



*Sudan University of Science & Technology*

*College of Graduate Studies*

*M.Sc. Construction Management*



***Balance between hard and soft managerial  
skills in construction projects management  
in Sudan***

***التوازن بين المهارات الإدارية الصعبة والناعمة في إدارة  
مشاريع التشييد في السودان***

A thesis submitted for partial fulfillment for the requirement of the  
degree of master of civil engineering in construction management

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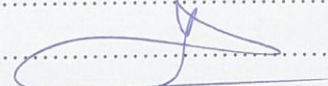
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(يَا أَيُّهَا الَّذِينَ آمَنُوا كُونُوا قَوَّامِينَ  
لِلَّهِ شُهَدَاءَ بِالْقِسْطِ وَلَا يَجْرِمَنَّكُمْ شَنَاٰنُ قَوْمٍ  
عَلَيْكُمْ أَلَّا تَعْدِلُوا اعْدِلُوا هُوَ أَقْرَبُ لِلتَّقْوَىٰ  
وَاتَّقُوا اللَّهَ إِنَّ اللَّهَ خَبِيرٌ بِمَا تَعْمَلُونَ)

سورة المائدة آية (8)

صدق الله العظيم

## **Acknowledgments**

To the one who had the biggest leg in my success and my guidance

So I managed to take out this research image modest

***DR. Awad Saad Hassan***

you who seek to push me forward with words and the question of my lessons

And my encouragement for success

You will endure a light that will illuminate the way for me, even as long as I

have entrusted you

My mother: Awada Mohamed

My father: Tag ELssier Abden

My husband: Alryah Mohammed

My brother: Mohammed, my sister: Safa.

My friend: Romaysa, Mawada, Raniya.

## **Dedication**

The idea is deeper than that you write ..in words

Vision is higher than flying idea ..in the atmosphere of the self

The idea is to give the fragrance nectar to the flowers

Dedication of the sweet melody .. To the strings of the dancer and voices

(From you and to you)

To the shining suns that illuminate the paths of life with rays of love as they  
fly Me always at the top

(My beloved mother and my beloved father)

To the sea from which I have been taken, and he has become compassionate  
and faithful, and he always seeks to remain

At the summit as a bright star

( Dear husband )

Treasures of science and knowledge and creativity have stood the positions  
of brothers and friends and evidence

Reach the top

(Evacuation teachers)

## **Abstract**

Despite the importance of management skills hard and soft, but not all of the members of engineering community aware of their importance, role and impact on the performance of projects and job satisfaction .

Hard skills are the technical or cognitive skills needed by the manager in his work either soft skills are personal skills or interpersonal skills or the personality traits of the manager

Personal skills are as important as technical skills in managing construction projects and construction organizations want to recruit managers who have both these skills and can balance these skills.

The ability to effectively manage projects has become an increasingly important skill. However, a number of managers are unable to successfully manage projects due to a lack of management skills.

This research aims to know how to balance administrative skills through, Learn about different types of management skills , Identify differences in project performance depending on the type of management skill, Studying the impact of personal skills and technical skills on the performance of projects and Study how to balance management skills.

In order to achieve this objective, a questionnaire was designed and distributed to group of people in construction industry in Sudan who are concerned with management skills and affected them, fill out the survey questionnaire the data were analyzed and results extracted.

The results showed Work experience directly affects the understanding of management skills and the recognition of their importance ,managers are more familiar with the terms on the management skills then the employees and then students. Manager's skills directly affect project performance and employee job satisfaction in the organization, Employees hard skills have a relationship with their employment and soft skills have a direct relationship to their promotion and lay off work , Hard skills make the manager good while soft skills create an effective manager and Balancing hard management skills and soft skills is a product of practical experience as it needs training and development.

Based on these findings a set of recommendations were developed to increase understanding and grasp the importance of management skills and recommendation for future researches.

## مستخلص

أصبحت القدرة على إدارة المشاريع بفعالية مهارة متزايدة الأهمية. ومع ذلك ، لا يستطيع عدد من المديرين إدارة المشاريع بنجاح بسبب نقص المهارات الإدارية.

المهارات الصعبة هي المهارات الفنية أو المعرفية التي يحتاجها المدير في عمله ، المهارات الناعمة هي المهارات الشخصية أو السمات الشخصية للمدير .

المهارات الشخصية لا تقل أهمية عن المهارات التقنية في إدارة مشاريع البناء ، وتريد منظمات البناء توظيف مديرين لديهم هذه المهارات ويمكنهم تحقيق التوازن بين هذه المهارات.

على الرغم من أهمية المهارات الإدارية الصلبة والناعمة ، ولكن ليس كل أعضاء المجتمع الهندسي على وعي بأهميتها ودورها وتأثيرها على أداء المشاريع والرضا الوظيفي للموظفين.

يهدف البحث إلى معرفة كيفية تحقيق التوازن بين المهارات الإدارية من خلال التعرف على أنواع مختلفة من المهارات الإدارية ، وتحديد الفروق في أداء المشروع تبعاً لنوع المهارة الإدارية ، ودراسة تأثير المهارات الشخصية والمهارات الفنية على أداء المشاريع ودراسة كيفية موازنه المهارات الإدارية.

من أجل تحقيق هذا الهدف ، تم تصميم استبيان وتوزيعه على مجموعة من الأشخاص في قطاع الإنشاءات في السودان ممن يهتمون بالمهارات الإدارية والمتأثرين بها ، وملاء الاستبيان ، وتم تحليل البيانات واستخلاص النتائج.

أظهرت النتائج أن خبرة العمل تؤثر بشكل مباشر على فهم مهارات الإدارة والاعتراف بأهميتها ، والمديرون أكثر دراية بالمهارات الإدارية ثم الموظفين ثم الطلاب، مهارات المدير تؤثر بشكل مباشر على أداء المشروع والرضا الوظيفي لدى الموظفين في المؤسسة ، المهارات الصعبة للموظفين العاملين لديها علاقة مباشرة بتوظيفهم والمهارات الناعمة لديها علاقة مباشرة مع ترقيتهم وتسريحهم من العمل ، المهارات الصعبة تجعل المدير جيداً بينما تساعد المهارات الناعمة على خلق مدير فعال وموازنة مهارات الإدارة الصعبة والمهارات الناعمة هي نتاج الخبرة العملية كما أنها تحتاج إلى التدريب والتطوير .

وبناءً على هذه النتائج ، تم تطوير مجموعة من التوصيات لزيادة الفهم وإدراك أهمية المهارات الإدارية والتوصيات الخاصة بالبحوث المستقبلية.

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# **CHAPTER ONE**

## **GENERAL INTRODUCTION**

### **1.1 General Introduction:-**

Project management is both a science and an art; it's a science because it requires the use of quantitative analysis such as charts ,graphs, financial data; and an art because it deals with qualitative analysis such as negotiating, conflict resolution, political, interpersonal and organizational factors. In order to perform the functions of management and to assume multiple roles, project managers must be skilled in both the science and the art of project management.

There are five managerial skills that are essential to successful management : process, problem solving, negotiating and conceptual skills The evolution of development projects has changed the skills required of project managers. Not long ago the emphasis was placed on technical skills and project managers were hired by the experience and proficiency in the technical area the project was involved in.

In the last years the nature of development projects has changed considerably , projects are not just one-dimensional approaches focused on a single solution. Today's' development project use multi-dimensional methods that include different approaches; these may include rights based, gender, and partnership .

Project teams involve more and more stakeholders, and behavioral skills are becoming equally important as technical skills are. In this new time, to be an effective project manager, may require having an understanding of general management rather than being a technical expert.

Projects are becoming more complex that it is simply no longer possible for the project manager to remain a technical expert in all aspects of the project. Project managers need to spend more of their time planning, organizing, directing and controlling the project rather than providing only technical direction.

In this study, management personal skills will be defined as well as technical skills and an attempt to find an optimal way to balance them for effective administrative performance and better performance of construction projects.

### **1.2 Research scope and limitations:**

Scope:- the research conducted to help in knowing about management skills and how to improve and balancing those skills .

Limitations:- lack of data and previous studies in country.

### **1.3 Research Problem Statement :**

Project management is the nucleus in the construction of business organizations and projects which in turn contribute effectively to economic development because the construction organizations follow different management methods and managers have different skills including the balance between personal and technical management and many managers found that the balance between these management skills is one of the reasons for success

### **1.4 Research Importance**

The research acquires its importance from being:

The research examines the balance between managerial skills, which is considered one of the important topics in business organizations and thus is closely related to the performance of projects

Modernity: The study examines a modern subject (balancing management skills)

The importance of research to the student where she will benefit from it at the level of her work

### **1.5 Research Objectives:-**

The aim of the research is to know how to balance administrative skills through

1. Learn about different types of management skills
2. Identify differences in project performance depending on the type of management skill
3. Studying the impact of personal skills and technical skills on the performance of projects
4. Study how to balance management skills

### **1.6 Research Questions:-**

1. Are there any differences in management skills?
2. To what extent do these skills affect project performance?
3. Could these skills be improved?
4. How to balance these management skills?

### **1.7 Research Methodology:-**

Questionnaire forms were adopted to collect the information required for the study, then they were divided into three categories with a view to identifying managerial skills and their importance in the view of employees, managers and students.

The questionnaire consists of

Part 1 General information describes the nature of the target group and the most important information about it.

Part 2 determines how each group know and understand the managerial skills and the terminology used.

Part 3 aims to know the importance of administrative skills in the eyes of each category and its impact on the category and the extent of the impact of experience and gender on the use of these skills in addition to other questions that serve the research

Part 4 aims to assess the skill level of each category and identify the skills most needed for training

The statistical analysis of the results of the questionnaire was based on the Google tables and Microsoft Excel for analysis

For the theoretical part a number of references, books and online search has been used.

### **1.8 Research area :-**

The research community includes contracting companies which are carried out in buildings works,

Human Boundaries: Employees of construction organizations at all levels of management

Time Limits: 2017 – 2021

Spatial boundaries: Contractors companies in Khartoum city (capital Sudan).

### **1.9 Research Content:-**

Chapter one contents General Introduction, Research scope and limitations, Research Problem Statement, Research Importance, Research Objectives, Research Questions, Research Methodology and Research area of study , Chapter two introduction, definition of management, nature of management, management Skills and construction projects management, hard and soft skills definition, importance of skills, balancing management Skills and previous studies, Chapter three research methodology , Chapter four analysis and discussion, Chapter five summary and recommendations and then references.

## **CHAPTER TWO**

### **THEORETICAL FRAMEWORK**

#### **2.1.1 Introduction :-**

Although management as a discipline is more than 80 years old, there is no common agreement among its experts and practitioners about its precise definition. In fact, this is so in case of all social sciences like psychology, sociology, anthropology, economics, political science etc. As a result of unprecedented and breath-taking technological developments, business organizations have grown in size and complexity, causing consequential changes in the practice of management. Changes in management styles and practices have led to changes in management thought. Moreover, management being interdisciplinary in nature has undergone changes because of the developments in behavioral sciences, quantitative techniques, engineering and technology, etc. Since it deals with the production and distribution of goods and services, dynamism of its environments such as social, cultural and religious values, consumers' tastes and preferences, education and information explosion, , etc., have also led to changes in its theory and practice. Yet, a definition of management is necessary for its teaching and research, and also for improvement in its practice.

Many management experts have tried to define management. But, no definition of management has been universally accepted.

#### **2.1.2 Definition of management**

Peter F. Drucker(1959) defines, "management is an organ; organs can be described and defined only through their functions". Ralph C. Davis(1960) has defined Management as, "Management is the function of executive leadership anywhere." Newman, Summer and Warren(1972), "The job of Management is to make co-operative endeavor to function properly. A manager is one who gets things done by working with people and other resources in order to reach an objective." E.F.L. Brech(1975), "Management is concerned with seeing that the job gets done, its tasks all center on planning and guiding the operations that are going on in the enterprise." According to McFarland(1979), "Management is defined for conceptual, theoretical and analytical purposes as that process by which managers create, direct, maintain and operate purposive organization through systematic, co-ordinate co-operative human effort."

Henry Fayol, "To manage is to forecast and plan, to organize, to compound, to co-ordinate and to control." Harold Koontz (1984)says, "Management is the art of getting things done through others and with formally organized group." Koontz and O'Donnel(1984), "Management is the creation and maintenance of an internal environment in an enterprise where individuals, working in groups, can perform efficiently and effectively toward the attainment of group goals. It is the art of getting the work done through and with people in formally organized groups." James Lundy,(1963) "Management is principally a task of planning, coordinating, motivating and controlling the efforts of other towards a specific objective. It involves the combining of the traditional factors of production and, labour, capital in an optimum manner, paying due attention, of course, to the particular goals of the organization."

J.N. Schulze(1997), "Management is the force which leads guides and directs an organization in the accomplishment of a pre-determined object." Wheeler(1999), "Management is centered in the administrators or managers of the firm who integrate men, material and money into an effective operating limit." Oliver Scheldon(2003), "Management proper is the function in industry concerned in the execution of policy, within the limits set up by the administration and the employment of the organization for the particular objectives set before it." G.E. Milward(1974-2005), "Management is the process and the agency through which the execution of policy is planned and supervised." Keith and Gubellini(2009), "Management is the force that integrates men and physical plant into an effective operating unit."Mary Parker Follett (1933)defines management as the "art of getting things done through people". This definition calls attention to the fundamental difference between a manager and other personnel of an organization. A manager is one who contributes to the organization's goals indirectly by directing the efforts of others – not by performing the task himself. On the other hand, a person who is not a manager makes his contribution to the organization's goals directly by performing the task himself.

Sometimes, however, a person in an organization may play both these roles simultaneously. For example, a sales manager is performing a managerial role when he is directing his sales force to meet the organization's goals, but when he himself is contacting a large customer and negotiating a deal, he is performing a non-managerial role. In the former role, he is directing the efforts of others and is contributing to the organization's goals indirectly; in the latter role, he is directly utilizing his skills as a salesman to meet the organization's objectives.



A somewhat more elaborate definition of management is given by George R. Terry(1971). He defines management as a process "consisting of planning, organizing, actuating and controlling, performed to determine and accomplish the objectives by the use of people and other resources".

According to this definition, management is a process – a systematic way of doing things. The four management activities included in this process are: planning, organizing, actuating and controlling. Planning means that managers think of their actions in advance. Organizing means that managers coordinate the human and material resources of the organization. Actuating means that managers motivate and direct subordinates. Controlling means that managers attempt to ensure that there is no deviation from the norm or plan. If some part of their organization is on the wrong track, managers take action to remedy the situation. To conclude, we can say that various definitions of management do not run contrary to one another. Management is the sum-total of all those activities that:-

- (i) determine objectives, plans, policies and programs;
- (ii) secure men, material, machinery cheaply
- (iii) put all these resources into operations through sound organization
- (iv) direct and motivate the men at work,
- (v) supervises and control their performance and
- (vi) provide maximum prosperity and happiness for both employer and employees and public at large

### **2.1.3 Nature of management:-**

Management has been conceptualized, as the social process by which managers of an enterprise integrate and coordinate its resources for the achievement of common, explicit goals. It has developed into a body of knowledge and a separate identifiable discipline during the past six decades. Practice of management as an art is, of course, as old as the organized human effort for the achievement of common goals. Management has also acquired several characteristics of profession during recent times. The nature of management as a science, as art and as a profession is discussed below :

#### **(i) Management as a Science :**

Development of management as a science is of recent origin, even though its practice is ages old. Fredrick W. Taylor was the first manager-theorist who made significant contributions to the development of management as a science. He used the scientific methods of analysis, observation and experimentation in the management of production function. A perceptive manager, as he was, he distilled certain fundamental principles and propounded the theory and principles of scientific management. His work

was followed by many others including Gantt, Emerson, Fayol, Barnard, etc. During the last few decades, great strides have been made in the development of management as a systematized body of knowledge which can be learnt, taught and researched. It has also provided powerful tools of analysis, prediction and control to practicing managers. The scientific character of management has been particularly strengthened by management scientists who have developed mathematical models of decision making.

Another characteristic of science in management is that it uses the scientific methods of observation, experimentation and laboratory research. Management principles are firmly based on observed phenomena, and systematic classification and analysis of data. These analyses and study of observed phenomena are used for inferring cause-effect relationships between two or more variables. Generalizations about these relationships result in hypotheses. The hypotheses when tested and found to be true are called principles. These principles when applied to practical situations help the practitioner in describing and analyzing problems, solving problems and predicting the results.

Even though management is a science so far as to possess a systematized body of knowledge and uses scientific methods of research, it is not an exact science like natural sciences. This is simply because management is a social science, and deals with the behavior of people in organization.

Behavior of people is much more complex and variable than the behavior of inanimate things such as light or heat. This makes controlled experiments very difficult. As a result, management principles lack the rigour and exactitude which is found in physics and chemistry.

Management is a social science like economics or psychology, and has the same limitations which these and other social sciences have. But this does not in any way diminish the value of management as a knowledge and discipline. It has provided powerful tools of analysis, prediction and control to practicing managers and helped them in performing their material tasks more efficiently and effectively.

### **(ii) Management as an art :**

Just as an engineer uses the science of engineering while building a bridge, a manager uses the knowledge of management theory while performing his managerial functions.

Engineering is a science; its application to the solution of practical problems is an art. Similarly, management as a body of knowledge and a discipline is a science; its application to the solution of organizational problems is an art. The practice of management, like the practice of medicine, is firmly

grounded in an identifiable body of concepts, theories and principles. A medical practitioner, who does not base his diagnosis and prescription on the science of medicine, endangers the life of his patient.

Similarly, a manager who manages without possessing the knowledge of management creates chaos and jeopardizes the well-being of his organization.

Principles of management like the principles of medicine are used by the practitioner not as rules of thumb but as guides in solving practical problems. It is often said that managerial decision making involves a large element of judgment. This is true too. The raging controversy whether management is a science or an art is fruitless. It is a science as well as an art. Developments in the field of the knowledge of management help in the improvement of its practice; and improvements in the practice of management spur further research and study resulting in further development of management science.

### **(iii) Management as a Profession :**

By a professional manager, we generally mean a manager who undertakes management as a career and is not interested in acquiring ownership share in the enterprise which he manages. But, is management a profession in the true sense of the word? or, is management

a profession like the professions of law and medicine? According to McFarland a profession possess the following characteristics : (i) a body of principles, techniques, skills, and specialized knowledge; (ii) formalized methods of acquiring training and experience; (iii) the establishment of a representative organization with professionalization as its goal; (iv) the formation of ethical codes for the guidance of conduct; and (v) the charging of fees based on the nature of services.

Management is a profession to the extent it fulfills the above conditions. It is a profession in the sense that there is a systematized body of management, and it is distinct, identifiable discipline. It has also developed a vast number of tools and techniques. But unlike medicine or law, a management degree is not a prerequisite to become a manager. In fact, most managers do not have a formal management education. It seems reasonable to assume that at no time in the near future, the possession of a management degree will be a requirement for employment as a career manager.

Management is also a profession in the sense that formalized methods of training is available to those who desire to be managers. We have a number of institutes of management and university departments of management which provide formal education in this field. Training facilities are provided

in most companies by their training divisions. A number of organizations offer a variety of short-term management training programs.

Management partially fulfills the third characteristic of profession. There are a number of representative organizations of management practitioners almost in all countries such as the All India Management Association in India, the American Management Association in U.S.A., etc. However, none of them have professionalization of management as its goal.

Management does not fulfill the last two requirements of a profession.

There is no ethical code of conduct for managers as for doctors and lawyers. Some individual business organizations, however, try to develop a code of conduct for their own managers but there is no general and uniform code of conduct for all managers. In fact, bribing public officials to gain favors, sabotaging trade unions, manipulating prices and markets are by no means uncommon management practices. Furthermore, managers in general do not seem to adhere to the principle of "service above self".

However little regard is paid to the elevation of service over the desire for monetary compensation is evidenced by switching of jobs by managers.

Indeed, such mobile managers are regarded as more progressive and modern than others. It may be concluded from the above discussion that management is a science, an art as well as a profession. As a social science, management is not as exact as natural sciences, and it is not as fully a profession as medicine and law.

## **2. 1.4 Management skill :-**

is the ability to carry out the process of reaching organizational goals by working with and through people and other organizational resources. Learning about management skill and focusing on developing it are of critical importance because possessing such skill is generally considered the prerequisite for management success. Because management skills are so critical to the success of an organization, companies commonly focus on possible steps that can be taken to improve the skills of their managers.

### **A. Management Skill: A Classic View**

Robert L. Katz has written perhaps the most widely accepted early article about management skill. Katz states that managers' ability to perform is a result of their managerial skills .A manager with the necessary management skills will probably perform well and be relatively successful. One without the necessary skills will probably perform poorly and be relatively unsuccessful. Katz indicates that three types of skills are important for successful management performance: technical, human, and conceptual skills.

- **Technical skills** involve the ability to apply specialized knowledge and expertise to work related techniques and procedures. Examples of these skills are engineering, computer programming, and accounting. Technical skills are mostly related to working with “things”—processes or physical objects.
- **Human skills** build cooperation within the team being led .They involve working with attitudes and communication, individual and group interests—in short, working with people.
- **Conceptual skills** involve the ability to see the organization as a whole.

A manager with conceptual skills is able to understand how various functions of the organization complement one another, how the organization relates to its environment, and how changes in one part of the organization affect the rest of the organization.

