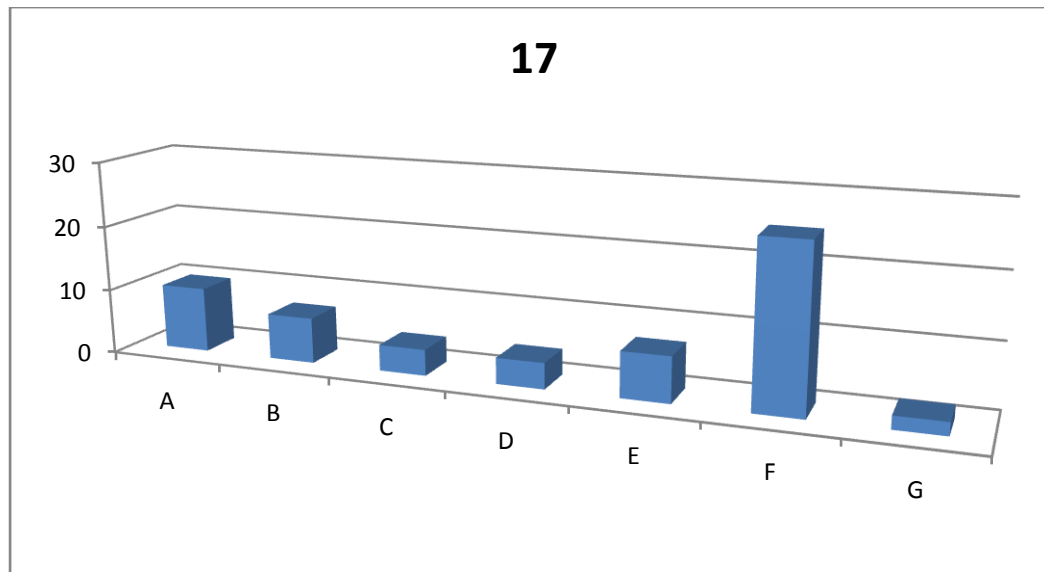


<u>Answers</u>		<u>frequency</u>	<u>Percentage%</u>
A	Perform time management	13	29.56%
B	Perform cost management	3	6.82%
C	Perform quality management	3	6.82%
D	Perform change management	6	13.64%
E	Perform Risk management	7	15.91%
F	Perform procurement management	2	4.55%
G	All above	24	54.55%
H	Others	0	0.00%

4.3.2.17 Question No.17:

In monitoring and controlling process, what is the phase that need to team work?

- A. Performing quality control
- B. Manage resource Manage
- C. Manage configuration
- D. determine variances
- E. Measure performance against Performance base line.
- F. All above
- G. Others.



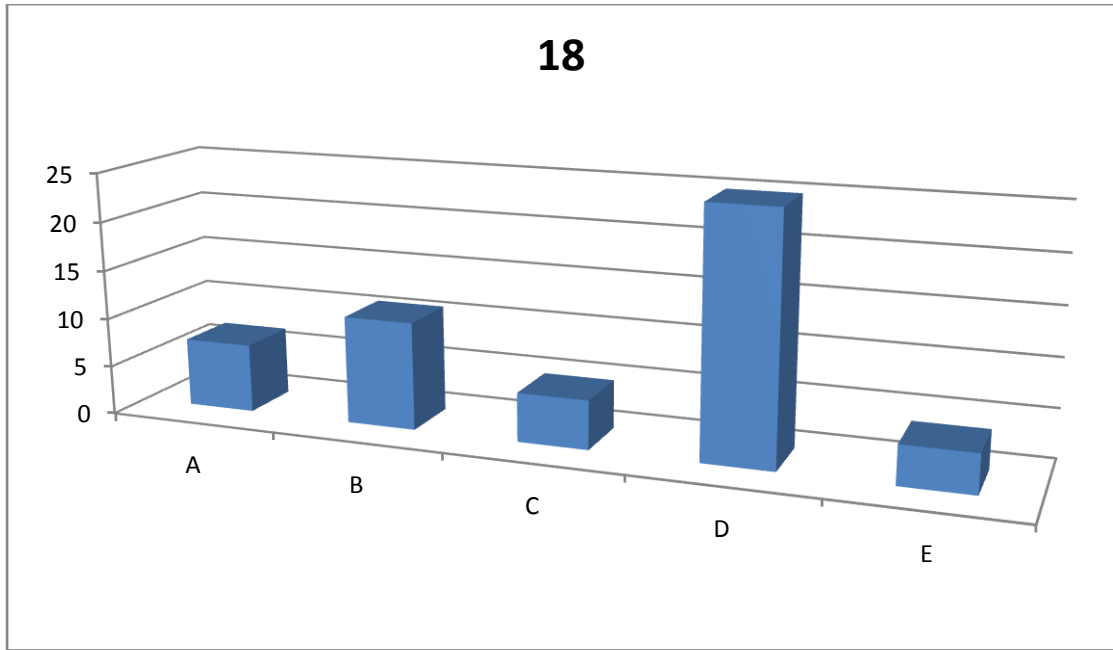
	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	Performing quality control	10	22.72%
B	Manage resource	7	15.91%
C	Manage configuration	4	9.09%
D	Determine variances.	4	9.09%
E	Measure performance against Performance base line.	7	15.91%
F	All above	25	56.82%
G	Others	2	4.55%