As one moves from lower-level management to upper-level management, conceptual skills become more important and technical skills less important. The supportive rationale is that as managers advance in an organization, they become less involved with the actual production activity or technical areas, and more involved with guiding the organization as a whole. Human skills, however, are extremely important to managers at top, middle, and lower (or supervisory) levels. The common denominator of all management levels, after all, is people.

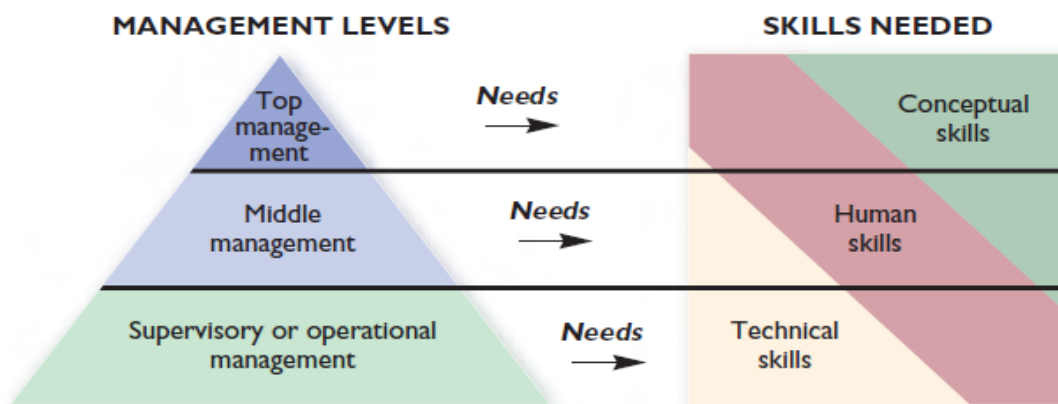


Figure2.1. Management Skills

<http://semesters.in/httpsemesters-INSKILLS-AND-LEVELS-OF-MANAGEMENT/> (2015)

## B. Management Skill: A Contemporary View

More current thought regarding management skills is essentially an expansion of the classic view list of skills managers need to be successful. This expansion is achieved logically through two steps:

1. Defining the major activities that managers typically perform
2. Listing the skills needed to carry out these activities successfully

The major activities that modern managers typically perform are of three basic types.

**1. Task-related activities** are management efforts aimed at carrying out critical management-related duties in organizations. Such activities include short-term planning, clarifying objectives of jobs in organizations, and monitoring operations and performance.

**2. People-related activities** are management efforts aimed at managing people in organizations. Such activities include providing support and encouragement to others, providing recognition for achievements and contributions, developing skill and confidence of organization members, consulting when making decisions, and empowering others to solve problems.

**3. Change-related activities** are management efforts aimed at modifying organizational components. Such activities include monitoring the organization's external environment, proposing new strategies and vision, encouraging innovative thinking, and taking risks to promote needed change.

### C. Management Skill: integrated taxonomy of Skills

A proposed integrated taxonomy of Skills is the one in Figure 2 where Soft Skills are organized in two clusters: Political and Ethical Skills – Strategic and Organizational Skills while a third one corresponds to Hard Skills: Managerial and Technological Skills. Politics and Ethics allow the interpretation, Strategy and Organization bring to planning and Management and Technology imply the coordination of actions. All these skills concur to the realization, then to the production of the effect (Ciappei, 2015).

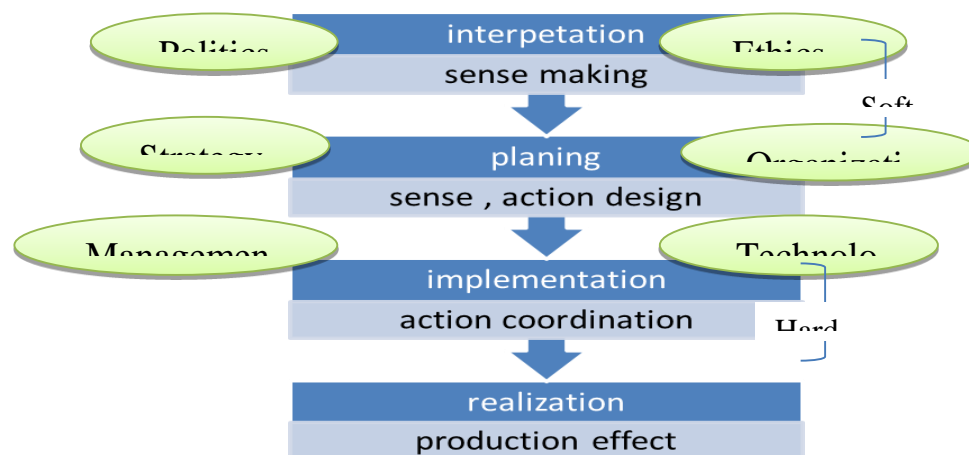


Figure2.2. taxonomy of skills – Cristiano ciappei (2015 )

## **2.1.5 Projects and projects management:**

### **2.1.5.1 What is a project:**

The Project Management Institute provides the following definition of a project: A **project** is a temporary endeavor undertaken to create a unique product, service, or result. Like most organizational effort, the major goal of a project is to satisfy a customer's need. Beyond this fundamental similarity, the characteristics of a project help differentiate it from other endeavors of the organization. The major characteristics of a project are as follows:

- a. An established objective.
- b. A defined life span with a beginning and an end.
- c. Usually, the involvement of several departments and professionals.
- d. Typically, doing something that has never been done before.
- e. Specific time, cost, and performance requirements.

First, projects have a defined objective—whether it is constructing a 12 story apartment complex by January 1 or releasing version 2.0 of a specific software package as quickly as possible. This singular purpose is often lacking in daily organizational life in which workers perform repetitive operations each day.

Second, because there is a specified objective, projects have a defined endpoint, which is contrary to the ongoing duties and responsibilities of traditional jobs. In many cases, individuals move from one project to the next as opposed to staying in one job. After helping to install a security system, an IT engineer may be assigned to develop a database for a different client.

Third, unlike much organizational work that is segmented according to functional specialty, projects typically require the combined efforts of a variety of specialists. Instead of working in separate offices under separate managers, project participants, whether they be engineers, financial analysts, marketing professionals, or quality control specialists, work closely together under the guidance of a project manager to complete a project.

The fourth characteristic of a project is that it is non-routine and has some unique elements. This is not an either/or issue but a matter of degree. Obviously, accomplishing something that has never been done before, such as building a hybrid (electric/gas) automobile or landing two mechanical rovers on Mars, requires solving previously unsolved problems and breakthrough technology. On the other hand, even basic construction projects that involve established sets of routines and procedures require some degree of customization that makes them unique.

Finally, specific time, cost, and performance requirements bind projects. Projects are evaluated according to accomplishment, cost, and time spent. These triple constraints impose a higher degree of accountability than you typically find in most jobs. These three also highlight one of the primary functions of project management, which is balancing the trade-offs between time, cost, and performance while ultimately satisfying the customer.

*What a Project Is Not* Projects should not be confused with everyday work. A project is not routine, repetitive work! Ordinary daily work typically requires doing the same or similar work over and over, while a project is done only once; a new product or service exists when the project is completed.

### **2.1.5.2 A construction project:-**

A construction project is an assignment/task/job that has to be undertaken and completed within a set time, budget, resources and performance specifications designed to meet the needs of stakeholder and beneficiaries

### **2.1.5.3 Project manager:-**

The project manager is the professional who is responsible for completing the project and project management would not exist without the project manager. Blackburn (2002, pp.5) concluded that ‘adding a project manager to a project (not uncommon: organizations do not know how early they should initiate a project, and the project manager is often brought

in late) is like introducing a sheep dog to a field full of wandering sheep’. Furthermore the project manager is the communication hub for most reports, requests and complaints. The successful project manager is able to imbue team spirit and confidence that drives the team toward excellence or when the project becomes stressful and frustrating. Nicholas (2012) also stated that the project manager is ultimately accountable whether the project succeeds or fails.

In the delivery of successful projects, certain knowledge, skills and personal attributes are required for a project manager to be effective. This refers to the project manager’s competence. Their competence is clearly a vital factor in the success of projects, yet it remains a quality that is difficult to quantify (Crawford 2000). The authority of the individual project manager depends on the status of the particular project and their reputation and influencing skills. The role of the project manager is changing from being an administration position into a much more managerial one. Holzle (2010) agreed that capabilities and competencies are required for project manager. As suggested by El-Sabaa (2001), human skill is primarily concerned with working with people. By developing high level human or interpersonal



skills, the project manager will be sufficiently sensitive to the needs and motivations of others in his or her project when communicating through behavioral norms what has to be achieved in certain contexts. He found that the human skills of project managers have the greatest influence on project management practices rather than technical skills. Knowledge, skills and personal attributes of project managers are the factors that contribute to completion of successful projects (Crawford (2000). Competent project managers are those who consistently deliver, on time and within budget, projects that meet or exceed stakeholders' expectations. Understanding of leadership principles and people skills are even more important to good project management. Muller et al. (2009) concluded that developing the project managers' leadership styles so that these target profiles are achieved will contribute to better project results and the personal success of individuals. Thus leadership competencies should be taken into account when assigning project managers to projects.

Dolfi et al. (2007) agreed that the important contributor to an organization's ability to achieve its strategic goals is competency of the manager.

Dolfi et al. (2007) pointed out that success in project management is dependent on many variables, the most important being leadership and interpersonal skills. Muller et al. (2005) found that competency can

be segregated into a number of classifications, such as leadership being a managerial competency imbued with personal characteristics. They concluded that successful project managers must have emotional intelligence such as self-awareness, emotional resilience, motivation, sensitivity, influence, intuitiveness and conscientiousness rather than being a pure tactician. Knowledge of project management tools and techniques are built upon and enhanced by the managerial skills, personal skills and learning skills (Blackburn, 2002).

According to Pant et al. (2008), the focus of most project management training has been on the technical skills (time, cost and quality) deemed essential to achieve project success because technical skills are easier to deal with when compared to the more difficult areas of soft skills. They concluded that project management practices need to emphasize training and relevant education for up and coming professionals. Regarding the career path, the project manager needs to be clear about expectations of competencies and know how to acquire them (El-Sabaa, 2001). The personality of the project manager strongly influences the decision concerning which career path to choose (Tremblay et al. 2002) and how to succeed in a project management work environment.

Holzle (2010) found that the qualification of the project manager has to be aligned according to the chosen career path levels. Project managers who are able to develop the appropriate knowledge and skills described in this thesis would position them for future career success. He suggested the needs of providing the continuity development to project managers by their organizational recognition and the needs of supporting project organization by project managers.

PMP qualification is used here as an example for illustration. PMI established a professional certification exam in 1984 that led to Project Management Professional (PMP) certification. PMI became the first organization in its field to attain International Organization for Standardization (ISO) recognition in 1999. To be eligible for the Project Management Professional (PMP) credential, professionals must meet specific project management knowledge and work experience requirements. The value of project management certifications is hotly debated in terms of whether: firstly, certifications make better project managers; and secondly, projects staffed by certified project managers are more successful than projects without PMPs. Starkweather and Stevenson (2011) concluded that PMP certification is a necessary, but not sufficient factor affecting project management success. Certification should be viewed as more than a paper

chase; a more relevant curriculum and experiential knowledge base must be developed. Muller and Turner (2007) maintained that project management certification does mean that projects will be executed well. The project manager, who has a track record of good projects plus a certification, strongly indicates a high performing professional. They found there is no difference in rating the success criteria or project success between certified and non-certified project managers across all projects. Many organizations are using PMI as an entrance requirement when hiring project managers.

#### **2.1.5.4 Construction Project manager:-**

The construction project manager performs the same functions as other managers. The construction project manager is unique because s/he manages temporary activities and is usually an outsider brought into a business or government department to implement a specific project.

A construction project manager is generally expected to be the projects' leader who needs to motivate and inspire people working on the project. construction Project managers are expected to organize resources to complete a project on time, on budget and within specification. They provide direction, coordination, and integration to the project team and are responsible for performance.

When things go wrong the construction project manager's job is to get the project back on track by working out ways to solve problems and serving as peacemaker when tensions arise. Depending on the nature of the project, there are a number of different groups outside the organization that influence the success of the project. To be effective, a project manager must understand how these groups can affect the project and develop methods for managing the relationship.

## **2.2 Soft and hard skills**

### **2.2.1 Hard skills:-**

#### **2.2.1.1 definition:-**

Hard skills are teachable abilities or skill sets that are easy to quantify.

Typically, you'll learn hard skills in the classroom, through books or other training materials, or on the job.

Hard skills are specific abilities, or capabilities, that an individual can possess and demonstrate in a measured way.

Possessing a hard skill connotes mastery and an expertise within the individual to perform a specific task or series of tasks to complete a job.

Examples of hard skills include:

Proficiency in a foreign language, a degree or certificate, typing speed, machine operation and computer programming.

#### **2.2.1.2 Measuring hard skills:-**

Hard skills are demonstrable and quantifiable; individuals who possess hard skills can be tested to prove their capacity in each hard skill they possess.

There are objective metrics that can be applied to the hard skill, not just subjective judgment.

Furthermore, an individual's proficiency in any particular hard skill can be measured against the proficiency of other individuals who possess that same hard skill.

Typing, for example, is a hard skill. Two individuals with the ability to type can be tested for speed and accuracy, with their scores determining which individual is more proficient in the skill.

#### **2.2.1.3. hard Skill training:-**

Although some individuals can have innate abilities that make it easier for them to learn a hard skill either through formal lessons or in informal ways, most people develop hard skills through some sort of educational process.

For example, some people have a natural sense of numbers that makes it easier for them to learn basic as well as complex math; yet, they, as well as others, learn math through a series of lessons.

Individuals learn hard skills in various ways, including learning them in traditional schools, colleges and vocational education programs. Individuals can also learn hard skills through apprenticeships, mentoring, on-the-job training and hands-on training. Individuals can teach themselves hard skills, too, through books, online platforms and even through trial and error.

Certificates, diplomas, licenses and test scores are often used as proof that an individual has achieved a certain level of proficiency for a particular hard skill or set of hard skills.

A driver's license, for instance, demonstrates that an individual has demonstrated a minimum level of proficiency as determined by the government agency issuing the driver's license. A commercial driver's license shows that an individual has achieved another, higher level of proficiency.

Hard skills can also be considered technical skills.

#### **2.2.1.4. Why hard skills are important**

Nearly all jobs today, including most professional positions, require hard skills.

Job descriptions frequently list a series of hard skills needed to be hired, and they also often list the preferred proof of such skills, such as degrees or certificates, that each job applicant needs in order to be considered for the position.

Possessing specific hard skills demonstrates one's ability to successfully perform the job and fulfill its duties.

For many professions in many companies, the possession of hard skills is important to ensure a company's financial success; however, in some instances, the worker's hard skills are critical to preventing catastrophic results.

A surgeon, for example, must have very specific hard skills to ensure against unnecessary harm to a patient; a pipefitter must also be exacting in his or her application of hard skills to ensure against something like a gas leak.

Furthermore, many employers seek out soft skills, finding that interpersonal skills are needed - sometimes in equal measure to their hard skills - for individuals to successfully complete the jobs they're assigned to do.

## **2.2.2 Soft skills:-**

### **2.2.2.1 Introduction:-**

Any organization is made of people and its success depends mainly on the capabilities of the human resources and on the kind of collaboration they are able to establish.

Human capital is then a fundamental component for any enterprise and the quality of it deeply affects the results that the company can achieve. This happens in both services and manufacturing companies, even if in these last ones, the competitiveness of the product also bases of course on the choice of materials and processes used to fabricate it. In the past manufacturing companies of any kind of industrial product were mainly concerned about the technical aspects of their production, in terms of methodologies, systems, facilities, components etc. and tried to select workers technically prepared and able to perform the tasks they were hired for. Nowadays this view has changed and workers are considered a key element not only for their ability to perform a certain activity, but in particular for their transversal competences, also called Soft Skills.

### **2.2.2.2 The term Soft Skills**

is used to indicate all the competences that are not directly connected to a specific task; they are necessary in any position as they mainly refer to the relationships with other people involved in the organization. Hard Skills, on the other hand, indicate the specific capabilities to perform a particular job. Then a Hard Skill can be for example the ability of a worker to regulate and control a CNC machine to fabricate a component, while a Soft Skill is his capability of collaborating with the colleagues working at the same factory department. Soft Skills are then considered a strategic element in any industrial organization and they deserve high attention from the Human Resources management, not only in the recruitment phase but also during the whole professional career of employees. The quality of the industry, in terms of quality of the product, of the organization, of the services and of the workers' life, strongly depends on the Soft Skills possessed by personnel at any level. The quality of the Human Capital working at any company, then the results they can achieve, mainly depends on their Soft Skills.

Many definitions of Soft Skills exist in literature. A first distinction can be made between self-oriented/ Intra psychic and other oriented/Interpersonal Skills. The first ones refer to what the person must understand and develop by himself while the second category gathers what the person can develop relating with other people. This distinction can also be made in terms of Personal and Social Skills. Personal Skills mainly correspond to cognitive Skills, such as knowledge and thinking skills while Social Skills refer to

relationships with other people. To just mention some, a knowledge skill is the capability of elaborating information and a thinking skill is the ability of exercising critical judgment. Examples of personal skills are the capacity and desire to continue to learn and the ability to plan and achieve goals. Main Social Skills can be identified in communication, listening capability, negotiation, networking, problem solving, decision making and assertiveness (Engelberg, 2015).

Soft Skills give Hard Skills the required plasticity to develop and keep up-to-date in changing circumstances. Soft Skills are closely related to plastic, rational, elaborating, abilities, elaborated in the prefrontal cortex, developed by Man in the last 50.000 years. Hard Skills allow Man to be what he is: an engineer, a physicist, a philosopher. Soft Skills operate in a direction that is rather separate from the role of the individual and go beyond the strict demands of the profession (Grisi, 2014).



Figure2.3. definition of soft skills – Bryce Kingsley (2015)

Personal Competences is well described in Figure 1 based on a research of Daniel Goleman. Any individual is responsible of his actions, this bases on different elements, each of them connected to the others. Awareness and Action interact with Personal and Inter Personal competences, as the figure clearly shows (Kingsley, 2015). Many personality features have a strong influence on the individual transversal competences. Moral virtues can be considered connected to Soft Skills: Temperance, Justice, Prudence, Courage are all significant traits for the development of transversal competences (Ciappei, 2015).

Soft Skills can be furthermore distinguished in Entrepreneurship Skills and Technological Skills. Entrepreneurship Skills are connected to leadership, to risk facing, to innovation and change management and correspond to Soft Skills. Technological Skills are the ones that allow performing specific

tasks. The parallel with Software and Hardware in Information Technology is evident: Software controls and manages Hardware. This is particularly true in the Indo-European approach, while in the Oriental one there is more integration between the two parts (Ciappei, 2015).

A famous simple definition of Soft Skills comes from the winner of the Nobel prize 2000 for Economics James Heckman: “Soft Skills predict success in life”. He identifies a cause-effect correlation between Soft Skills and personal and professional achievements of people (Cinque, 2015).

Skills by several institutions and organizations, including the European Union (UE) and the Organization for Economic Cooperation and Development (OECD) Figure 2. Hard Skills are also called Specific Competences and Soft Skills are often indicated as Generic Competences (Poblete Ruiz, 2015). The term cross-cultural competencies appeared in Europe 20 years ago. Now expressions such as Key Competences and, after Microsoft-Intel definition, 21st Century Skills are also very common (Hautamäki, 2015).

Some European projects have been developed to define and study the Skills issue. One of them is the “Tuning” project in which Generic Competences are divided in three categories: Instrumental, Interpersonal and Systemic. Instrumental Competences correspond to cognitive, methodological, technological and linguistic competences. Interpersonal can be divided in two groups: individual and social. Systemic competences are considered organizational, entrepreneurial and leadership skills (Poblete Ruiz, 2015).



Figure 2.4. different names proposed to define soft skills – Maria Cinque (2015)

It is important to try to understand which skills will be necessary in future. The work skills that will be required in 2020 can be defined as the skills that should be acquired by all citizens, in order to ensure their active participation in society and economy, taking into account the major drivers of change. Among them, the skills in using technology, in particular digital skills, will be fundamental in most jobs to perform many tasks (Cinque, 2015). Furthermore digital resources can help students to develop and train their Soft Skills, then they can be considered at the same time aims to be reached and tools to train, to develop and increase competences and capabilities. In order to define and identify Soft Skills,

the Center of Creative Leadership in Bruxelles (Kingsley, 2015) has proposed a tool named “Social Identity Mapping”, which considers gender, nationality, religion, sexual orientation, race or ethnicity, age, education, socioeconomic status etc. of people. This mapping involves three internal processes: categorization, identification and comparison. First it is necessary to define groups based on shared believes, experiences and characteristics. Second each individual group. Third the groups have to be compared. It’s human nature to want to fit in some group as well as to be unique. To be aware of his own social identity is the first step in order to understand which is his own idea and connection to leadership, in order to be able to develop this kind of Soft Skill. The identity is not static, it can change and be developed over time. Identity is made of three components: Given Identity (for ex. To be a male of a certain age), Chosen Identity (for ex. university-educated and married), Self Identity (includes traits, behaviours, beliefs, values and skills). Social Identity is important for Soft Skills

because it leads to:

Self awareness, managing self, communication, empathy and effective dialogue across differences, all the mentioned transversal skills are really significant to be successful as a manager and more in general in any kind of profession.

A Soft Skill that most experts recognize such as a very important one is Emotional Intelligence. A possible definition of this transversal skill is the ability to perceive and express emotions, to understand and positively use them, and to effectively manage emotions in ourselves and others. Thus Emotional Intelligence is central to performance. It can be considered connected to individual personality but it can also be developed trough attention and development (Kingsley, 2015).

The conceptual model of Skills developed by John Dewey in the book “The Human Nature and Conduct” defines the personality as the interpretation of his habits, which are not pure repetitions but dispositions that the person



expresses as specific ways of acting in different challenging situations. Dispositions motivate, activate, and direct abilities. Then the model of soft skills, revisited like dispositions, looks like a complex construction in which many components interact and are developed over time, showing performances based on a coherent set of knowledge, abilities, attitudes and values. In the concept of disposition three interacting components can be distinguished:

attitudes and values, knowledge and abilities involved and a set of coherent behaviors.

The disposition can only be inferred evinced, from repeated congruent behaviors and performances (Pellerey, 2015).

Following another approach, competences can be distinguished in three categories:

Knowing-why competences implying Reflectiveness, understanding and Self-awareness and knowing-What, When, Where competences implying Proactivity.

Further Soft Skills important to be considered regard the capacity to develop and take advantage of an extensive network of relationships, the Knowing-How, Whom competences implying Reactivity and the Transferable competences in terms of knowledge and employability improving skills (Guglielmi, 2015).

### **2.2.2.3 Why do Soft Skills matter:**

A soft skill differentiates between the adequate and the ideal candidates. As far as competitive job markets are concerned, recruiters look for the people who are efficient to become leaders and leadership quality depends on the soft skills. So, in this case, technical ability and knowledge in the domain area is not important. It is the interpersonal people skills, social skills, communication skills, attitudes, social intelligence and emotional intelligence quotients is what matters over here, because these skills help people to work and perform well in a suitable environment.

Soft Skills are not only important in the organizations for facing the clients, it is also very important for an employee to interact with his clients. That's why employees give a lot of importance to soft skills so that they can create a productive and healthy environment.

Research conducted by Harvard University :-

The Carnegie foundation and Stanford research center , has all concluded that 85 % of job success comes from having well-developed soft skills and people skills and only 15% of job success comes from technical skills and knowledge ( hard skills ) .

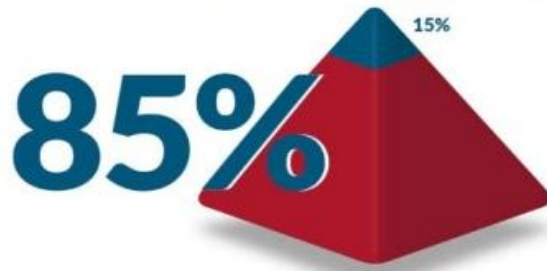


Figure 2.5. soft skills importance – [www.carnegiefoundation.org](http://www.carnegiefoundation.org)- (2014)

#### **2.2.2.4 Importance in Today's Workplace:-**

Soft skills are as important as cognitive skills (John, 2009; Zehr, 1998). Giving students soft skills could make the difference in their being hired for a job in their field (Evenson, 1999), and the lack of soft skills can sink the promising career of someone who has technical ability and professional expertise but no interpersonal qualities (Klaus, 2010). Wellington (2005) describes the soft skills of success based on his experiences in different management positions, primarily within human resources. Successful managers who were promoted had both excellent technical and soft skills, especially the willingness and ability to work positively with others. Cobanoglu, Dede, and Poorani (2006) concluded that soft skills were among the most important skills in the job requirements for a hotel information technology manager: Communication was the most important, followed by critical thinking, and then the knowledge of information technology.

The research for the 21st century shows that potential employers want to hire applicants with strong interpersonal skills (“Employers Value Communication,” 2004; Glenn, 2008; Mitchell et al., 2010; Perreault, 2004; Sutton, 2002; Wilhelm, 2004), but new graduates are falling short of employers’ expectations (National Union of

Students, 2011). Employers stress that educators should be teaching their students how to cooperate with others in the workplace and successfully acquire customer service skills (Evenson, 1999). In fact, soft skills are so important that they are ranked as number one and extremely important for potential job hires in many occupations and industries (Sutton, 2002). Hiring applicants who have interpersonal skills is instrumental for successful organizations to maintain a competitive advantage (Glenn, 2008). Soft skills are critical in the technical workplace (James & James, 2004), and business professionals need these skills because employers value them (John, 2009).

Even though some money is devoted to training managers to comply with workplace rules and teaching them the financial basics, oftentimes little attention is given to soft skills (White, 2005). Many senior executives view

the concept of training soft skills as simply a motivational seminar that inspires employees but offers little use for job application or value to the company that pays for the training (Onisk, 2011); and some will say that hard skills, such as those in construction, computer programming, or accounting, take precedence over knowing how to be diplomatic with an upset customer or show finesse as an effective team member (Evenson, 1999). In contrast, Klaus (2010) notes that she frequently finds senior managers complaining that their newest employees lack the interpersonal skills needed for success in the business world. Personality measures are equally important predictors of work success as cognitive

ability and work accuracy. Moad (1995) justifies the increases in training budgets driven by changes to client/ server technologies and the need for soft skills in business. Soft skills must be quantifiable and measured in returns, with the benefit translated into the bottom line (Onisk, 2011). Hard skills are specific, teachable abilities that can be defined and measured. By contrast, soft skills are less tangible and harder to quantify (Bronson, 2007). Measuring the impact of soft skills training on the return on investment (ROI) versus the impact of hard skills training is a challenge (Georges, 1996; Redford, 2007). Calculating the ROI and measuring the effectiveness of communications training, ethics, teamwork skills, and other softer skills is extremely difficult; therefore, many corporate training departments are reluctant to provide soft skills training. However, Moad (1995) notes that the impact of softer skills on ROI much more than justifies the money spent on training. Hard skills alone may be meaningless without soft skills. For example, software testers need two types of skills: one skill set to perform technical duties at work and one skill set to approach work with a positive attitude (soft skills; Magazine, 2003).

As a result of economic restructuring, European and Welsh business executives are trying to raise the skill levels of the workforce in order to boost productivity and economic growth and reduce unemployment. To engage workers with negative experiences of formal learning (e.g., school), there has been an increase in more informal learning, much of which is focused on soft skills, such as self-confidence and communication skills (Holtom& Bowen, 2007). Corporate trainers are implementing inhouse

training that teaches how to read people, draw out clients, and build relationships: skill-oriented executive education that fills in the holes of their employees' formal educations "all while bringing their humanity and personality into the mix" (Klaus, 2010, p. 9). Another method of promoting soft skills in organizations is to team up a newly hired employee with an expert mentor, who has been in the industry for 20 to 35 years. One Texas

company begins the mentoring process informally, then involves an official mentorship relationship, and then returns to informality. The mentee learns both technical and soft skills from the mentor, such as the ability to cooperate with managers, peers, and customers (Riley, 2006).

**Some research** recently conducted in the USA identify as essential competencies on the job Problem Solving, Team working and Critical Thinking, in order of importance, considering this last essential but relatively easy to hire in comparison to the first two, which are essential but hard to hire. Creativity is considered a less essential competence however significant, but very hard to hire. Figure 3 graphically represent the results of this research listing the competences most important to be hired and showing that

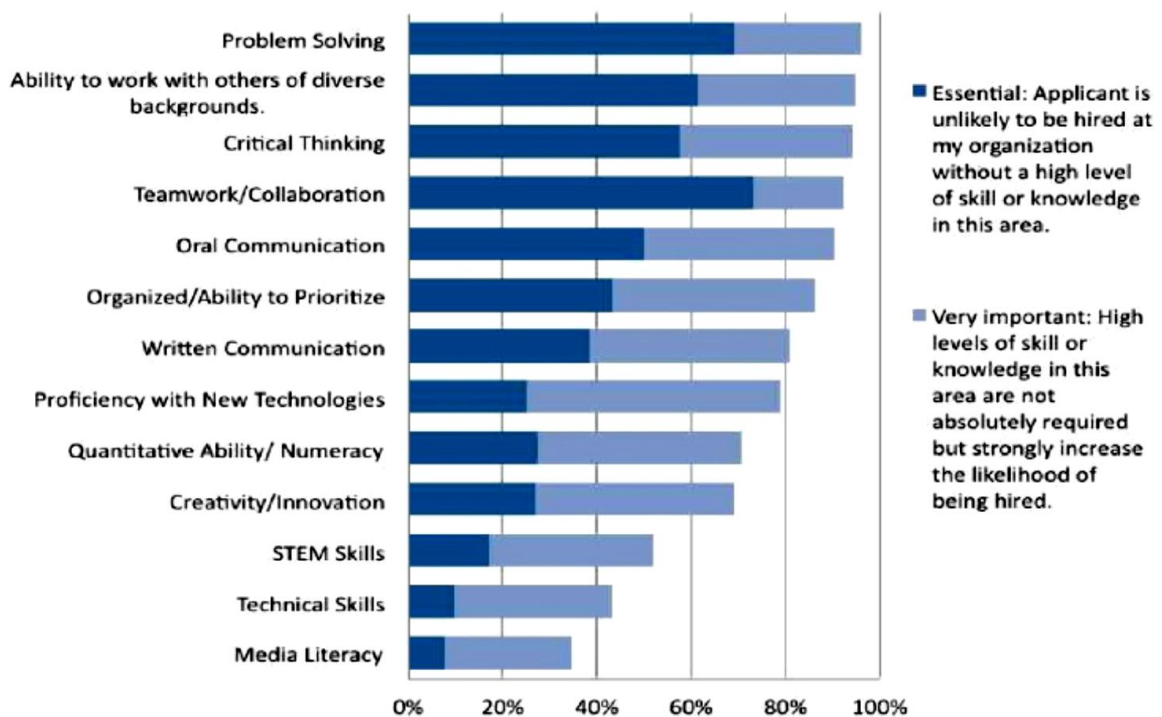
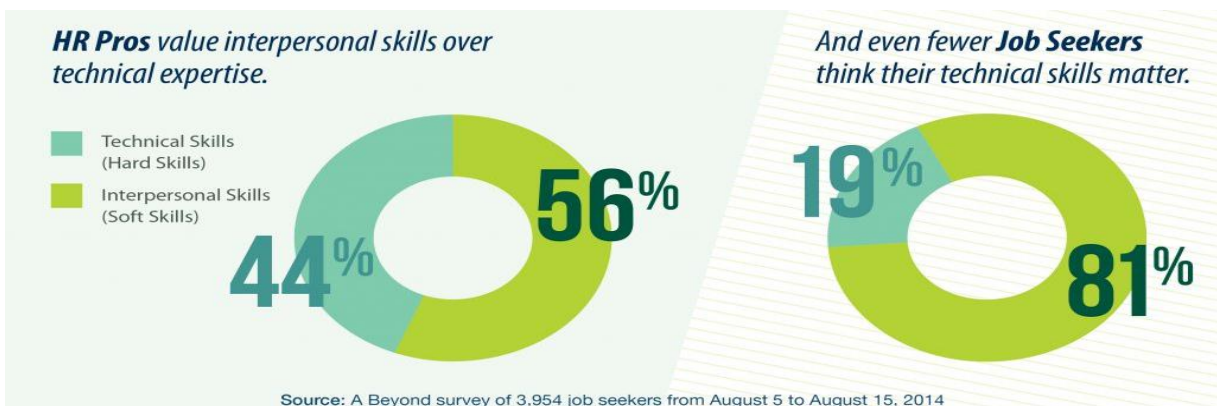


Figure 2.6. essential competences to be hired – Manuel Poblete Ruiz (2015)



## **2.3. Construction Project Management Soft Skills and Hard Skills:-**

### **2.3.1 what are Construction Project Management Soft Skills and Hard Skills ?**

Construction Project management requires a diverse array of skills. These skills are broadly grouped into soft skills and hard skills.

#### **2.3.1.1 Soft skills**

refer to interpersonal skills and include traits such as leadership, communication, negotiation and expectations management. They are largely intangible, difficult to measure and are not associated with a measurable deliverable or a concrete output. Soft skills are generally employed

Without the use of tools or templates.

Below are 11 soft skills essential for success as a project manager.

##### **1. Leadership**

*“Effective leadership is not about making speeches or being liked; leadership is defined by results not attributes.”*

*– Peter Drucker(2003)*

Leadership is an essential characteristic of project manager. PMBOK® defines leadership as ‘the ability to get things done through others’.

In a good way, actually. By inspiring people to do the work. By making people wanting to do the work. This is typically done by conveying the vision of the project and the value that team members will be creating by successfully completing the project.

Leadership is all about effectively conveying the big picture and inspiring team to achieve the goal.

Taking the example of University project from Acquire Project Team process, make each team members realize that they are part of the solution that impact several hundred thousand people year on year in getting through college. Such visibility will bring in holistic approach and team members will be able to work around the issues on the project to achieve common goal of the project.

Leadership is also about showing people how they can achieve their own objectives by aligning themselves to the project’s objectives. If a senior engineer on the team has a career goal to be an architect showing him that getting in

involved in the design phase, putting in the additional effort to acquire required knowledge and contributing can help him grow into that role.

## 2. Team building

*“None of us is as smart as all of us.” – Ken Blanchard(2011)*

A project involves different people such as customer, sponsor, vendor, consultant, PMO, quality assurance team, and management. The core team that does project work interacts with most of these people, and more importantly with each other on the team day after day. It is important that team members feel safe, collaborate well and trust each other. The goal of team building exercises is to develop a project environment that helps people bond with each other.

Sharing information, involving people in decision making, keeping the team in the know-how of customer’s business related news, keeping open both upward (with management) and downward (with subordinates) communication channels, resolving conflicts in a timely and fair manner, protecting team members from external disturbances are some of the actions a project manager do in this regard.

Project manager can also showcase team’s good work on public platforms such as all-hands meeting in the organization to make team feel proud of the work they are doing as a unit. Highlighting customer appreciation team has got, and specific recognition or rewards received are also good ways to make the team feel important.

A team that gels well will have its members helping each other during tough times and sail ahead.

## 3. Motivation

*“Motivation will almost always beat mere talent” –*

*Norman Augustine(2016)*

When people know that their work is making a difference – to the customer, end users, company, as well as themselves – they stay motivated. People have various personal and professional needs and goals, and they need to be satisfied on that front. For some people it may be about financial compensation, for some it is sense of accomplishment by doing challenging work, for some it could be hierarchical growth and for others it could be getting recognition of their hard work. Knowing what motivates each of your team members and helping them get those things will keep the team motivated.

#### 4. Communication

*“The single biggest problem in communication is the illusion that it has taken place.”*

– *George Bernard Shaw(1950)*

While good communication seems easier to achieve, it can create a lot of issues on the project.

Communication is a two-way street. Open and honest communication from top-down will ensure the same bottom-up. Which means to say that when a project manager communicates decisions and information transparently with the team, team members feel comfortable about opening up with the manager about their concerns, issues and even provide constructive suggestions.

Open communication practice builds mutual trust amongst team members.

According to a web poll conducted by CompTIA, nearly 28% of more than 1000 respondents said that poor communication is the number one reason causing projects to fail!

Project manager should identify efficient communication channels with each of the stakeholders, keep cultural differences in perspective and communicate information on a regular basis.

#### Active Listening

This is a communication technique where the listener gives constant feedback to the speaker, by re-stating what they have understood. This way both speaker and listener make sure that the message has been communicated as intended.

To practice active listening the listener should overcome the urge to ‘waiting to speak’ and instead focus on really understanding what is being spoken, and channelize her energies to relay back the communicated information by phrasing in their own words.

#### 5. Influencing

*“Example is not the main thing in influencing others. It is the only thing.”*

— *Albert Schweitzer(1965)*

Influencing is about using your relationship with team members effectively to ensure they collaborate and cooperate well on making right decisions and achieving project goals.

First and easiest way to influence team members is to lead by example. If you expect team to turn up early for work start doing it yourself. If you expect team to not cut corners, subtly show instances where you went that extra mile to finish some work where cutting corners was easy and nobody would have noticed. Being subtle is the key, else people may take you as show-off.

Keep team's interest in mind while making decisions and let them know. When decisions do not go in their favor, they would respect you for your effort

## 6. Decision making

*“Decision is a sharp knife that cuts clean and straight; indecision, a dull one that hacks and tears and leaves ragged edges behind it.”*

– Gordon Graham(2001)

Decision making is about how does a project manager goes about handling issues on the project. These are few basic techniques in decision-making: Command – this type of decision making is authoritative. Project manager's decision is final, and team is expected to follow it.

Consultation – is when you consult your team members and stakeholders and then take the most rational decision in the best interest of the project.

Consensus – means that a decision that appeals to the majority of the team is taken. This may not be the best way to make – means that a decision that appeals to the majority of the team is taken. This may not be the best way to make decision because decision of majority may not necessarily be in the best interest of the project.

Coin-flip (random decision) – this is the least preferred one and best avoided. Decisions made using this technique do not generally gain respect of team members, since there is no reasoning involved.

Time constraints, trust, quality and acceptance are four contributing factors to decision style.

The other option to making decision is to follow six-phase decision-making model:

Define problem in a clear and concise way

Brainstorm multiple solutions and ensure that decision is not arrived in haste

Define evaluation criteria, explore pros and cons of each of the alternative solutions, choose the best solution



Figure out who are involved in implementing solution and who gets affected , involve them to gain acceptance of this solution

After implementing the solution, analyze, evaluate and list lessons learned

Evaluate to what extent project objective was achieved by this solution

## 7. Political and cultural awareness

Many a teams have geographically separate team (virtual teams) and/or teams that is co-located but consists of people from different cultural backgrounds. Knowing each team members and their backgrounds helps project manager to communicate in a fashion that makes it easier for the members. When people from different countries work together, project manager should understand their way of working, and the environments that they feel most comfortable working with.

Project politics can be positive or negative factor for the team. Project manager should ensure that authority is used skillfully and in a right manner by self and other senior members on the team.

## 8. Negotiation

*“Negotiation means getting the best of your opponent.”*

– Marvin Gaye(1984)

Negotiation is a good conflict resolution skill. While there are issues on the project you as a project manager should ensure that you listen to both the parties and make decisions in a fair and just manner. And that both parties know about this.

While negotiating it may not be always possible to please both parties.

Attempt for a win-win situation to both parties, where each one is able to compromise to certain extent in order to come to a resolution.

Listening, stating, and articulating problems might themselves present solutions, which neither parties could have considered earlier. It is important to NOT take sides while negotiating and be fair and just in arriving at a resolution.

## 9. Trust building

A true leader is the one who earns his team’s trust, and can trust his team without a doubt in his mind.

*“The best way to find out if you can trust somebody is to trust them.”*

- Ernest Hemingway(1961)

A leader can earn trust by sharing information with team, being transparent about decisions, getting people involved in decision-making process, being genuinely interested in team members' growth and by helping people achieve their goals.

A leader also need to be able to communicate straight, without beating the bush, and be receptive to team member's suggestions and concerns. Listening to their concerns, empathizing with them and making earnest attempt to solve their problems will also give you team members' trust, even if you are not able to solve some of their issues.

## 10. Coaching

*"A coach is someone who can give correction without causing resentment."*

— John Wooden(2010)

Coaching is about helping team member discover their own potential and elevate themselves from their current position of skill level to next position.

Coaching includes counseling to help people change their mindset about a situation and help perform better.

Coaching can be a great motivator for team members. Knowing that they are being helped by an expert makes them take those additional steps to achieve their goals. Coaching can produce amazing results and you would see that most of world-class sportspeople have coaches who help them achieve extraordinary results. While training is focused more on increasing a specific skill level, coaching deals with increasing skill level as well as overcoming one's own mental ghosts and self-doubt to excel in their field.

## 11. Conflict management

*"The better able team members are to engage, speak, listen, hear, interpret, and respond constructively, the more likely their teams are to leverage conflict rather than be leveled by it."*

— Runde and Flanagan(2012)

Conflicts are part of any system, more so when people are involved. Conflict management might easily be one of the core skills a project manager must master in order to manage projects well.

There can be zillion reasons for a conflict to surface on project team – competition to get a scarce resource, communication gaps, unclear requirements, system downtime, personnel policies, and so on.

If managed well a conflicting situation can bring together people and make them more focused towards achieving project objectives.

### **2.3.1.2 hard skills**

Hard skills are the technical aspects of the project manager's role and include development of tangible deliverables such as project schedules, budgets and work breakdown structures. Hard skills often involve the use of templates and tools such as scheduling software, spreadsheets and modeling tools.

Below are some of the frequently required hard skills in construction project management:-

#### **1. Contract Management and Procurement**

The Project manager should be knowledgeable about activities required to ensure fulfillment of the contract and the relevant laws. They should also be familiar with the process of converting business or project needs into outsourced goods and services, and how to select the best vendors. They should know how to manage stakeholders in the supply chain.

#### **2. Risk Management**

Project Management Institute (PMI) defines project risk as 'an uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives'. Risk Management involves risk identification, risk analysis and risk prioritization and control. It seeks to monitor and manage risks to minimize or avoid their negative effects on the achievement of project objectives. Project Managers often use the National Institute of Standards and Technology (NIST) Risk Management Framework (RMF - see below) to manage risk in a structured manner.