4.3.2.18 Question No.18:

In closing process, what is the phase that need to team work?

- A. Business index and archive
- B. Ensure that the work performed in accordance with the required
- C. Ensure that the final payments are paid to every
- D. All above
- E. Others

18



	<u>Answers</u>	<u>frequency</u>	<u>Percentage%</u>
A	Business index and archive	7	15.91%
B	Ensure that the work performed in accordance with the required.	11	25.00%
C	Ensure that the final payments are paid to every.	5	11.36%
D	All above	25	56.82%
E	Others	4	9.09%

Chapter five
Result interpretation

Data were Distributed, collected, analyzed as described in chapter four.

Been inferred the following interpretations:-

5-1 Part one:

5-1-1 Question 4, 5, 6: The audience who responded to the questionnaire is working in Sudan in private and public sectors. All of them in their professional carrier practice work in teams.

The work done by groups could be achieved cohesively, if corrections were made in managing departments and ministries, it could be quite possible to achieve the three objectives of the project.

5-1-2 Question 7, 8, and 11: The desire of the engineers to work in team reflects the feasibility and necessity of the team work in construction projects, more above that confirms the idea of the team as a good idea to accomplish tasks in high ratio of production.

5-1-3 Question No 9:

Must take the concept of (good management) and establish it in all Sudanese company (private or public sector) to avoid achievement problems.

Adoption of the state, it will be starting point.

5-1-4 Comments on question no nine- :

Question nine is: Does work in Sudan hinder using team work? With request to justifications?. Your answer briefly.

A- Yes

B- No

In asking the audience about work environment in Sudan hinders the team work in or not, the answers provided that 63% ensured the statement with some reasons. The conclusions of the comments were as follow:

1. Lack of coordination in the majority of firms. ‘Practically in the public departments.’
2. The main reason is the lack of management systems, where overlapping responsibilities and ignorance due to confusing tasks.
3. Dependence.
4. Working in Sudan depends on the individual skills. The best way of work for any action is to have good a team work.
5. Dictatorship to impose views.
6. There are no elements to work.
7. Inability to divide tasks within the project, and their dependency.
8. Lack of respect for time. Lack of understanding of the principle of team work.
9. Work in Sudan does not interfere with the team work, but hinders the application process.
10. Bureaucracy.
11. Team work leads to better completion of work in the presence of qualified staff.
12. Good management leads to good team work.
13. There are no clear policies and specific actions to accomplish.
14. The general culture does not encourage work as a team.
15. Usually, assign work for one person to be followed by the manager directly.
16. Work depends on the hierarchy and job title, which this is not available. And the lack of opportunity for training workers and professionals.
17. The local nature does not encourage the team work. The new concept of team works is clearly known in the Sudanese construction industry but no encouragement from the construction managers.