#### **3. Monitoring and Evaluation and Project Performance Metrics**

M&E is the continuous assessment of project implementation in relation to agreed schedules with a view to improve current and future management of outputs, outcomes and impact. It provides managers and other stakeholders with continuous feedback on implementation and identifies actual or potential successes and problems as early as possible to facilitate timely adjustments to project operation. Evaluations are often retrospective and are best done by an independent person or body.

A metric is a standard of measurement by which the efficiency, progress, performance, productivity or quality of a project or product can be assessed. Project management metrics help in assessing the status of ongoing project in te

rms of schedule, cost and profitability. The metrics also help foresee any potential risks and nail down problems much before they become severe. They also help monitor the profitability of a project, its team productivity and quality of work outputs.

Some Project performance metrics include: Schedule and Effort/Cost Variance, Planned Value (PV), Earned Value (EV), Schedule Variance (SV) and Resource utilization.

#### 4. Budgeting and Scheduling

A budget indicates how funds will be utilized and expended during the lifetime of a project. Within a budget, all the efforts used in producing the deliverable of each task in the project are defined in terms of cost and the schedule shows the sequence of the activities.

Once approved, the project manager has to monitor the budget and the schedule milestones and ensure adherence to it. The budget and schedule are among the project control tools.

#### 5. Planning

A project plan is a formal, approved document used to guide both project execution and project control. According to PMBOK (Project Management Body of Knowledge), a project plan documents the planning assumptions and decisions, facilitates communication among stakeholders, and document approved scope, cost, and schedule baselines.

A Project plan should answer four basic questions about the project: what work is being done? Why is it being done? Who is doing it? When will it be done?

Planning tools include WBS (Work Breakdown Structure), Program Evaluation Review Technique (PERT) and Gantt Charts and Critical Path Method (CPM) charts.

### **2.3.2 Comparing Construction Project Management Soft Skills and Hard Skills:-**

Soft skills are often phrased using verbs. They reflect actions :managing expectations, influencing, negotiating, problem-solving, and so forth. Hard skills generally are phrased using nouns, as they are aligned with the resulting deliverables or outputs produced: schedules, budgets, earned value metrics, risk management reports, variance analysis, etc.

The verbs and nouns listed here are by no means exhaustive, nor are they mutually exclusive. Nonetheless embedded in this discussion is a

fundamental assumption that to be effective project managers, we need both soft skills and hard skills, and research supports this assumption.

Table 2.1. Comparing Construction Project Management Soft Skills and Hard Skills:-

Soft Skills	Hard Skills
<b>Relate to interpersonal skills and their challenges</b>	Often involve the creation of a tangible deliverable
<b>More intangible and less visible</b>	More technical in nature
<b>Typically employed without the use of tools/templates</b>	Often incorporate the use of a tool (scheduling software; spreadsheets; presentations) or deliverable templates
<b>Soft skills (ing)</b>	<b>Hard skills (noun)</b>
<b>Managing expectations, Leading, Decision making, Influencing, Negotiations, Resolving conflicts, Problem solving, Motivating and Communicating</b>	Schedules, Work breakdown structures, Critical path diagrams, Variance analysis, Metrics, Earned value, Budgets, Dashboards and Risk management

### 2.3.3. Reasons for projects failure:-

#### A. Top Ten Reasons Why Projects Fail:

Studies by the Standish Group, Gartner, and others all point out the same fact: projects very often fail. They are late, over-budget, and/or they fail to deliver the product they were designed to produce.

Knowing what can go wrong is helpful to preventing future mistakes. If we look at common causes of project failure and assess the degree to which we are equipped to overcome them, we can avoid pitfalls when they appear.

On a similar note, to be successful we need to define the measures for success, such as satisfying the requirements of stakeholders, delivering business value, and meeting time and budget expectations, and then make sure that we implement practices to be successful while avoiding common pitfalls



Shown above is a list of top ten reasons for project failure, assimilated from research published by the Standish Group<sup>1</sup> and gantthead.com contributors. Along the left and the right sides of this list, we have two barometers with a rough estimate of the degree to which soft skills or hard skills contribute to each failure factor. The barometer levels are not intended to be exact by any means, and they are based on the author’s subjective classifications. Nonetheless some themes emerge.

“Inadequately trained or inexperienced project managers” appears at the top as the primary reason for project failure. If you asked 100 project managers if they felt they had sufficient training or experience in project management, in all likelihood the majority would say yes, but yet this perception runs counter to these studies. For this failure factor, the hard and soft skills barometers are about even; to be successful, project and program managers need to employ both hard and soft skill techniques. Similarly, properly setting and managing expectations, and selecting appropriate methods for one’s project involve roughly an even balance of hard and soft skills as

Figure (2.8) Reasons for projects failure (www.projectmgmt.brandeis.edu( 2012))

The remaining factors on the list are less general than the blanket factor of project management inexperience or inefficiency, and they are a bit more

useful because they help to reveal not only reasons for failure but also hints about how these factors may be overcome.

Project plans and effort estimates are outputs primarily of hard skills, while leadership, communication, culture and ethics are generally associated with soft skills. Yet things aren't so black and white. Let's take poor planning. Suppose we determine that we need more education and experience in developing comprehensive project plans. How might we build on these skills?

- We can learn specific steps for how to define a work breakdown structure (WBS) that reflects project scope.
- We can study how to migrate a WBS into a scheduling tool.
- We can use this tool to assign and analyze resource assignments and other dependencies.
- We can crank out critical path diagrams
- In short, we can try to master the technical skills involved in developing a solid project schedule.

These cannot be our sole areas of focus, though. Consider, for example, how do we go about defining a comprehensive WBS? We may have mastered the skills necessary to build a WBS that complies with a textbook definition of completeness, but unless we communicate scope expectations with our stakeholders, facilitate negotiation discussions to ensure that the scope is attainable and based on reality, and set expectations within the organization about the resources required to achieve the scope, in effect our perfect WBS has no value. The hard skills required to build the WBS have the higher barometer, but without applying the right set of soft skills, we won't be successful.

Similarly let's take poor leadership. If we self-assess and determine that we need to sharpen this interpersonal skill, we first need to determine if the traits of leaders can be learned, or are people born leaders, to coin a phrase? Effective leaders:

- Create an image of charisma and maintain an optimistic viewpoint.
- Use passion as a catalyst to generate enthusiasm.
- Communicate with the entire body, not just with words.
- Inspire others and bring out the potential in others by tapping into people's emotions.

Research shows that people can learn to exhibit these traits. It's clear, though, that as leaders, we need to have solid fundamental skills in the domain in which we are leading. An optimistic leader who tries to

enthusiastically lead a team of resources to project completion will not be successful if he or she does not understand the intricacies of the project's scope, deliverables, schedules, and budgets. This leads us to the notion that perhaps the best leaders may come from the ground up, meaning they have strong prerequisite knowledge that gives them the ability to make sound decisions while they lead others to project success. If they are lacking in any of the prerequisite knowledge, then they need to surround themselves with key contributors who can assist them in filling in these gaps.

### **B. Key Challenges for Construction Project Managers:-**

Construction projects are notorious for being over-budget, late and saddled with scope creep, as well as for poor communication protocols and inadequate controls around scope change management. It is vital that a construction project manager take a proactive approach from the moment of his or her appointment. Project management plans, even for relatively modest construction projects, should exhibit a level of detail greater than might be deemed appropriate for other types (non-construction) of projects of equivalent cost and duration.

#### **2.3.4 Balancing hard and soft skills in Construction Project Management:**

Commonly referred to as “soft skills,” interpersonal skills include traits such as leadership, communication, negotiation, expectations management, influencing, problem-solving, and decision-making. Soft skills are largely intangible, not associated with a deliverable or a concrete output, and they are generally employed without the use of tools or templates.

“Hard skills” on the other hand, that is, the more technical aspects of the project manager's role, generally involve the creation of a tangible deliverable such as a work breakdown structure (WBS), project schedule, critical path diagram, earned value reports, project budgets, dashboards, and so forth. These skills are more technical in nature, and they often incorporate the use of tools such as project scheduling software, spreadsheets, modeling tools, and a myriad of deliverable templates available.

Many people feel more comfortable in one of these areas or the other. Some people by their nature are effective communicators and leaders; they may be less adept at creating dependency diagrams or in-depth budget tracking reports. Others may thrive in the creation of project management deliverables such as schedules, risk management reports, critical path analysis, and variance analysis, but they may lack the abilities to effectively lead resources on their teams, or to appropriately tailor and communicate project management deliverables and status to the appropriate audiences.



Pause for a moment and perform a quick self-assessment. Are you equally comfortable delivering a 15-minute presentation to a senior VP within your organization as you are with using tools to determine budget variances and corrections required? Are you equally adept at negotiating with contracted vendors as you are with developing effort and cost estimates for resources? Is there a distinction between art and science being made here?

#### **2.3.4.1. Constant Crossovers**

##### **Work Breakdown Structure in MS Project**

- Communicating with team and sponsor: scope development
- Negotiating with team, sponsor, external parties: scope refinement, prioritization, and approval
- Influencing: organizational
- Problem-solving: dependencies, critical path, achieving constraints
- Leading and decision-making: resource assignments, team Development priorities; resource acquisition

##### **Communicating Status to Stakeholders**

- Schedules
- Budgets
- Issue Lists
- Risk Lists
- Dashboards

Creating a WBS is generally classified as a hard skill. If I was creating a WBS for a project that I will execute alone, with only myself involved and with my being the sole source for the requirements and all project decisions, then perhaps the creation of a WBS would land solely in the hard skills court.

There is a crossover of skills required in the context of the WBS, though, on the far majority of projects where we as project managers are not the sole team member. As discussed above, we can't develop a WBS unless we understand the specific business objectives of what we are trying to achieve and the scope to be constructed that will realize those business objectives.

To determine the business objectives and the scope to be modeled in the WBS, we need to work with numerous and disparate stakeholder groups, all of whom will have their own assumptions about priorities, and many of whom will introduce constraints. We need to apply leadership, organization, and negotiation skills to arrive at a mutually agreeable definition of scope reflected in a base lined WBS. Once obtained, how then do we achieve it?

To break the WBS down into a resource-leveled schedule with milestones and dependencies:

- We may need to further negotiate within and outside our organization for the appropriate resources, likely applying influencing skills to obtain the best team members available.
- We'll need to apply problem-solving skills to reconcile the embedded conflicts between scope, time, cost, and quality, and to develop response plans for risks related to the WBS.
- We'll need to exhibit strong leadership skills to guide and develop team members through project execution and decision-making skills to recommend appropriate corrective actions when variances arise.

By definition, projects change, and we need to respond to changes, primarily using soft skills. There are more factors involved, but hopefully this illustrates that a seemingly hard skill such as developing a project schedule simply cannot be done without applying soft skills as well.

Similarly, let's consider communicating. A typical project manager spends approximately 85% of their time communicating! Effective communicators may seem to have been born with a gift; they always know the right thing to say at the right time, at the right level, and with the right audience members. They know how to plan properly to design and implement communication

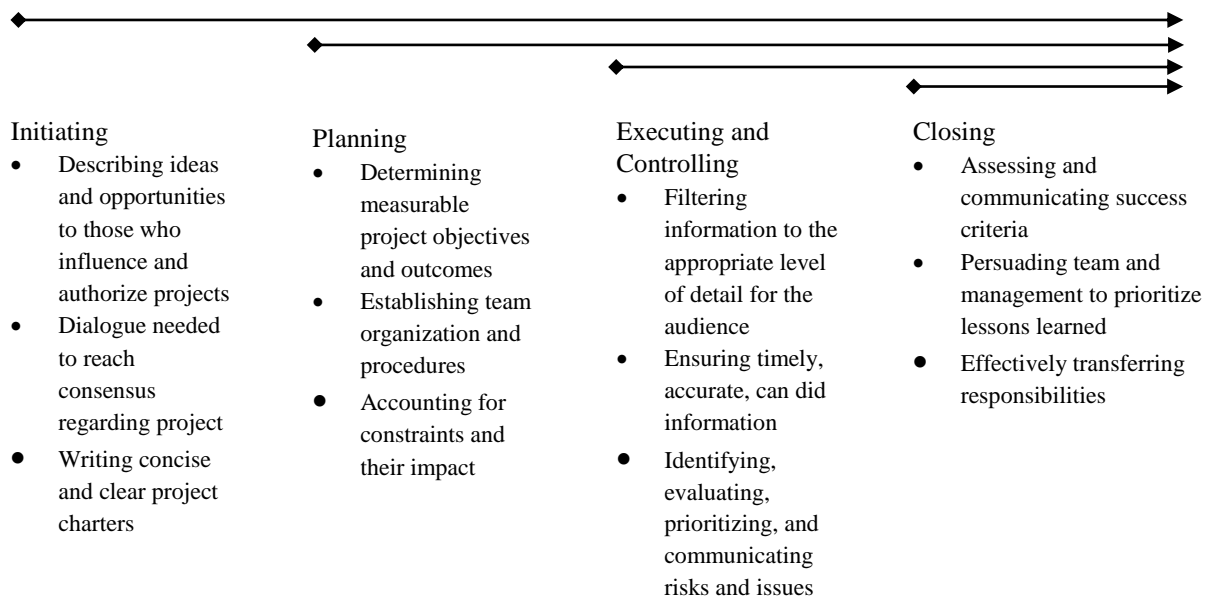
strategies. They know how to actively listen, and to recognize the role of perception in overcoming perceptual differences as a speaker and a listener.

Many of these aspects of effective communications can be taught. We can learn how to deliver information, how to communicate in order to persuade, how to strengthen our active listening skills, how to be aware of and effectively express body language. We can try to master all of these skills in the context of effective communication, but fundamentally we need to have solid understanding of what we're communicating. It sounds so basic – but ask yourself if you have ever worked with a project or program manager, or a member of a senior management team, who tried to deliver a status update without full knowledge of what he was speaking to? The message may be delivered well from a stylistic point of view, sounding polished, but the content of the message is way off the mark. Those with specific knowledge of the content will immediately see that the communicator is essentially trying act his way through the status update. The crossover theme applies. To be most effective applying the soft skill of communicating status to stakeholders, for example, we need sharpened hard skills to effectively speak to schedules, budgets, issues, risk lists, and so forth.

Both of these examples illustrate methods where we can balance hard and soft skills to combat many of the top reasons for project failure, including failure to adequately identify and document requirements, poor planning, poor effort estimation, and inadequate communication

### 2.3.4.2 Threads

Applications of hard and soft skills crossover throughout the project lifecycle constantly, to the point where the majority of the soft skills become threads employed from initiation through closure.



For example, suppose we are tasked to write a project charter for presentation to a CIO who will ultimately approve or deny our project. We can select a template for a project charter and try to fill it in to the best of our ability. How do we perfect it?

- We must frame the project charter so that the project objectives clearly articulate measurable and achievable business value to the organization.
- We must account for potentially conflicting opinions and inputs from other stakeholders in the organization and put forth proposals that reflect the achievement of consensus.
- We must write clearly and concisely, recognizing that those who approve projects are not likely to read 10 to 15 pages of narrative but rather a 1-2 page summary underscoring the potential business value to be delivered.

Similar examples can be reviewed as we move throughout the life cycle. In planning we need to listen and problem-solve to identify and minimize known project constraints. In executing and controlling we need to filter information produced to the right level of detail required by our audience. In closing we need to use persuasion skills to ensure that a comprehensive post project review analysis is conducted.

Communications.Leadership.Decision-making.Influencing.Negotiating. They're not one-time endeavors but threads applied throughout a project. Properly applied we can help combat reasons for project failure such as expectations management; misalignment between project teams and organizations they serve; and poor leadership.

#### **2.3.4.3 Balancing Techniques:-**

While seemingly an exclusively soft skill, communicating in the context of a project or program can be improved with tools and techniques. We've all seen the impact of ineffective communication on all aspects of the project life cycle:

- Information fails to get to the people who need it in time for them to use it.
- False or incomplete information is distributed and used as the basis for decision-making.
- Assumptions are confused for facts.
- Information distributed becomes a spark that ignites politics and conflict.

- Crucial information is withheld.
- Huge amounts of time are spent in unfocused, ineffective meetings.

Let's approach the creation of an effective communications infrastructure as a key component of our project management tasks. We can assess our stakeholders and their communication needs.

- Are they a key part of the project or are they peripherally involved?
- What types of information do they need to receive, with what frequency?
- What are they most concerned about?
- What is the most appropriate way to communicate the various project outputs they should receive?

A communications matrix can come together quite quickly to record answers to these questions, helping us to manage our project. However, we should prioritize time to assess its effectiveness.

A project manager may indicate on a communications matrix that he plans to email a project requirements document to the sponsor for approval, with a response requested in three business days. The project manager completed the entries of the matrix, but is this the most effective choice? Would the sponsors be likely to read and absorb all aspects of the requirements document? Would they even read it all? Why expend the effort producing a document that you need approved if it will remain unclear if the approvers even understand what they're signing? We can adapt our approaches and have a review meeting where stakeholders perform a walkthrough of the document, with questions, suggestions, and points requiring clarification noted. When signatures are eventually obtained, all can have confidence that there is meaning behind the signatures.

We can use matrixes and planning grids to help steer our decisions related to effective communications, once again balancing hard and soft skills. The right communication strategy will help overcome many top reasons for project failure, assisting in preventing and resolving issues, managing expectations, and resolving conflicts. The approach should be proactive and targeted. It includes delivering the needed information to the right stakeholder at the right time, applying a direct, collaborative, professional, and respectful communication approach, and using an appropriate communication technique for the task at hand. These and related techniques are risk mitigation strategies to help us overcome some of the top ten reasons for project failure, including ineffective communications and inadequate or misused methods.



diagram 2.1.foundation of project management . (www.projectmgmt.brandeis.edu( 2012))

### A. Sources of Conflict:-

Conflict is the result of disagreement, referring to any situation in which there are incompatible goals, thoughts, or emotions within or between individuals or groups.

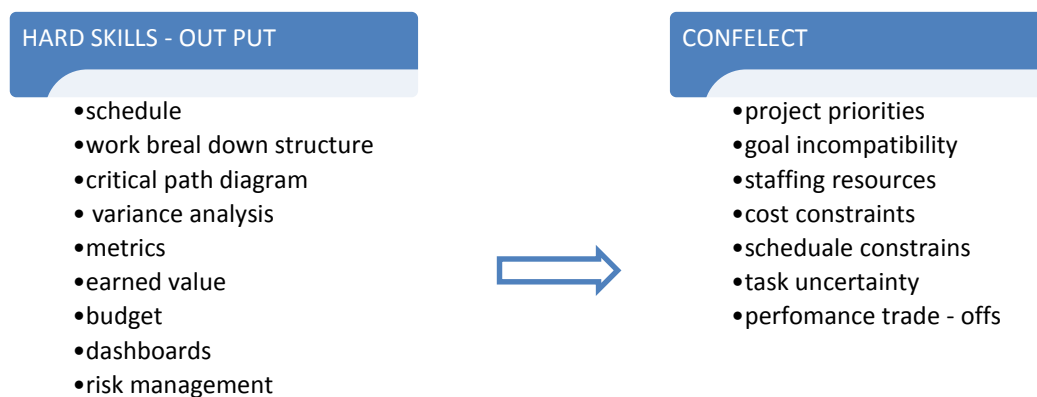


diagram 2.2.Sources of Conflict.(www.projectmgmt.brandeis.edu( 2012))

Essentially any hard skill output has the potential to be a source of conflict on a project. Individuals reviewing a project schedule may have different priorities or goals in mind; they may be competing with the project for resources; they may be pushing to cut funds expended, or to deliver the

product sooner; they may have potential customers looking for a particular feature-set sooner than reflected in the current schedule.

Sources for conflict are numerous. We need to recognize, though, that conflict is an inevitable consequence of organizational interactions, regardless of organizational size, and it can be beneficial.

Do you know some people, though, who avoid conflict like the plague? They might go out of their way to say whatever needs to be said to make everyone happy, all the while essentially burying the conflict temporarily in the sand until another issue is bound to resurface. We need a plan to deal with conflict directly.

### **B. Conflict Handling Modes**

There are several conflict handling modes, and knowing which is the most appropriate to apply in certain situations is an essential part of their effectiveness.

For example, we can **withdraw** or retreat from an actual or potential disagreement. Doing so may be useful for a cooling-off period, but it's not the best long-term strategy since the conflict is not addressed or resolved.

We can try to **smooth** things over, de-emphasizing or avoiding areas of difference and emphasizing areas of agreement. Similar to withdrawal, this is useful when a cooling-off period is needed but it similarly does not resolve the conflict.

We can search for **compromises**, bargaining and searching for solutions that bring some degree of satisfaction to all parties in the dispute. Everyone may not be perfectly satisfied but they can live with the solution.

We can use **forcing**, where we exert our viewpoint at the potential expense of another. This may be applicable when time is short, stakes are high, and there are no alternatives. The project manager must have a high-level of authority for this to be effective, however.

We can use **confrontation**, where we face the conflict directly and work with affected parties through the areas of disagreement. This takes time, and once again the project manager needs the right level of authority.

Why do we need a firm grasp on conflict resolution techniques? Essentially all of the top ten reasons for project failure have at their roots an underlying conflict. Conflicts can arise in planning and estimating, in managing expectations, in working with stakeholders to define requirements, in working with teams from different organizations and cultures, and so forth.