18. Managers and supervisors are not oriented with the result of the team work.

19. The structure of the business sector is fragile because it is based on family ownership of companies which depend on the relationships. This eliminates the evaluation of the work on the basis of achievement. Some companies that were newly established are somehow different.

37 % of the audience answered negatively, supporting their response by the following reasons:-

1. Teamwork is necessary to accomplish tasks, especially in large projects.
 2. Dependency and reliance on others.
 3. Team provides time and information to accomplish any work.
 4. No project could be accomplished ideally without team work beside other resources.
 5. Personal motives are the primary cause of implementation of the idea of team work.
 6. The idea of team work could be result in the project, if all parties put the goal of the projects priority
 7. Don't think so.
 8. We are individual in the manners and culture.
 9. The team work is a best way to achieves goals
 10. There is no relationship between the place and method of work.
- What is important is to identify the group's tasks.

5-1-5 Question no No.10: 73% believe that the output of Sudanese construction industry is less than the input. While 27% don't believe in that.

This statement reflects the actual situation of the Sudanese construction industry which always suffers from different types of problems. So

through scientific techniques; solution may be found in using team work techniques.

The output of the Sudanese construction industry is less than what expected, because of the difficulties facing the engineering work in Sudan such as:

- Ill Management.
- Poor Planning.
- In suitability of business choice.
- Lack in organization's assets.

5-1-6 Question No.12: Managers in Sudanese construction industry assigned by:

A- Managers, because of special relationships

B- Managers, because of political reasons

C- Managers, because of their qualification.

This question exactly reflects the circumstances that surround the profession in which plenty of problems arise, so the foundation of work is the qualifications either in the public sectors or in the private sector.

5-1-7 Comments on question No. 12: -

Question no. twelve is: about the types of managers in the Sudanese construction industry which are either by: Please comment.

- Managers, because of special relationships
- Managers, because of political responses
- Managers, because of qualification.

91% said yes and only 9% said no. So the answer concerning this question showed that:

One of the most problems facing the local industry is the use of human resources where qualifications are not the main issue in selecting staff while others standards were used, causing deficiencies and drawbacks.

The conclusions of the comments are as blow:

91%, who said yes, justified their answers as follow:

1. The above options are really what occur in the Sudan, although the third option is of rare occurrence.
2. The second option in recently became of frequent occurrence.
3. Personal and political relations are governing the labor market.
4. According to the collected data and its analyses the first two are the most common in Sudan.
5. All happened.
6. Options I and II. But III are not true.
7. All, except for free competition which is very weak and almost rare.
8. Personal relationships and political considerations have major role in appointing administrators and managers. It is very rare to appoint them through free competition.
9. The proportions of managers, who had been qualified and appointed to compete, are low in Sudan.
10. Options first and second, are there. But the third does not occur in Sudan.
11. Private companies: personal relationships, and political relations: state-owned companies, Foreign companies: free competition.
12. The third option is the last one to be implemented. Especially in the public sector.
13. The majority comes from personal relationships and political considerations and few are from qualifications and free competition.
14. In state policy and in companies, loyalty is more important than efficiency.
15. 95% of managers in the construction industry are appointed by personal relationships or political considerations or the director himself is the owner of the institution.

16.Success in the Sudanese construction industry does not depend on the professional performance but on the social success.

17.Private companies: personal relationships, state-owned companies: political relations. Foreign companies: free competition.

18.The third is rare, the second is frequent, and the first just happens.

19.Manager, who is assigned by free competition, has the efficiency of management.

20. The political appointment in government service.

21.All answers were said to be true, except for some cases in the private sector companies.

22.Manager, who is assigned by personal relationships or political considerations is too often incompetent and shall hinder the construction industry.

23.Perhaps there may be other species also.

And there are no comments from audiences who answered negatively.

5-1-8 Question No.13: Effective leaders can lead to effective team, because they put objectives of the project in their mind and consequently lay others on the same track.

5-1-9 Question No.14: The knowledge of human rights is important to give the duties and take the rights. Anybody who knows his rights must know his duties towards the organization. So this concept might lead to high achievement in jobs. According to this concept any organization can be able to sue their employees, and employees can return to take their rights.

There is much legislation concerning that issue which could assist in regulating the relationships between the parties.

5-2 Part two:

5-2-1 Question No.1: The answers of questioners about the reasons of difficulties facing the engineering work in the Sudan are:

83% believe in management and managers.

83% say planning.

63% say the labor market and its requirements (demand, supply).

63% say plants and equipments.

The most difficulties which are facing the engineering works in the Sudan are management, managers and planning.

As a general view Sudan is a developed country with limited invested resources. Alack of scientific data base to plan, Political instability, change in polices are dominate. Works do not take appropriate an opportunity to be done.

All companies in Sudan suffer lack of management and no good managers and thus of planning.

5-2-2 Question No.2: It is clear that by research, the engineering work should be closely linked to the planning process in order to avoid expected problems. Practically those concerning over budgeting due to financial reasons, payment delays. Also external reasons related to market situation or client cash flow are so influencing.

The management of contracting company and ambiguities in the plans and documents also represent main factors which cause an increase in the cost by:

1. The contract which does not include all rights and duties raising the proportion of the risks in the basic cost.

2. Inadequate management means, poor planning; poor team work, delay in works, and thereby increase in cost.

Also change in legislations and variation in labors environment may cause increase in budget.

3. Change in legislation means change in cost.

4. Homogeneity of team work, and agreement with the commander, could be assist to avoid disputes.

5-2-3 Question No.3: The Organization of firms in terms of the distribution of responsibility and organizational chart in Sudan is not clear, while the functional organization system is the most famous system.

Many of audience asked for the meaning of this question which gives an evidence for the lack of knowledge about organizational systems and their scientific foundations. This constitutes a real problem that needs to be considered.

5-2-4 Question No4: The construction industry is known in Sudan since the period of constructing the pyramids. From that time up to now there is development in construction field. And therefore, taking into account the facts of that; the development in that construction industry as:

1. Infrastructure and the increase in urban structures.
2. The maximum utilization of natural resources without harming the environment.
3. Urban planning and sustainability of services to confront the increasing populations.
4. Architecture engineering should consider the circumstances of climate and the culture of the society.
5. Engineering schools' and faculties' should select students by measuring their ability, creativity and innovation.

6. Quality and high performance of state enterprises working in roads, bridges, dams, reservoirs and the extent of interest and sustainability
7. Materials in terms of quality and amounts.
8. Current investment law in the construction industry and its relationship with production of power and the local employment.

5-2-5 Question No. 5: All audience arrange in ascending order the factors that control the distribution of information through team members as follows:-

1. Type of organization.
2. Personal skills.
3. Communication system.
4. Values.
5. Team culture.

The distribution of information through team members in any company depends on the type of organization which the company works through because the type of the organization establishes upward and downward and channels which information goes and comes through.

Personal skills criteria of managers should be with 99% of its capacity for dialogue and discussion and communication. Chapter three discusses this openly.

Communication system is important, but it is implicitly explained in type of organization.

Values and team culture factors are not have significant impact if 1, 2, and 3, have been established.

5-2-6 Question No.6: Question No.6 What is the factor that controls the team work in offices?. So the audience said: Management, Type of organization, are the most factors.

Good and qualified leaders establish and lead good system to deal with duties and responsibilities by considering type of organization system. By default the good manager is a member of the good team.

5-2-7 Question no 7: What is the factor that controls the team work in sites?

The good planning with strong engineering foundation is a best tool to control and organize the site works because it should not ignore:

1. Approval of documents.
2. The site in and the site out.
3. Supply of water and electricity.
4. Neighbors situations.
5. Security and safety.
6. How and where to locate the materials and plant.
7. The time schedule to perform respectively.

Of course motivation and sanction are contributed to raising the spirit of the work and thus the arrangement of work within the site. Also the organization structure helps to arrange the works in the site by determining responsibilities and authorities. All that, imbedded in planning.

5-2-8 Question No.8: Question No.8 asking about the consequences of shortage in team work in Sudanese construction industry. The audiences said: Delay, Lack of mutual experiences, Leads to low out butts (quality, productivity, workability).