## **2.4.Previous studies:-**

### **2.4.1. Executive Perceptions of the Top 10 Soft Skills Needed in Today's Workplace**

#### **2.4.1.1 Abstract**

Hard skills are the technical expertise and knowledge needed for a job. Soft skills are interpersonal qualities, also known as people skills, and personal attributes that one possesses. Business executives consider soft skills a very important attribute in job applicants. Employers want new employees to have strong soft skills, as well as hard skills. This study identified the top 10 soft skills as perceived the most important by business executives: integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethic.

#### **2.4.1.2 Purpose and Problem Statement**

The purpose of this study was to determine the critical soft skills that employers want from their employees so that business educators can promote these skills in their curriculum to improve the employability of graduating business seniors.

#### **2.4.1.3 Summary**

Research suggests that soft skills are just as good an indicator of job performance as traditional job qualifications (hard skills). Hard skills are the technical abilities and knowledge that one possesses, whereas soft skills are those personal attributes and interpersonal qualities that are intangible. Although soft skills are important to recognize and improve, hard skills are critical on the job as well. While employers exceedingly want new employees to possess strong soft skills, the hard and soft skills must complement one another.

This study identified the top 10 soft skills as perceived the most important by business executives: integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethic.

Business executives consider interpersonal skills a very important attribute in job applicants. They want employees who are honest, can communicate well, get along with others, and work hard.

#### **2.4.1.4. Conclusions and Recommendations**

Corporate recruiters want candidates with soft skills who add value with their soft skills, and also have the ability to make a difference in the



workplace. Business employees need to communicate effectively, get along well with their coworkers, embrace teamwork, take initiative, have high work ethic, and portray professionalism.

This study identified the top 10 soft skills attributes deemed critical by business executives. Even though all of the soft skills appear very important, not all are perceived by business executives to be equally important. This study found that communication, integrity, and courtesy are the most important interpersonal skills for success.

Soft skills are critical in today's workplace and should be viewed as an investment. Even though interpersonal skills are critical for employers, many job applicants and current employees in business do not have adequate interpersonal skills. Organizations need to train current employees to enhance their soft skills.

Although we see many challenges, we also have many opportunities to prepare business students for today's workforce. Business educators need to understand the importance of interpersonal skills for their students and include soft skills in their curriculum.

Instructional strategies and methods can be applied in the classroom to enhance interpersonal skills. Soft skills and hard skills should be integrated to create a well-rounded business graduate.

Further research is needed to study interpersonal skills and determine if other soft skills are deemed as important as the attributes found in this study.

## **2.4.2. Soft Skills Implementation in Construction Management Program: A Comparative Study of Lecturers and Students Perspective**

### **2.4.2.1. Abstract :**

This study aimed to identify the soft skill implementation problems in Construction Management Program based on lecturers and students perception. A total of 95 construction management students and 44 construction management lecturers participated in this study. Data were collected using a questionnaire. Among the variable studies were the understanding of terms and definition, soft skills and general attitudes. Result of the study shows that there is a mismatch between students and lecturers perception in soft skills implementation. Future study need to be carried out confirm this mismatch in identifying the gap of soft skills in construction management program based on industry, lectures and students perspective.

#### **2.4.2.2 A Objective of the Study:**

This study aimed to explore the construction management students' and lecturers' perception and understanding of soft skills implementation in Malaysian public universities.

#### **2.4.2.3 Methodology :**

This study was extended from study by [14] and used a descriptive research design. Data were obtained through the administration of questionnaires at 3 public universities in Malaysia (USM, UTHM and UiTM). In Malaysia, there are only 4 public universities offered the construction management courses for undergraduates. They are University Teknologi MARA, University Tun Hussein Onn Malaysia, University Teknologi Malaysia and University Sains Malaysia. However, UTM was not participated in this research because the Faculty of Built Environment has just changed their curriculum from Building to Construction Management early of this year (2012).

#### **2.4.2.4.Disscussion and conclusion:**

Results of the study indicate that there were mismatch between students and lecturers perception towards soft skills implementation.

While the students are familiar with terms, lecturers were having problems in understanding the soft skills terms of references. There is a percentage that lecturers don't know the terms and know the terms but don't understand it fully. Even the percentage is not high, the argument about the soft skills preparation before the implementation is arise. Universities should prepared the lecturers with seminar and training before the soft skills implementation and having continues and extra seminar in improving lecturers understanding towards soft skills.

The findings provided some significant insights that universities and industries were not attached together in improving the students' soft skills. This is because, even half of the students have attended their internship and their perception toward what soft skills that was most important to the industry is difference with lecturers' perception. Which soft skills are important to the industry, students' perception, lecturers or both? In planning the curriculum, industries were invited to brainstorm the soft skills elements and curriculum. However, the needs of industries are kept changing by time to time and universities were just left behind [1]. Industries s and universities should always keep in touch, especially in discussing the needs of soft skills for students. The mismatch between respondents' perception towards soft

skills that being taught well and important to the industries shows that, the soft skills element need to be re-learnt in order to fulfill the industry's needs.

Lecturers and students were having problems in soft skills implementation process especially in understanding the assessment. This problem led to the question, does lecturers assessment towards students soft skills were valid in previous semester? If they don't really understand the assessment process, how do they assess their students?

There were negative perceptions from students towards lecturers' attitudes in implementing soft skills. The mismatch arise when lecturers were agreed with what they doing right, somehow the students disagree with it. What are the problems between lecturers' perception and students' needs?

Further research will be carried out in identifying soft skills gap between, industries, academia and students.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

This chapter includes the procedures have been relied upon in the implementation of the field study , a description of the sample community and characteristics of the sample ,the main tools of the study (questionnaire) and the statement of statistical methods used in the treatment of study results.

#### **3.2. Research population:-**

The research population is engineering consulting, contracting companies in all disciplines and engineering collages (civil engineering, construction management) in Khartoum \_capital of Sudan.

#### **3.3. Research sample:-**

A heterogeneous sample was chosen to represent different opinion trends within the population and don't care to represent these trend proportionately what we want to represent is trends and ideas not individuals. sample size was calculated using "sample size calculator application " as the sample consist of employees, managers and last year students.

#### **3.4. Research Methodology**

\* First:-

(3) questionnaire forms were adopted to collect the data required for the study, then they were divided into three categories with a view to identify managerial skills and their importance in the view of employees, managers and students and the role collages and curriculums in processing skills .

\* Second:

Secondary sources: it consists of books, references, previous researches and internet sites which deal with subject of study .

#### **3.5. Design of the questionnaire:**

The questionnaire consists of

-Part 1 General information describes the nature of the target group and the most important information about it.

-Part 2 determines how each group know and understand the managerial skills and the terminology used.

-Part 3 aims to know the importance of managerial skills from the view of each category and its impact on the category and the extent of the impact of experience and gender on the use of these skills in addition to other questions that serve the research

-Part 4 aims to assess the skill level of each category and identify the skills most needed for training.

### **3.6. Questionnaire arbitration and piloting:**

The questionnaires were presented to a doctor at Sudan University of Science & Technology to arbitrate them, and then they have been distributed to a part of research sample, errors and negatives were found and have been corrected and questions formulated in a final preparation for the questionnaires.

### **3.7. Questionnaire distribution:**

250 copies of electronic questionnaires using Google forms were distributed to the research sample, which included **40** managers,**130** employees of engineering companies and **80** last year students at civil engineering college construction management specialization.

The questionnaires were designed in English language then translated to Arabic language to make it easy for the research sample because it's the mother language in Sudan , then they translated again to English after data compilation .

### **3.8. Data compilation and analysis:**

250 copies of an electronic questionnaire were distributed to the research sample, **218** were retrieved questionnaires **32** managers,**112** employees of engineering companies and **74** last year students at civil engineering college construction management specialization.

The statistical analysis of the results of the questionnaire was based on the Google tables application and Microsoft Excel for analysis.

# CHAPTER FOUR

## ANALYSIS AND DISCUSSION:

### 4.1. Managers questionnaire:

1. Questionnaires have been retrieved 32.
2. Age range (35 to 60) with mean 47.
3. gender :-

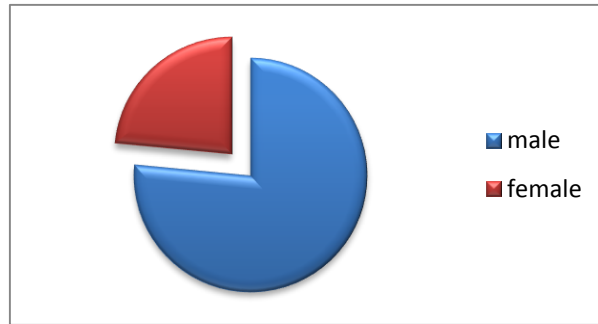


diagram (4.1) Gender of managers

- 32 Managers were surveyed in construction engineering filed, their age 35- 40 with mean 47, 76% are males and 24% are females.

### 4. Experience years :-

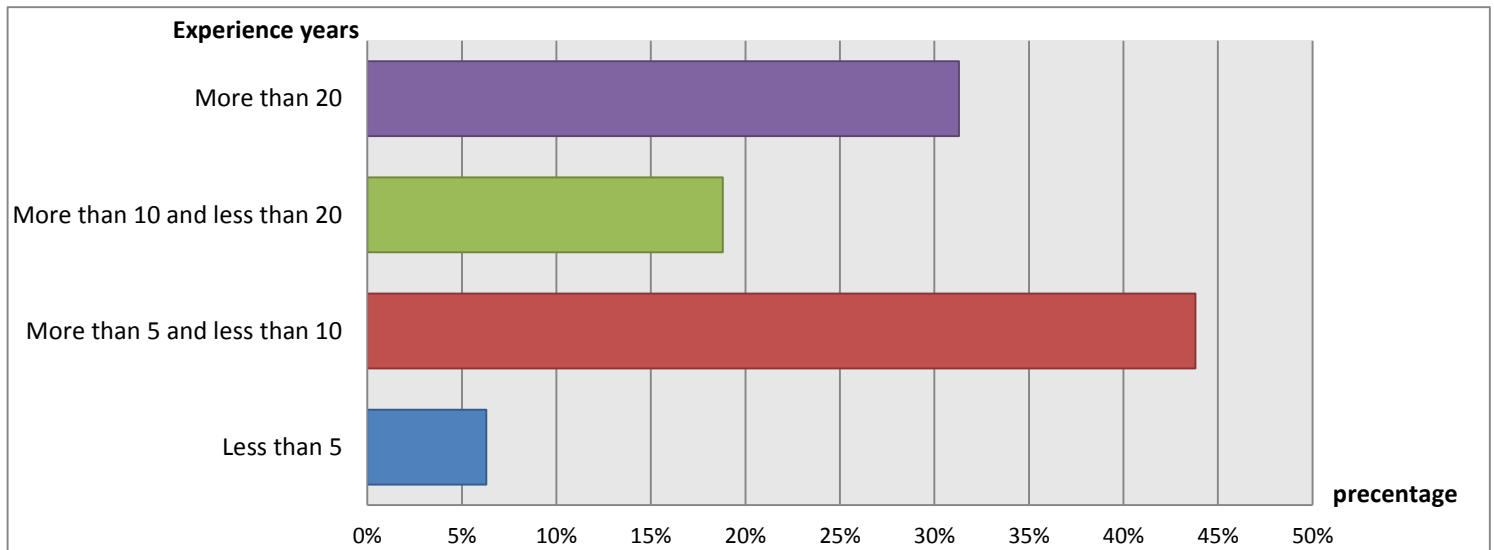


diagram (4.1) Experience years

- 31.3% are more than 20 years experienced, 18.8% are more than 10 and less than 20 years experienced, 43.8% are more than 5 and less than 10 years experienced, and 6.3 % are less than 5 years experienced.

## 5. Are you familiar with these terms :-

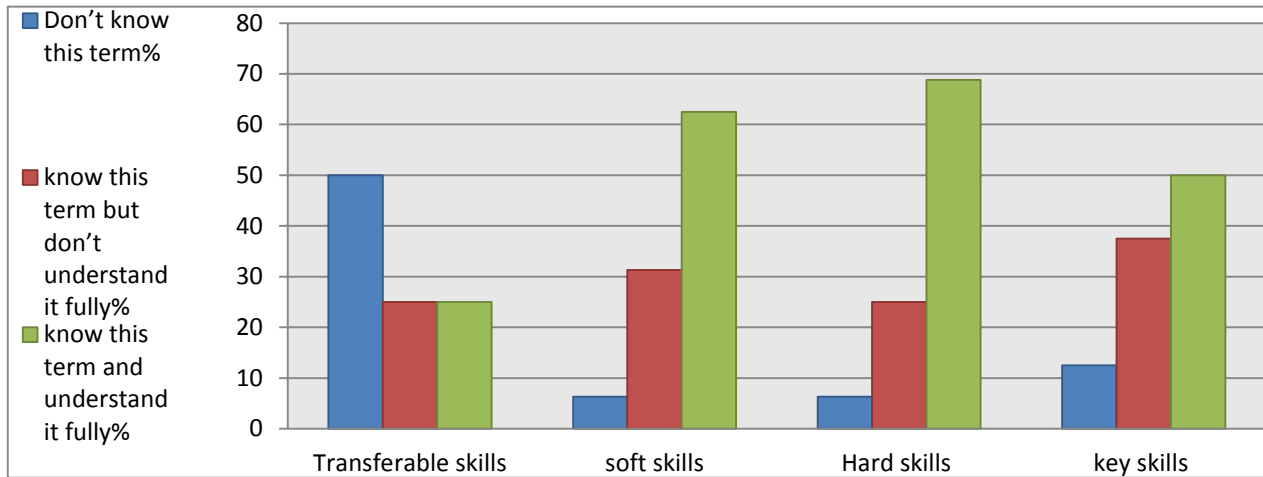


diagram (4.3): managers' familiarity with terminology

- From the whole managers 87.5% know the term key skills, but 50% don't know the term transferable skills, the term soft skills is known for 62.5% and they fully understand it , 31.3% know it but don't understand it fully , 6.3% don't know it, while 6.3% don't know the term hard skills 68.8% know it but don't understand it fully ,and 25% know it but don't understand it fully.

## 6. How important you think soft skills are :-

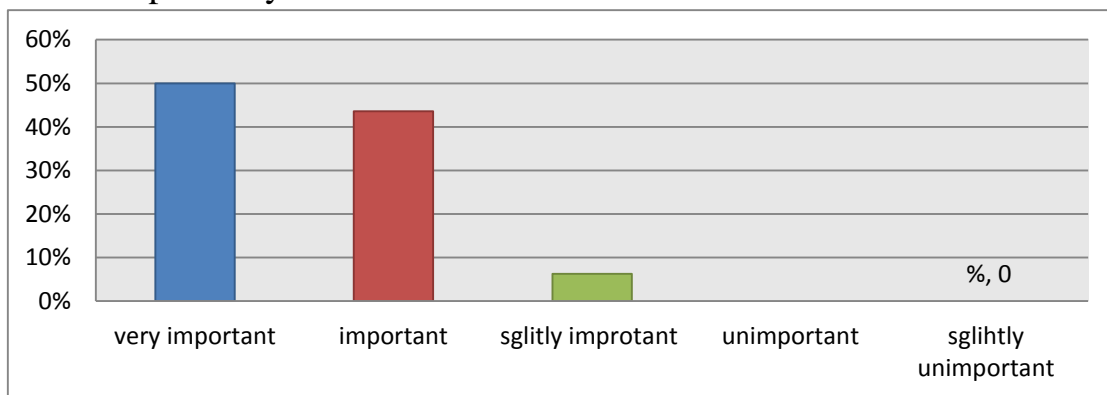


diagram (4.4.): managers importance of soft skills

- 50% of managers think soft skills are very important, 43.6% important, 6.3% slightly important in general, where no managers think it's unimportant.

7. Hard skills or , soft skills are more important in construction projects management

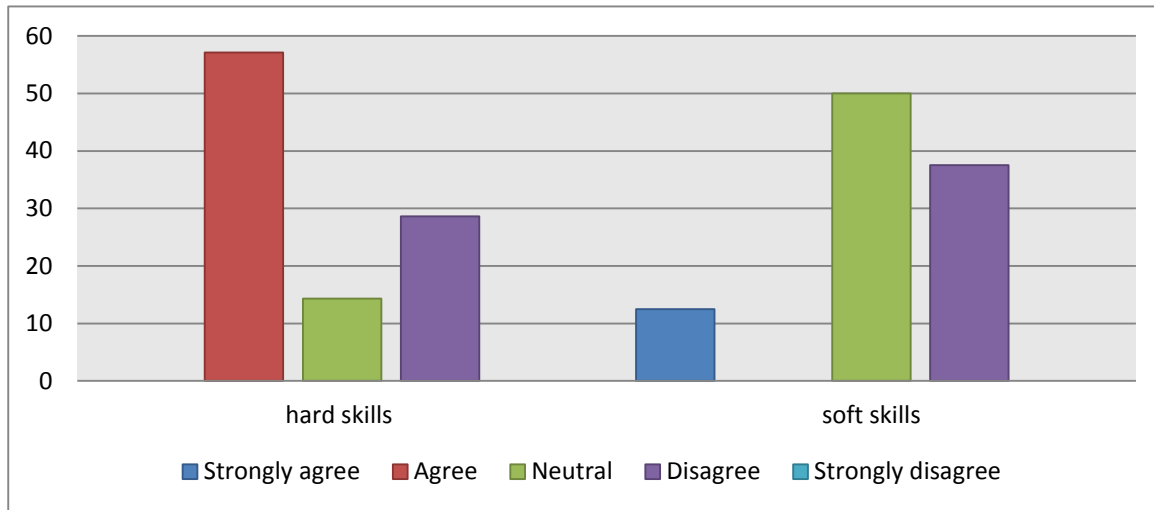
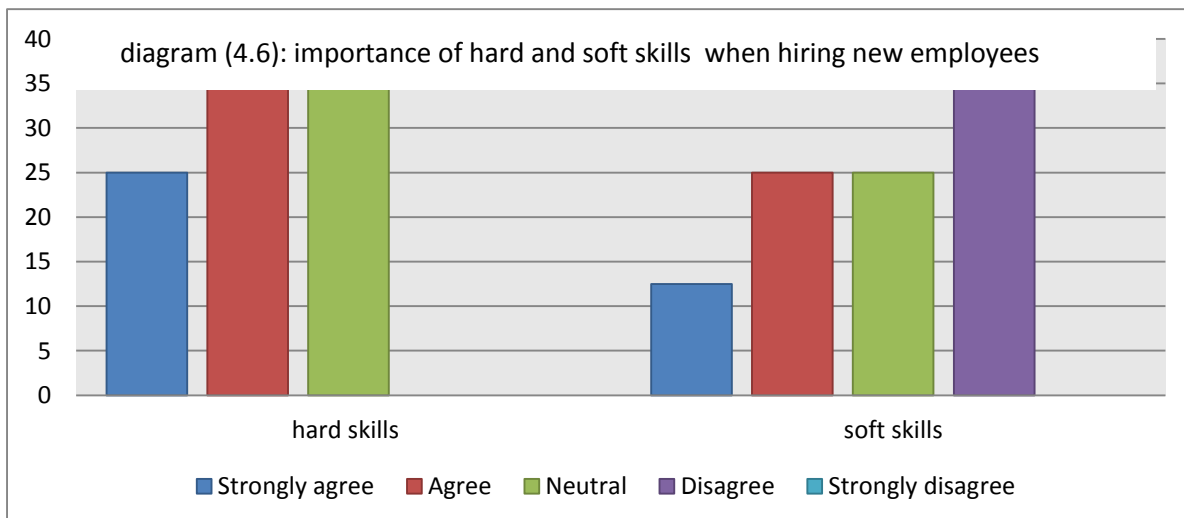


diagram (4.5): importance of hard and soft skills in construction projects

➤ 57.1% think hard skills are more important in construction projects management than soft skills, while only 12.5 % think soft skills are more important.

8. Hard skills or , soft skills are more important when hiring new employees



62.4% think hard skills are more important when hiring new employees, 37.5% think soft skills are important.



### 9. Hard skills are more important or soft skills when promoting employees

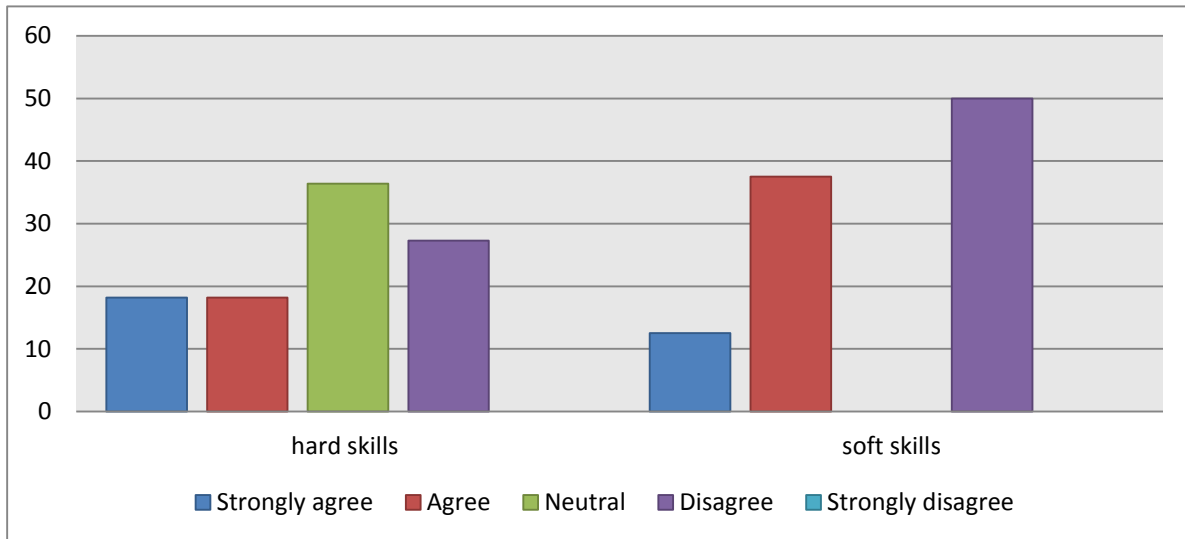


diagram (4.7): importance of hard and soft skills when promoting employees

- 50% of managers think soft skills are important when promoting employees, 34.5% think hard skills are important when promoting employees.