Lack of team members means lack of performance, so delay of deliverables. Team leader should tag labors performance per day with time schedule to avoid delay and low of the output. Also the lack of labors lead to lack of mutual experiences as there is no proper team to help or to organize.

5-2-9 Question No.9: Question No. 9 stipulate: **Does the (earned value) increase using team work? : Answer is yes.**

Earned value technique is a concept of measuring schedule performance index and cost performance index, without team works this couldn't be achieved because simply, team goal is the project schedule, also the team members of the project should cooperate to give the project manager good data to measure the cost at any point during project performance.

5-2-10 Question No.10: When asking about the objectives which will be improving by team work, the audience answered: Management as general, Achievement as general, Quality Social relationship, The work environment.

The relationships between team members need to be open and honest to improve the execution in general by saving project performance progresses, management in general. A good communication system, motivation, and establishing quality as required by defusing knowledge of quality are needed. The social relationship could be maintained by creating a good work environment.

5-2-11 Question No. 11: Question No. 11 asking for what objectives could be saved by team work the audience replied:

Good team works save performance progress, cost and time, which means team works members could achieve the project goals by:

1. Sharing the role in measuring earned value, as a result of question No9.
2. Announce the project manager when the quality of material or work is not sufficient.
3. Achieve activities on time.
4. Help project manager to avoid lost.

5-2-12 Question No.12: When asking about work in team encouragement the audience replied: Innovation, Responsibility, and Trust.

The leader of the team should know the strengths and weaknesses of individuals and use this to establish the team.

The team which works with a good leader, maintain innovations by mutual experiences in a conducive environment encouraging and using scientific tools. Brain storming is likely to help in this process.

Team learns how to take tolerance and responsibility through distribution of the tasks, for example; if the project manager or the leader of the team should divide the tasks between the members of the team and ask each member for a daily accomplishment reports. This shall contribute to raise the spirit of responsibility especially, if the director requests each member to see other reports. These comparisons give everyone a strong desire to accomplish his responsibility. With generated confidence among the workers and there is nothing to be hidden or ashamed of. The distribution of responsibilities, linked to the ability of each individual in the team besides assigning a specific task completion makes the member more confident in himself which leads to an increase in productivity.

5-2-13 Question No.13: Question No.13 asking for what processes during project life cycle deals with team work the audience said: All processes.

During the project life cycle phases, processes group (initiating, planning, executing, monitoring and controlling, and closing) coordination between the people and resources should be core for. So by team works these processes could be performed in high performance.

Such processing groups include the performance in:

1. Time management.
2. Risk management.

3. Change management.
4. Cost management.
5. Quality management.
6. Procurement management.

5-2-14 Question No.14: Question No.14 asking for what process during initiating deals with team work. The audience said all processes such as: Study of business case, Collecting project charter, Setup the project office work, Dividing large projects into phases. put the most one is study of business case.

In the initiating process the most activity deals with team works is the study of the business case because this needs collective efforts especially in developing a country like Sudan, where market conditions are not stable and the policies are changeable. It does not grow in a scientific manner regardless the global market. Business case should care about market study and firm needs.

Formal business cases are evaluated to ensure:

- The investment value and importance.
- The project to be managed, properly.
- The firm has the capability to deliver the benefits.
- The firm's resources are used to the highest value and opportunities.
- Projects with inter-dependencies are undertaken in the optimum sequence.

The principal purposes of the formal business case process are:

- Introduction of a way of thinking that causes people feed the authority by the recommend projects as there; values, risk and relative priority, are to be the fundamental elements of submitting the project proposal.

- Require those; proposing a project to justify its value to the firm and to self-cull any proposals that are not of effective value.
- Enable management to determine if the proposed project is of value to the business and achievable compared to the relative merits of alternative proposals.
- Enable management to measure the subsequent achievement of the business case benefits, objectively.

The formal business cases are evaluated to achieve principal purposes of the formal business case process; it needs team to work in the light of market study and firm situation.

In the initiation process large projects are divided in to phases. The project setup and the project office works need to hire teams to achieve the goals on the right way.

5-2-15 Question no 15: Question No.15 asking for what is the process during planning processes group that deals with team work. The audience said: all planning stages but the most one needs team work is a Creating a project plan

The key process to have a successful project is planning. Creating a project plan is the first task to be done when undertaking any kind of projects.

This process is often ignored in favor of getting the work. Standard earlier however, many people fail to realize the value of the project plan in saving time, money and solving many problems.

The following steps guide these to a simple, practical approach to project planning. On applying these steps, a sound project planning for the project could be achieved.

5-2-15-1 Step 1: Project Goals

A project is successful when the needs of the stakeholders **are** met. A stakeholder is anybody directly or indirectly impacted by the project.

As a first step, it is important to identify the stakeholder in your project. It is not always easy to identify the stakeholders of a project, particularly those impacted indirectly. Examples of stakeholders are:

- The project sponsor.
- The customer who receives the deliverables.
- The users of the project outputs.
- The project manager and project team.

Once stakeholders are understood, the next step is to find out their needs. The best way to do this is by conducting stakeholder interviews. Take time during the interviews to draw out the true needs that create real benefits. Often stakeholders will talk about needs that aren't relevant and don't deliver benefits. These can be recorded and set as a low priority.

The next step, once conducted all the interviews, and have a comprehensive list of needs is to priorities them. From the prioritized list, create a set of goals that can be easily measured. A technique for doing this is to review them against the smart principle. **In** this way it will be easy to know when a goal has been achieved.

Once established a clear set of goals, they should be recorded in the project plan. It can be useful to include the needs and expectations of stakeholders.

This is the most difficult part of the planning process **to be** completed. It's time to move on and look at the project deliverables.

5-2-15-2 Step 2: Project Deliverables

Using the goals defined in step 1, create a list of resources needed by the project in order to meet those goals. Specify when and how each item must be delivered.

Add the deliverables to the project plan with an estimated delivery date. More accurate delivery dates shall be established during the scheduling phase, which is next.

5-2-15-3 Step 3: Project Schedule

Create a list of tasks that need to be carried out for each deliverable identified in step 2. For each task identify the following:

- The amount of effort (hours or days) required to complete the task.
- The resource that will carry out the task.

Once you have established the amount of effort for each task, you can work out the effort required for each deliverable, and accurate delivery date. Update your deliverables section with the more accurate delivery dates.

At this point in the planning, a software package could be used such as [Microsoft Project](#) to create your project schedule. Alternatively, using

one of the many free templates available. Input all of the deliverables, tasks, durations and the resources who will complete each task.

A common problem discovered at this point, is when a project has an imposed delivery deadline from the sponsor that is not realistic based on estimates. If this is discovered; contacting the sponsor is necessary. The options in this situation are:

- Renegotiate the deadline (project delay).
- Employ additional resources (increased cost).
- Reduce the scope of the project (less delivered).

Use the project schedule to justify pursuing one of these options.

5-2-15-4 Step 4: Supporting Plans

This section deals with plans to be created as part of the planning process. These can be included directly in the plan.

5-2-15-5 Human Resource Plan

Identify by name, the individuals and organizations with a leading role in the project. For each, describe their roles and responsibilities on the project.

Next, describe the number and type of people needed to carry out the project. For each resource detail starting dates, estimated duration and the method you will use for obtaining them.

Create a single sheet containing this information.

Having followed all the steps above, a good project plan was created. Remember to update this plan as the project progresses, and measure

progress and remember with team works let us say leader. A team without project manager can't handle all above stages to a good plan.

After project manager and his leader; team create a good plan by their share, the project team helps to create recourses, financial, quality, procurement; project scope statement, communication plan, and project team can help project manager to determine all rules and responsibilities.

5-2-16 Question no 16: QuestionNo.16 asking for what process during execution processes group that deals with team work the audience said all stages of execution as: Perform time management, Perform cost management, Perform quality management, Perform change management, Perform risk management, Perform procurement management . But the most task deals with team work is the performing of time management because time management is referred to business or work activities. Eventually the term was broadened to include personal activities as well, so the team members are responsible to achieve the tasks on time and accordingly to finish the project on time.