### 10. Employees Soft skills have a real relation with employees firing

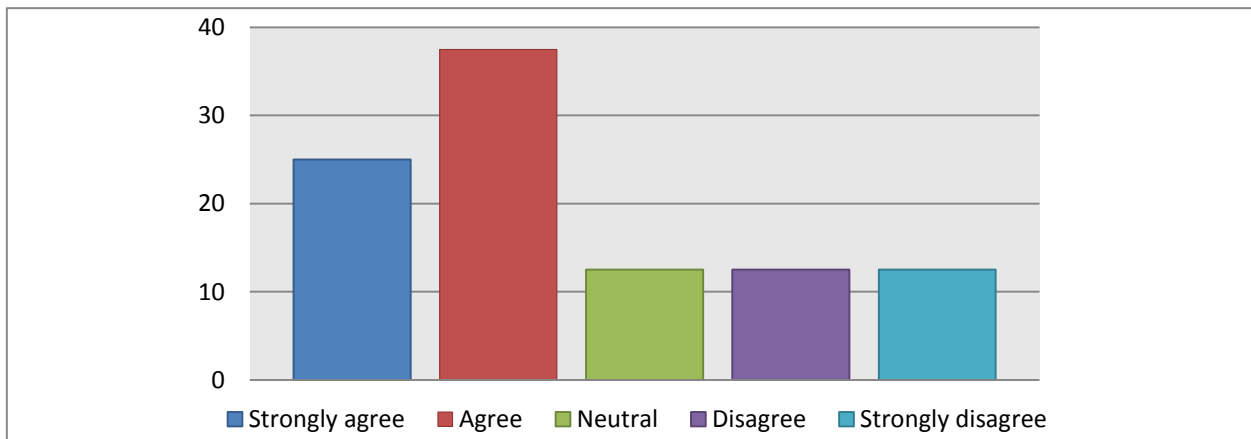


diagram (4.8): Employees Soft skills have a real relation with employees firing

- 62.5% of managers said soft skills have real relation with employees firing.

**11.Using managerial skills (hard or soft ) depends on managerial level**

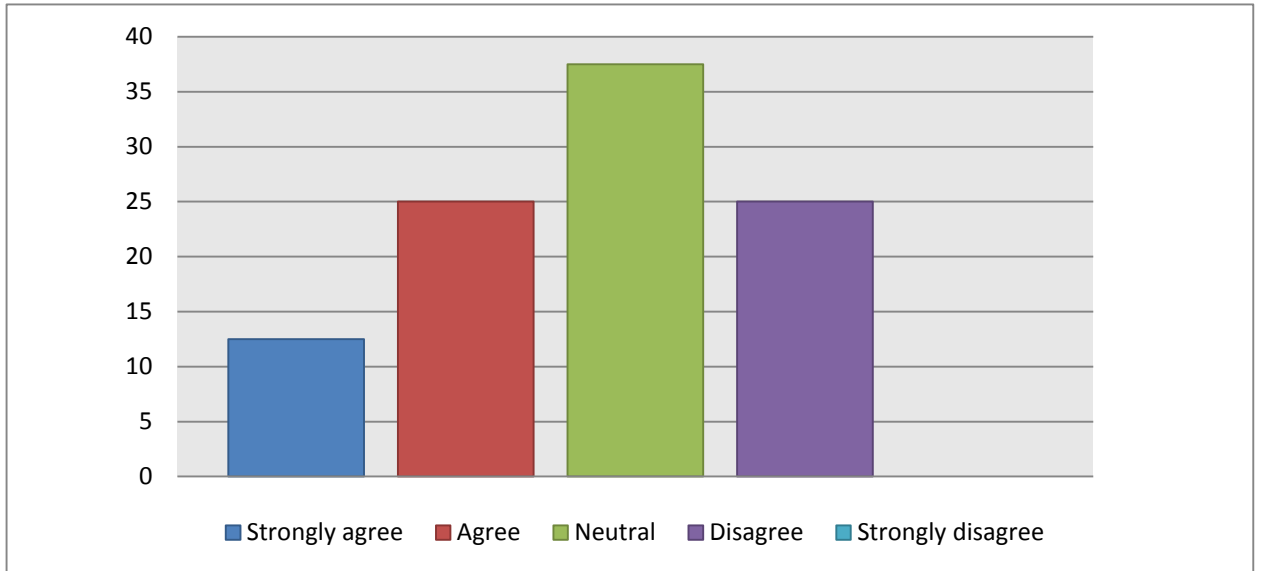


diagram (4.9): Using managerial skills depends on managerial level

- 37.5 % think using managerial skills depends on managerial level, and 25% think using managerial skills don't depend on managerial level.

**12.soft skills or hard skills are easy to learn and improve :-**

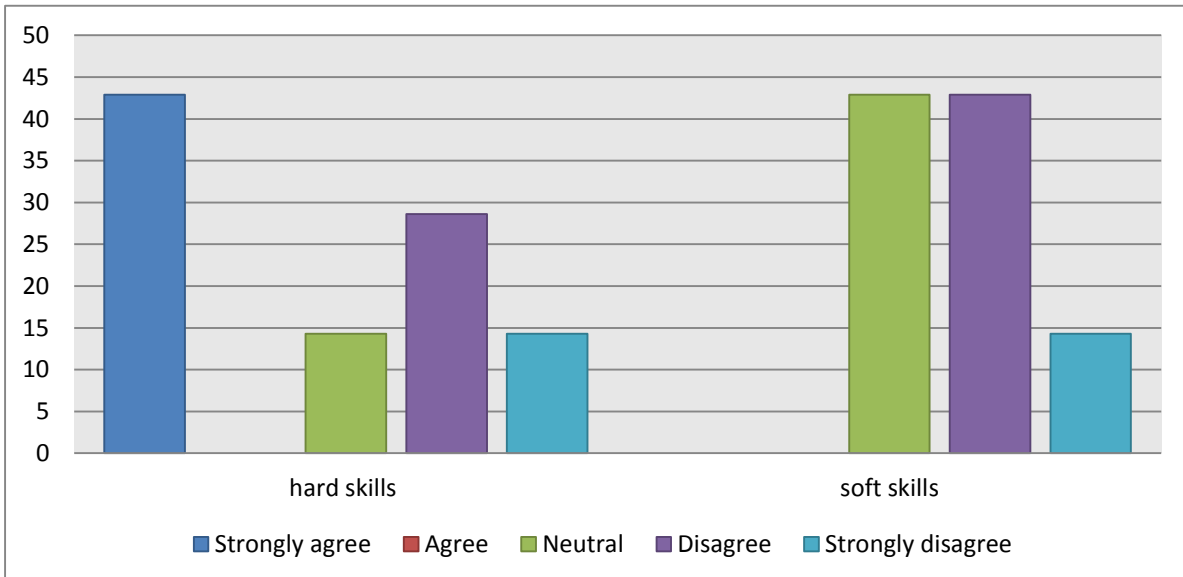


diagram (4.10): soft skills or hard skills are easy to learn

- 42.9% said hard skills are easy to learn and improve than soft skills.

**13. My employees have satisfactory hard skills and soft skills :-**

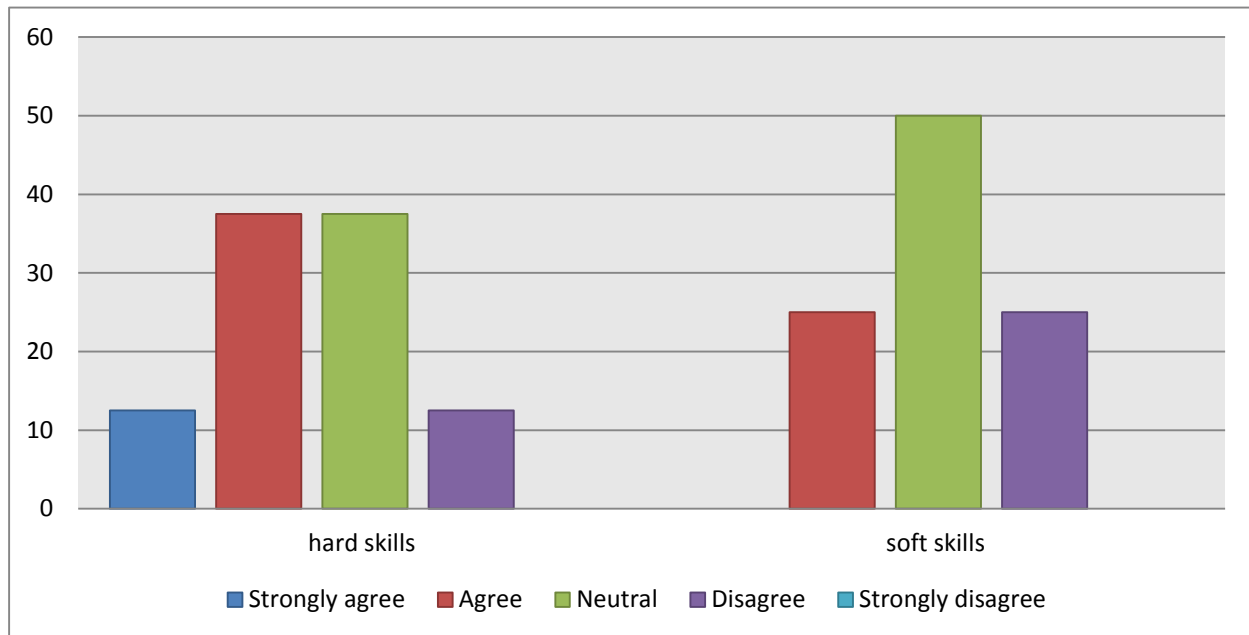


diagram (4.11): employees have satisfactory hard skills and soft skills

- Managers think their employees have satisfactory hard skills 50% and 25% think they have satisfactory soft skills.

**14. How do you believe your organization will view soft skills in the next (3-5) years**

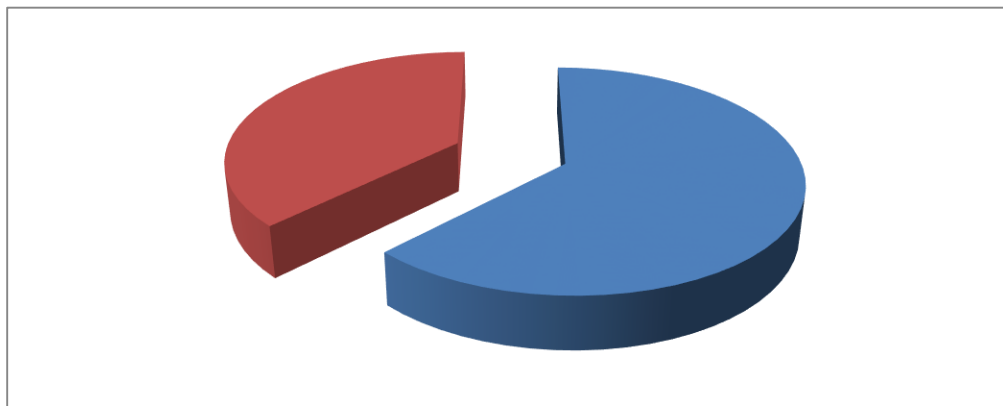


diagram (4.12): How do you believe your organization will view soft skills in the next (3-5) years

- 62.5% of managers think soft skills will be more important in the next (3-5) years while 37.5 % said they will remain the same.

**15.**Do you provide your employees with clear understanding of type of skills you value most?

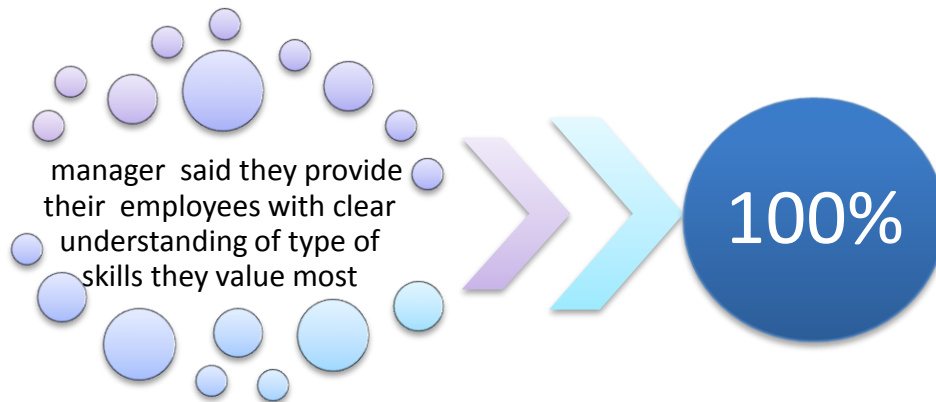


diagram (4.13):managers provide their employees with clear understanding of type of skills they value most

- All managers said they provide their employees with clear understanding of type of skills they value most 100%.

**16.**Please rank these skills in order of importance to hire employees (Starting with (1) for the most important)



diagram (4.14):rank skills in order of importance to hire employees

- Strong work ethics are the most important skill in managers opinion when hiring new employees ,then teamwork skills second , technical skills third , flexibility and adaptability fourth ,problem solving fifth, dependability and reliability skills sixth and communication skills seventh as less important skill.

**17.**How would you compare hard skills level of the experienced workers versus the recent graduates with in your organization

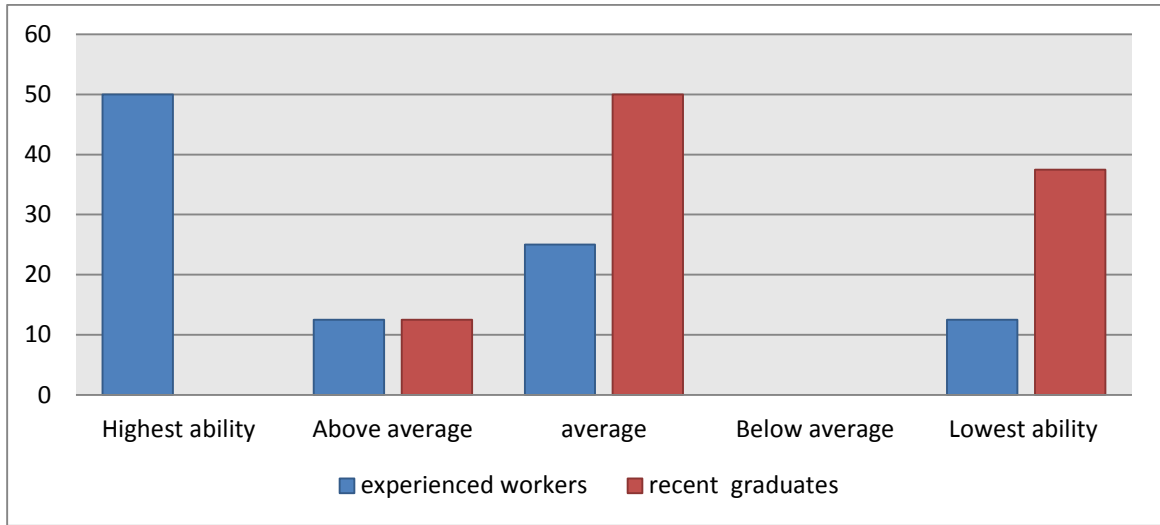


diagram (4.15):employees’ hard skills level

- 50% think experienced workers have “highest ability” hard skills level compare to recent graduates – in their organization- which have” average” level in their managers’ opinion 50%.

**18.**How would you compare soft skills level of the experienced workers versus the recent graduates with in your organization



diagram (4.16):employees’ soft skills level

- 62.5%of managers think recent graduates are at “average” level in soft skills compare to experienced workers which have “highest ability” and above average soft skills 75%.

19. In your opinion how feasible is it to train and develop soft skills in recent graduates and experienced workers

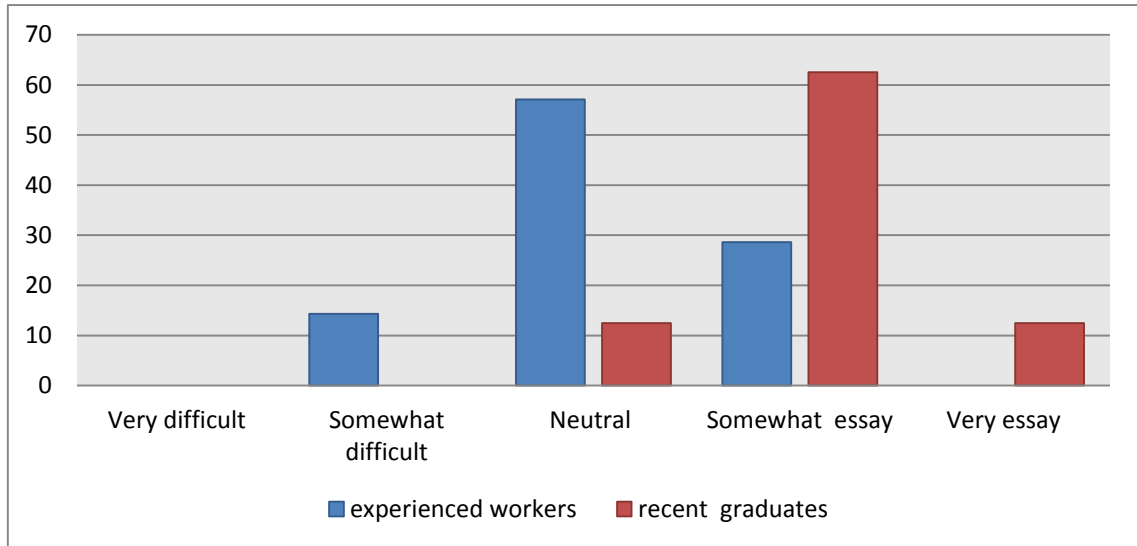


diagram (4.17): how feasible is it to train and develop soft skills

- 62.5 % of managers think it's somewhat easy to train and develop soft skills in recent graduates than experienced workers which is somewhat difficult 14.3% while 31% were neutral.

20. As a whole please rate your employees in terms of their abilities in the following skills

table (4.1): rate of employees skills in terms of their abilities

skills	rate
Critical thinking	Average 59% - 50%
Communication	Above Average 69-60%
collaboration	Above Average 69-60%
Creativity and innovation	Average 59% - 50%
Technical skills	Average 59% - 50%

- Managers rate their employees level in Critical thinking, Creativity and innovation and Technical skills as "average" level (50-59 %), and communication and collaboration as "above average" (60-69%).

21. Please rank these skills in order of construction employees need more training on (( 1) for the skill need more training)

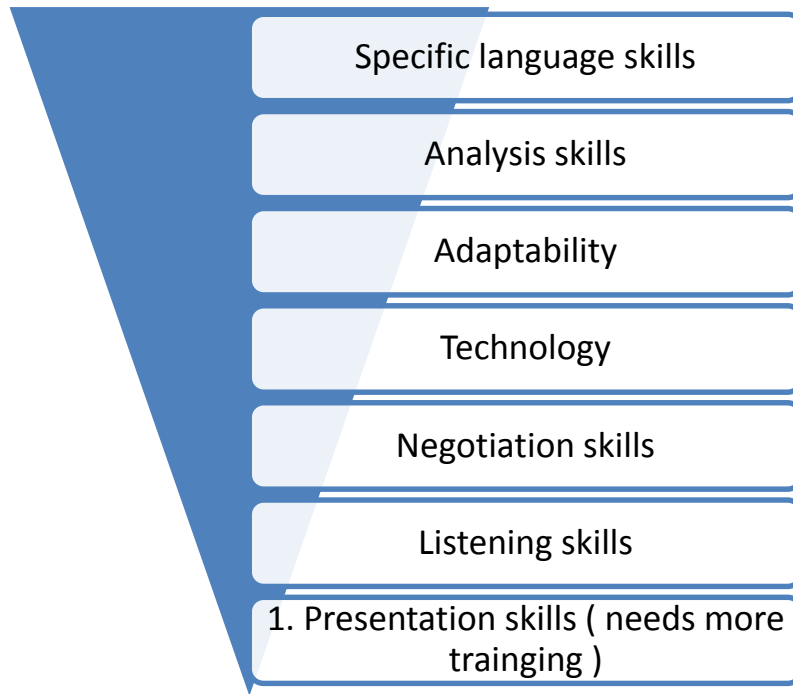


diagram (4.18):skills in order of construction employees need more training on

- Managers think their employees need more training in presentation skills in the first place, then listening skills second, negotiation skills third, technology fourth, adaptability fifth, analysis skills sixth and specific language skills - in the last place- seventh as a skill they need less training in it .