5-2-17 Question no 17: Question No.17 asking for what is the process during monitoring and controlling that deals with team work the audience said: Performing quality control, Manage resource, Manage configuration, determine variances, Measure performance against Performance base line. But during monitoring and controlling processes group the most task deals with team work is the performing of quality control process. Project quality management is a critical aspect of the performing organization, and integral to project management. It is necessary to assure that project requirements are met. Project quality management implements the organization's quality management system via policies, procedures and continuous improvement activities, as

appropriate. Processes critical to the quality management system include quality planning, quality assurance, and quality control. So team members at any stage during a project life cycle must understand what his works is and what the deliverable concept means and how to be controlled till submitting his tasks.

5-2-18 Question no 18: Question No.18 asking for what is the process during closing processes that deals with team work. The audience said: Business index and archive, Ensure that the work performed in accordance with the required, Ensure that the final payments are paid to every. During closing processes group the most task which deals with team work is the ensuring of the work to be performed in accordance with the required objectives.

The team involved in the delivery process must help the project manager to deliver and submit the work according to the specifications, so in each individual area of specialized project manager can assign a leader.

5-3 Research Results:

From the interpretation of the analyzed data the research proved that, if a good team is established in construction project, increase, improvement, saving, and encouraging in the project parameter will occur as follows:

Increases of:

- Earned value.
- Productivity.
- Workability.
- Experiences.

Improvement of:

- Management.
- Achievements.

- Quality.
- Relationship.

Saving of:

- Time.
- Cost.
- Quality

Encouraging of:

- Creativity.
- Responsibility and honesty.
- Trust.

Conclusion and recommendation

1. Team work is a good idea to achieve goals in construction industry field. Because this field is, complex and rich of many overlapping tasks.
2. Caring about human resources is a soul of production, quality and mutual experiences.
3. Focus on Sudan in terms of employment because the country rich in human resources that warrant serious consideration for attention, and as noted in the research that the idea of the team work in Sudan is not impossible.
4. Consider this research as an abstract to future, to help in human resources in construction field, by using team work as a tool to achieve project goals.
5. Despite the general understanding of the concept of team work, but work in contracting companies is different from consultants firms, so must recommended that for future study to recognize between them.
6. In recent years, many foreign workers in the Sudan should be considered in the future and its impact on the Sudanese workers.

References

- 1- Mr. John Clearwater Construction Industry March 2011
- 2- William J. Bende and Darlwnw Septelka: **Teambuilding in the Construction Industry**,1991.
- 3- Covey, Steven **The Seven Habits of Highly Effective People**. 1989
- 4- Eicholz, Marti **Business Relationships, The Dynamic of Teamwork**.1997
- 5- Jason Westland **The Project Management Life Cycle** . 2006
- 6- Paper from Dr: Mohamed Elrebaa **Team work in engineering-1998**
- 7- Terry L. Williams **Use of Team Building Construction Projects to Reduce Cost Growth and Schedule Growth** 2011
- 8- <http://www.bized.co.uk/> ... Leader ship
- 9- Rich Harrill **Fundamentals of Destination Management and Marketing** 2005
- 10- Paper from: The institution of Civil Engineer. **-The Respect for people working group** 2006
- 11- Washington, DC **Partnering A Concept for Success Associated General Contractors**, 1991. .
- 12- Covey, Steven **The Seven Habits of Highly Effective People**: 1989
- 13- Eicholz, Marti **Business Relationships**1997
- 14- Wiggins, Hernandez J., **“ESA Safety Optimization Study Engineering**1985
- 15- Ritta **(PMP Exam Prep)**. 2005
- 16- **Paper related to Ritta's book**- from:

"http://en.wikipedia.org/wiki/Business_case:-

1. PM Hut [^] **Building a Project's Business Case**, 2009
 2. Schaltegger, S.; Wagner, M. (Eds.): **Managing the Business Case for Sustainability**. 2006 .
- 17-William J. Bender and Darlene Septelka's – **Existing methods of Team building in the Construction Industry 2009**