## 4.2. Employees questionnaire analysis:

\*Age :Mean 30 (range 23 to 50).

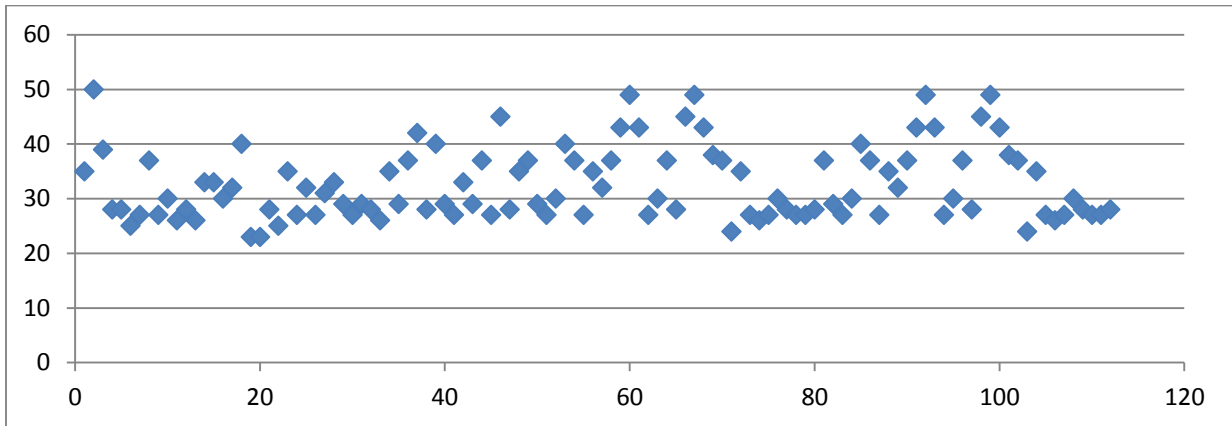


diagram (4.19) : Age of employees

- 112 EMPLOYEES were surveyed in engineering contracting and consulting companies in all disciplines in Khartoum state (capital of Sudan), age range (23 to 50) with mean 30.

\*Gender:-

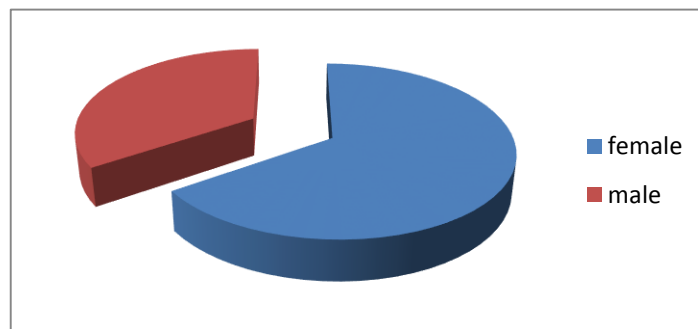
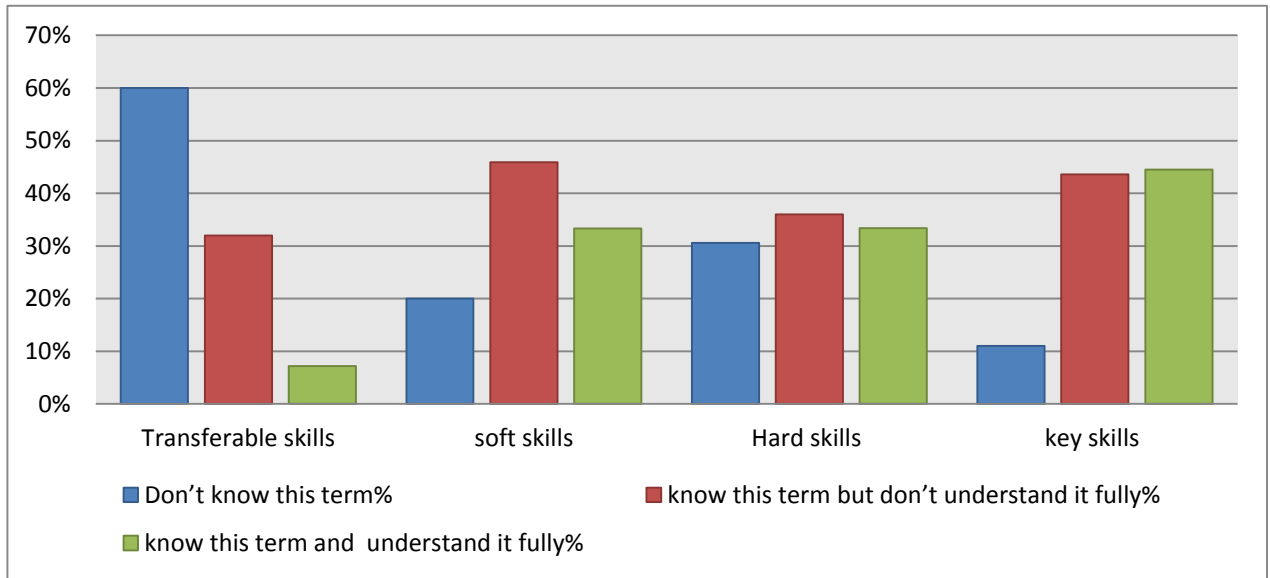


diagram (4.20) Gender of employees

- 35% of employees are males and 65% are females.



## 1-Are you familiar with these terms:-



- From the whole employees 88% know the term key skills, but 60.4% don't know the term transferable skills, the term soft skills is known for 33.3% and they fully understand it, 54.9% know it but don't understand it fully, 20.7% don't know it, and 31% don't know the term hard skills 36% know it but don't understand it fully.

## 2.How important you think soft skills are :-

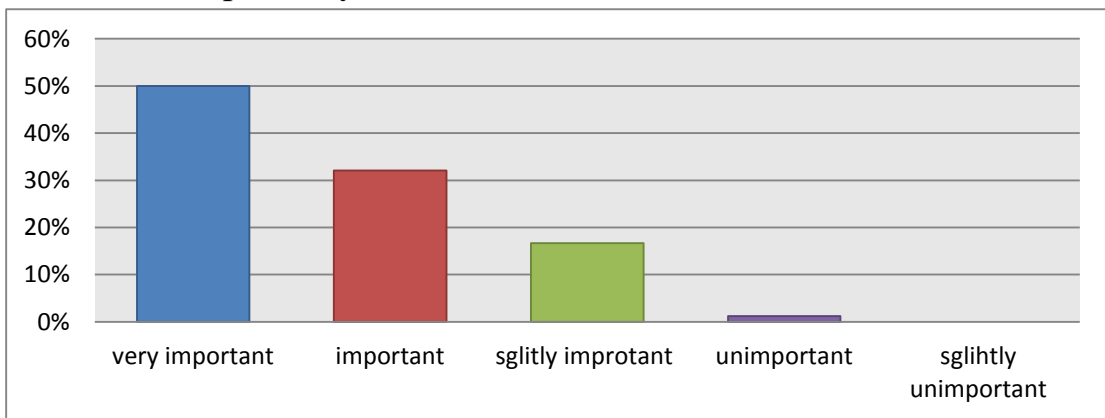


diagram (4.22): employees importance of soft skills

- 50% of employees think soft skills are very important, 32.1% important, 16.7% slightly important, where 1.2% think it's unimportant.

### 3. Managers Soft skills have a real relation with employees job satisfaction

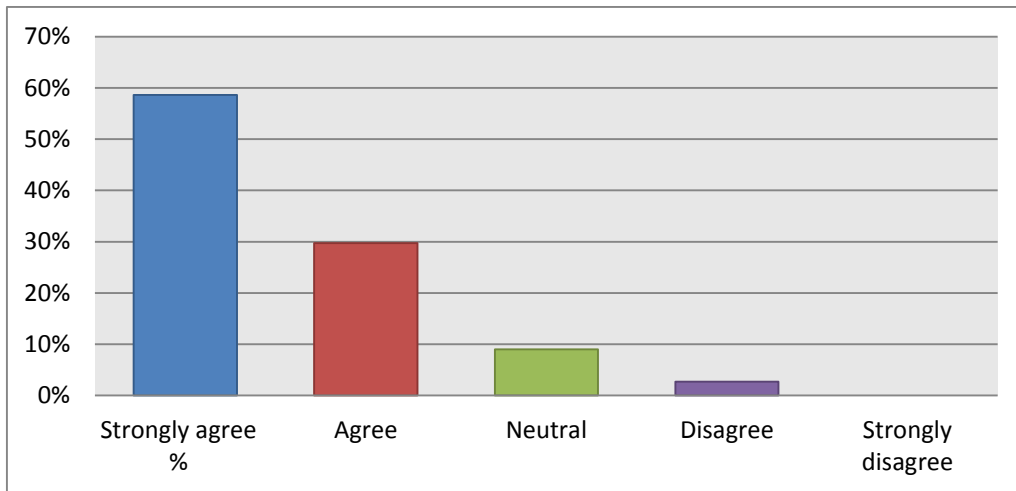


diagram (4.23): Managers Soft skills have a real relation with employees

- 88.7% of employees see that there is a real relation between managers soft skills and employee's job satisfaction, only 2.7% of them disagree with that.

### 4. my managers have satisfactory (hard , soft) managerial skills

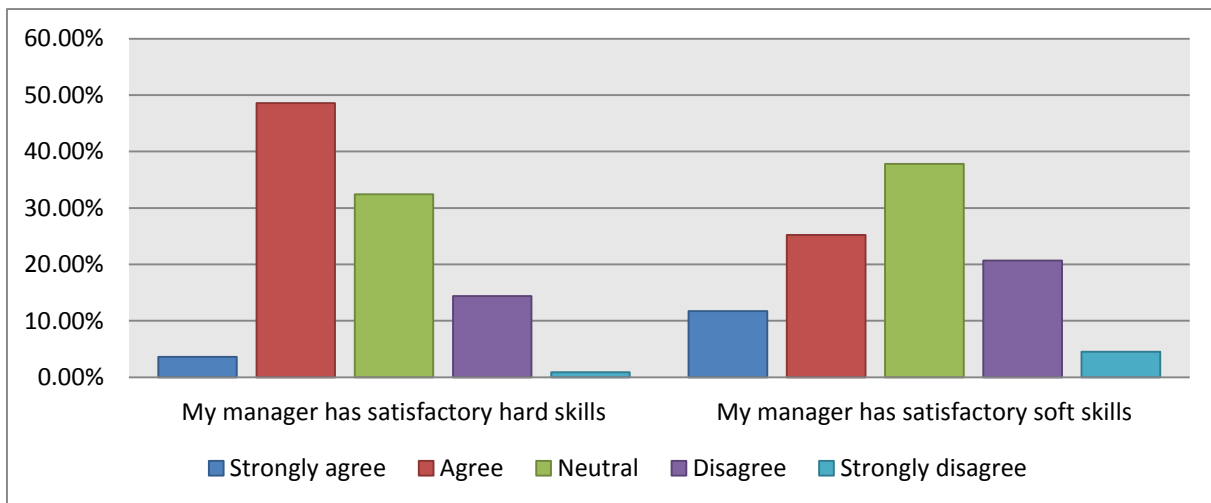


diagram (4.24): managers have satisfactory (hard , soft) managerial skills

- 52.2% think their managers have satisfactory hard skills, while 37.2% think their managers have satisfactory soft skills against 25% think they don't have satisfactory soft skills upon their opinion.

## 5. Hard skills or soft skills are more important to be in managers

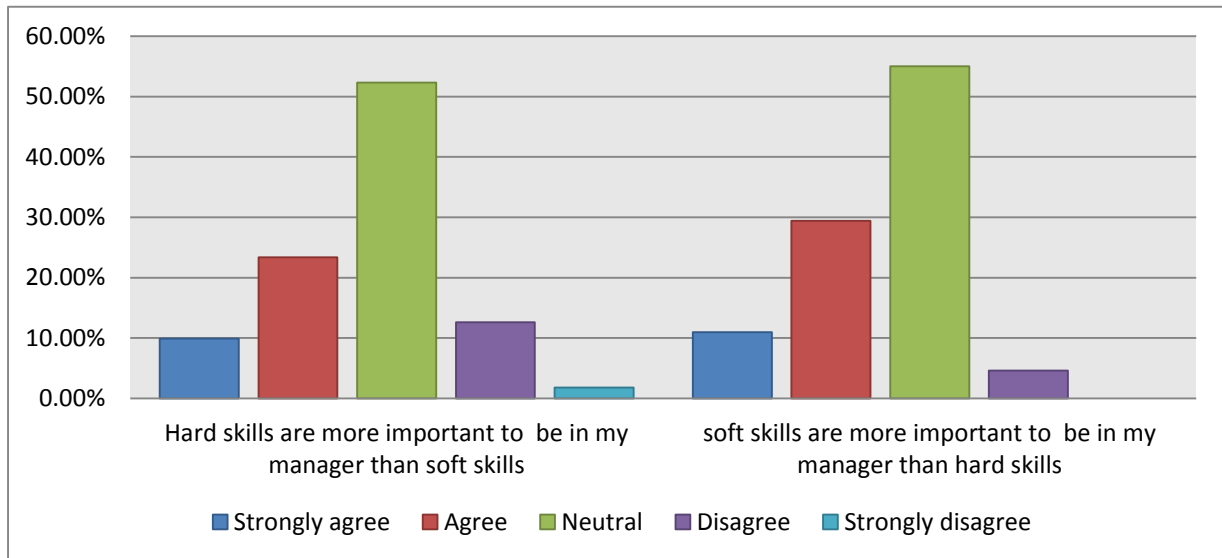


diagram (4.25): important skills to be in mangers

- Employees said soft skills are more important to be in their manager (40.4%), but (33.3%) said hard skills more important to be in their mangers and (53.6%) were neutral for both skills.

## 6. My manager balanced when using managerial hard and soft skills

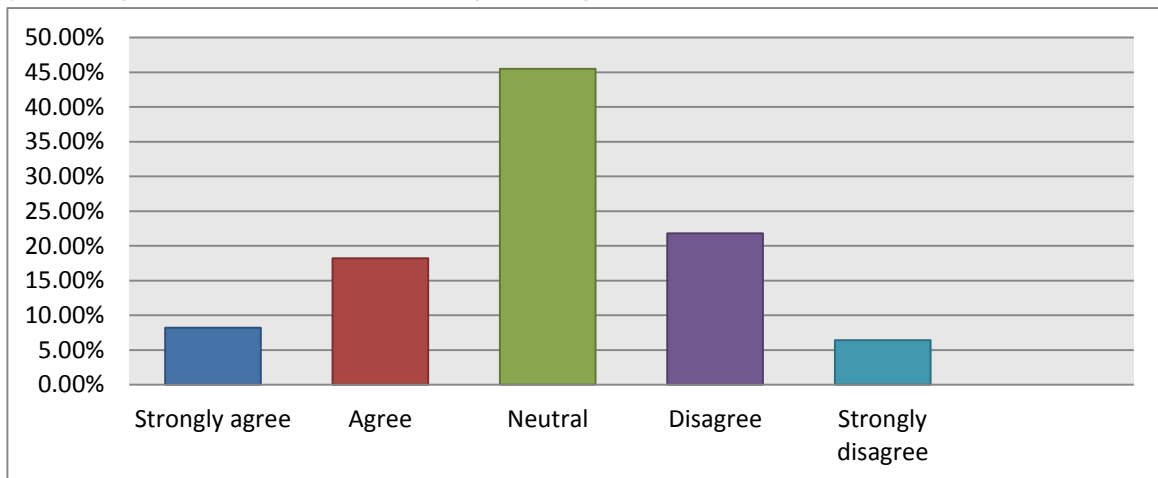


diagram (4.26): managers balanced when using managerial hard and soft

- opinions were so close about mangers balancing their hard and soft skills where (26.5%) agreed that their mangers balancing hard and soft skills and (28.2%) disagreed with them and see their mangers don't balance hard and soft skills.

## 7. Soft skills make the effective manager

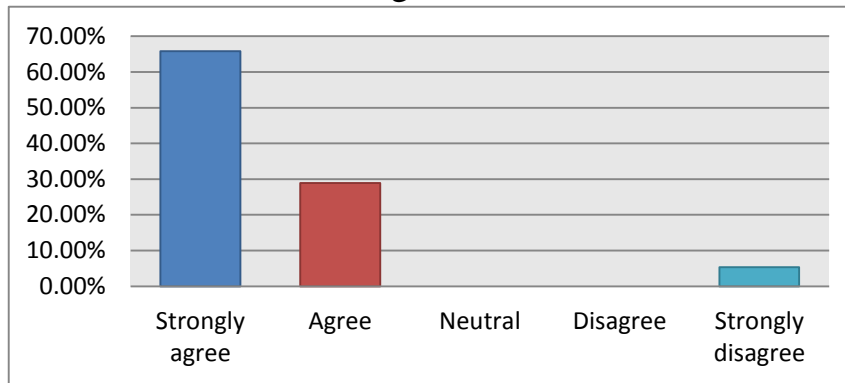


diagram (4.27): Soft skills make the effective manager

- 65% of employees strongly agreed that soft skills make effective managers and 28 % just agree with that.

## 8. How do you rate your managers' soft skills

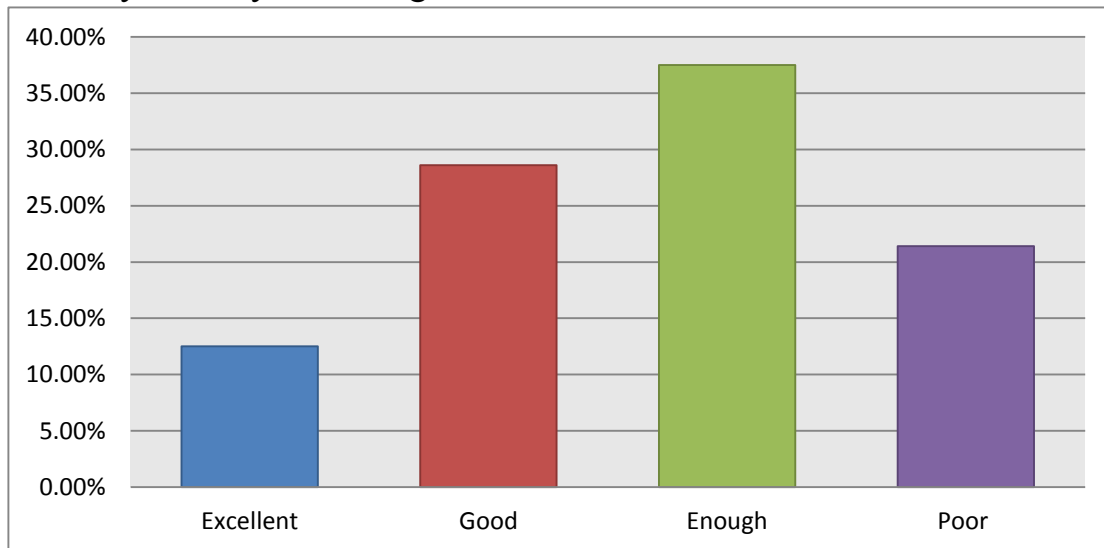


diagram (4.28): rate of managers on soft skills

- 37.5% of employees think their managers have enough soft skills, 28.6% think their managers have good soft skills, 21.4% said they have poor soft skills while 12.5% think their managers have excellent soft skills.

9. How do you believe your organization will view soft skills in the next (3-5) years

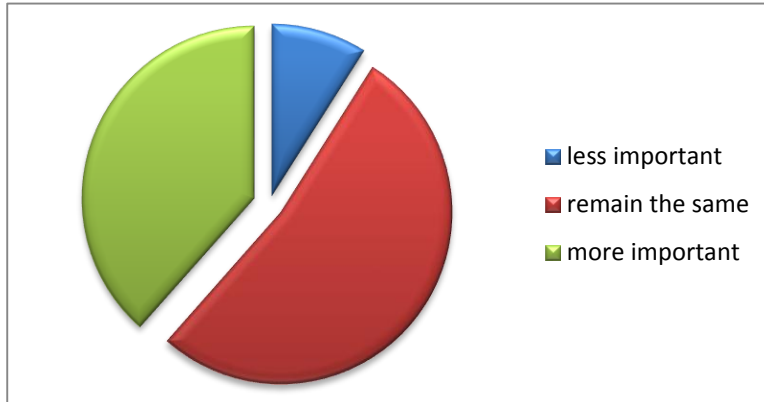


diagram (4.29): How do you believe your organization will view soft skills in the next (3-5) years

- 9% said their company will see soft skills less important in the next (3-5) years, 38% said they will be more important but 53.6% think they will remain the same.

10. Does your manager provide you with clear understanding of type of skills they value most:-

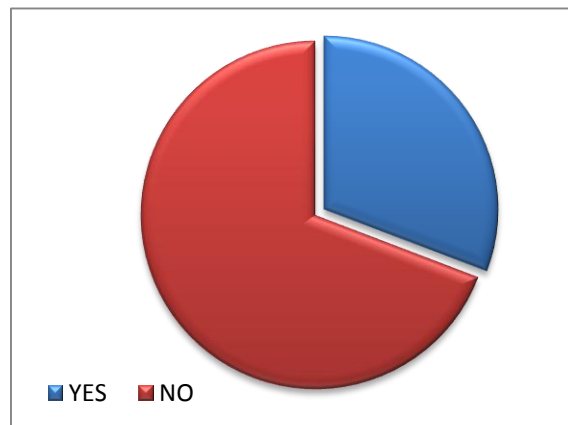


diagram (4.30): managers provide you with clear understanding of type of skills they value most

- Only 31% of employees agreed that their managers provide them with clear understanding of type of skills they value most, but 69% of them said they don't.

11. What is your manager level at these skills:-

table (4.2): rate of managers in skills

Skills	Rate
Self-management	Average 59%- 50%
Communication	Above Average 69-60%
Technical skills	Above Average 69-60%
Decision- making	Above Average 69-60%
Motivating skills	Average 59%- 50%
Influencing	Average 59%- 50%

- Employees rate their managers level in self-management , motivating skills and infusing skills as “average” level (50-59%) ,and communication ,technical skills and decision making as “above average” (60-69%).

12. Please rank these skills by their importance (Starting with (1) for the most important)

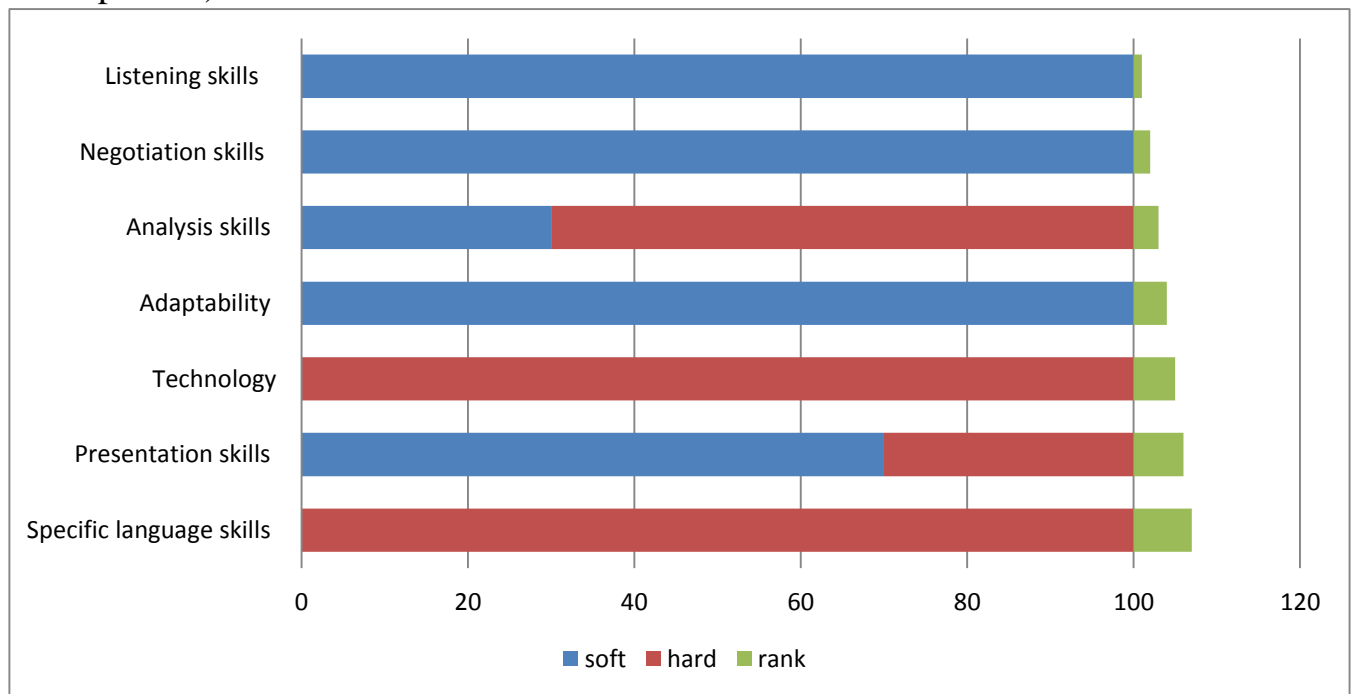


diagram (4.31): rank skills by importance

- Listening skills are the most important skill in employees opinion ,then negotiation skills second , analysis skills third , adaptability fourth ,technology fifth, presentation skills sixth and specific language skills seventh as less important skill.

### 4.3. Students questionnaire analysis:

- 74 STUDENTS were surveyed in civil engineering school specialization of construction engineering at Sudan University of Science & Technology.

1- Are you familiar with these terms :-

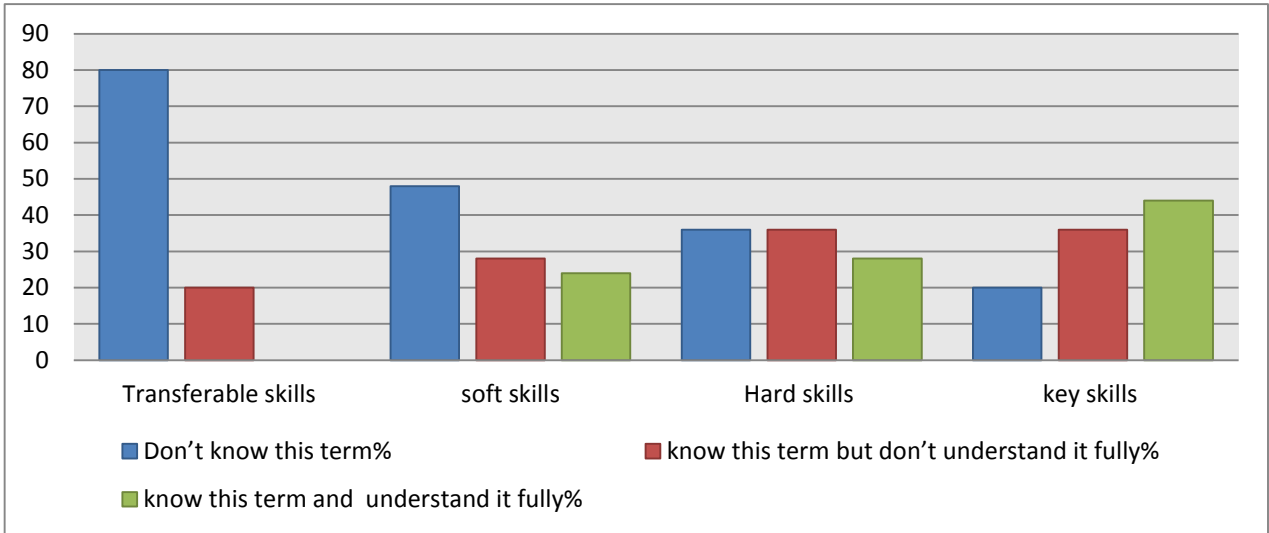


diagram (4.32): students familiarity with terminology

- For the whole students the majority weren't familiar with term transferable skills 80%, or the term soft skills 48%, while only 24% know the term soft skills and understand it fully and 36% know the term hard skills but don't understand it fully.

2. Hard skills are more important to be hired, soft skills are more important to be hired:-

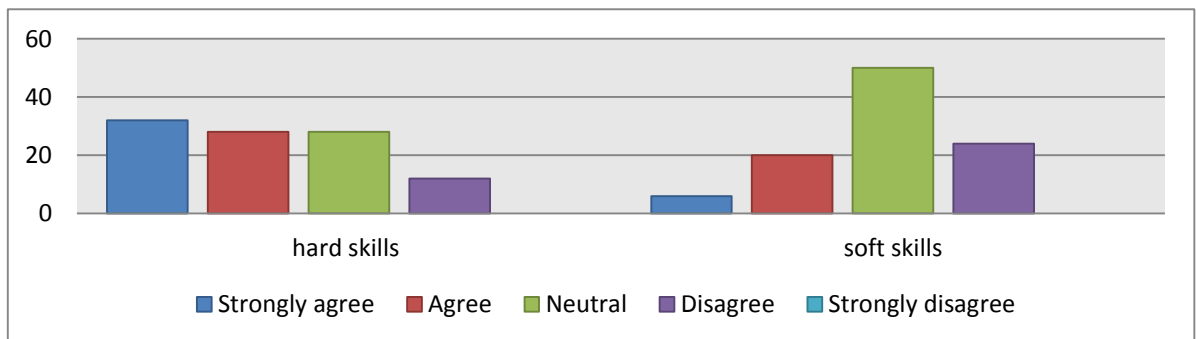


diagram (4.33): importance of hard and soft skills for students to be hired

- 60% of student thought that hard skills are more important to be hired only 36% thought that skills soft skills are more important.

### 3. College curriculums emphasize on hard skills:-

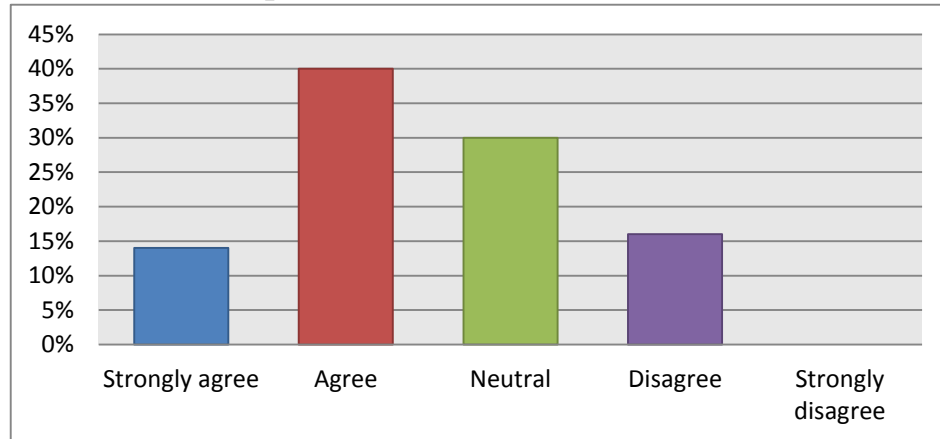


diagram (4.34): College curriculums emphasize on hard skills

- 54% of them thought that College curriculums emphasize on hard skills

### 4. Lecturers are very clear in explaining why it is important to be learning soft skills

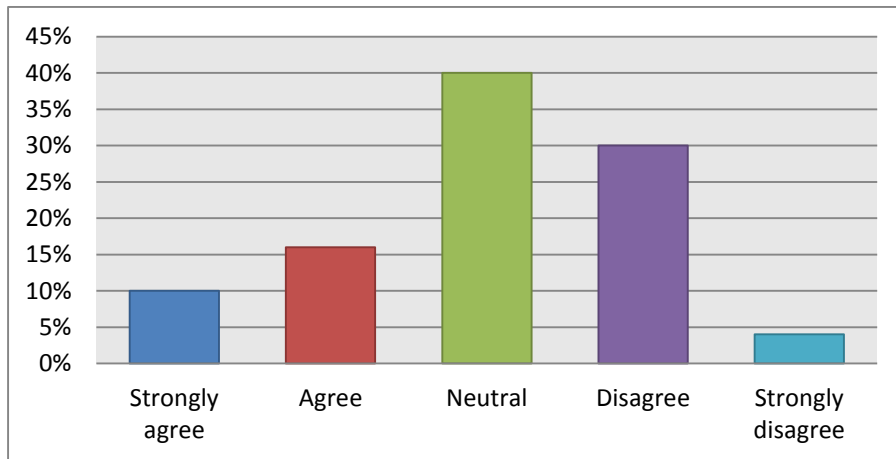


diagram (4.35): Lecturer are very clear in explaining why it is important to be learning

- Students think the lectures aren't clear in explaining the importance of learning soft skills 34% against 26% thought the opposite.



## 5. Activities we do in class help us to develop new skills

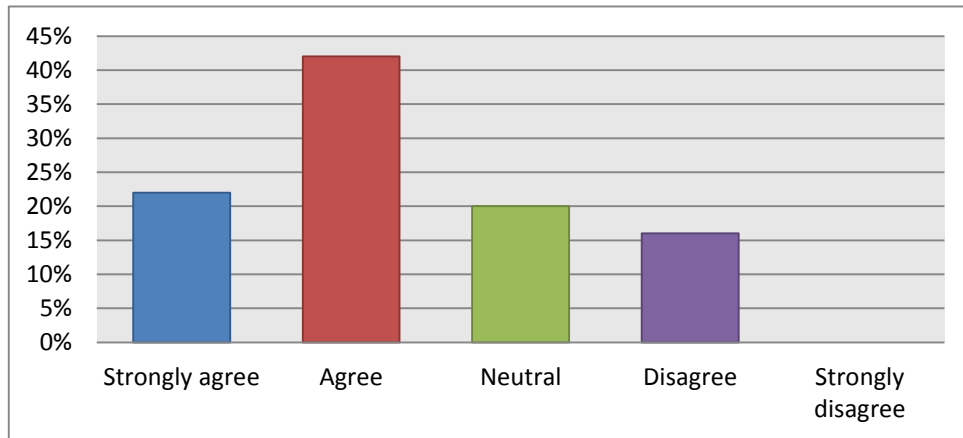


diagram (4.36): activities in class help to develop new skills

- 64% of students thought that the activities in classes help them to develop new skills.

## 6. I think our lecturers are innovative in how they help us learn new skills

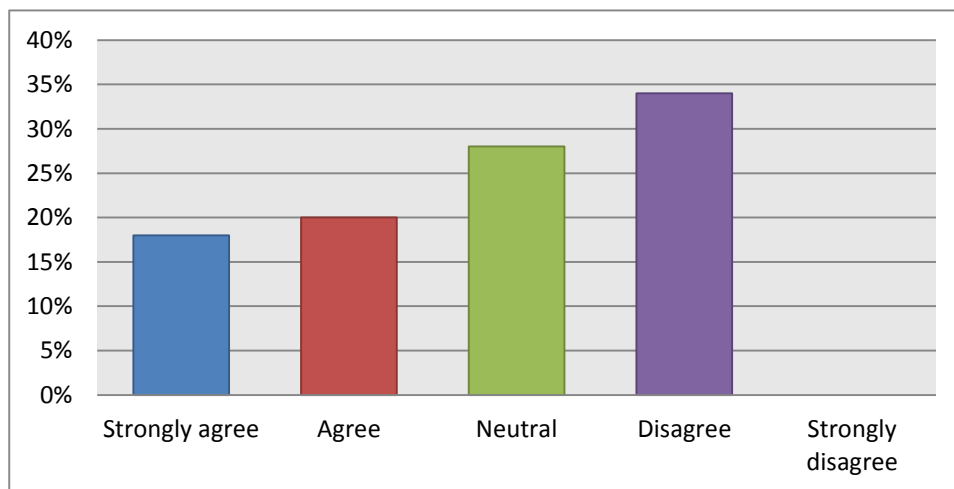


diagram (4.37): lecturers are innovative in how they help learn new skills

- 36% thought lecturers are innovative in how they help them learn new skills and 34% disagreed with that.

7. Please rank these skills in order of importance to work place :-

(Starting with (1) for the most important)

table (4.3): skills in order of importance to work place

SKILL	RANK
Communication	4
Teamwork	6
Flexibility, adaptability	5
Problem solving	3
Technical skills	1
Dependability, reliability	7
Strong work ethics	2

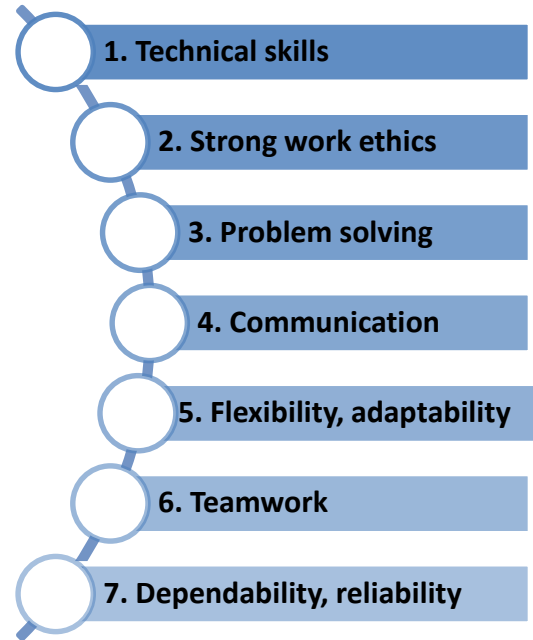


diagram (4.38): skills in order of importance to work place

- In ranking skills by their importance students had chosen technical skills first as the most important skill then strong work ethics second , problem solving third , communication fourth , flexibility , adaptability fifth ,teamwork sixth and dependability, reliability the seventh as the less important skill .

8. Students need to train on these skills please rank them by students needs of training on them (( 1) for the skill need more training)

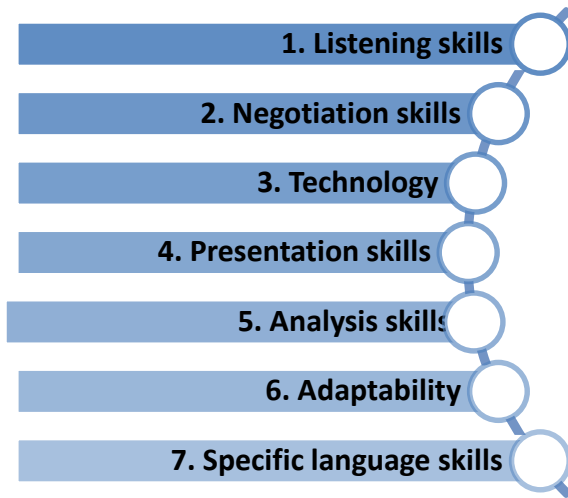


table (4.5): skills in order of students needs of training

SKILL	RANK
Presentation skills	4
Specific language skills	7
Negotiation skills	2
Technology	3
Adaptability	6
Analysis skills	5
Listening skills	1

diagram (4.39): skills in order of students needs of training

- Students think they need more training in listening skills in the first place, then negotiation skills second, technology third, presentation skills fourth, analysis skills fifth, adaptability sixth and specific language skills - in the last place- seventh as a skill they need less training in it.

9. Do you think you ready for workplace in term of

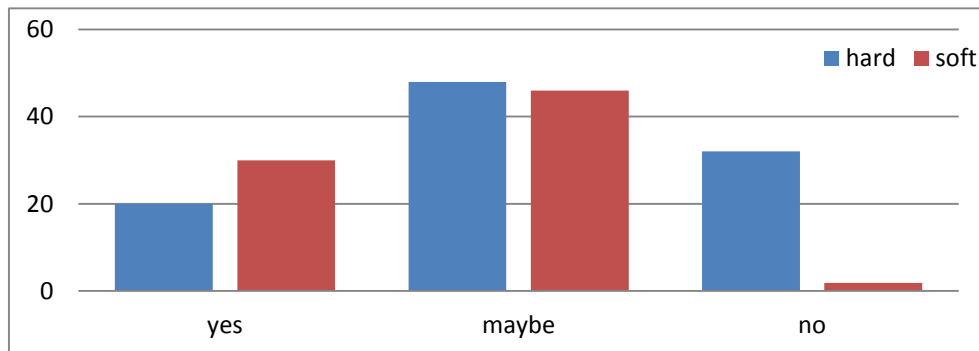


diagram (4.40): Do you think you ready for workplace

- 20% of students think they are ready for the work place in term of hard skills, 48% aren't sure if they are ready or not and 32% Saied they aren't ready, However 30% of then think they are ready for the work place in term of soft skills , 46% aren't sure , and 24% aren't ready yet .

#### 4.4. Common questions between the three questionnaires analysis :

A. Total number 218 (Managers, employees and student)

Age: 23 to 60.

1. As a community we lack using soft skills:-

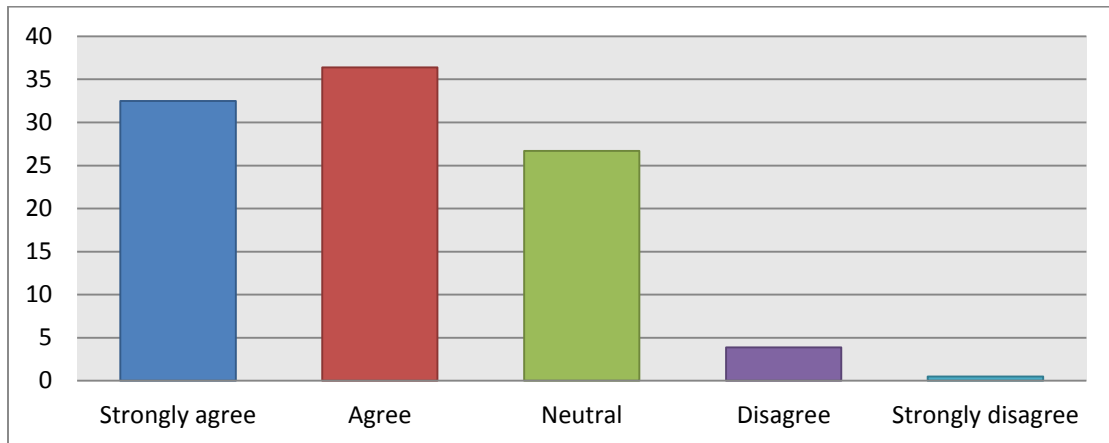


diagram (4.41): As a community we lack using soft skills

➤ From the whole 68.9% think we lack using soft skills.

B. Managers and employees :

2. Meal managers are better in balancing hard and soft skills

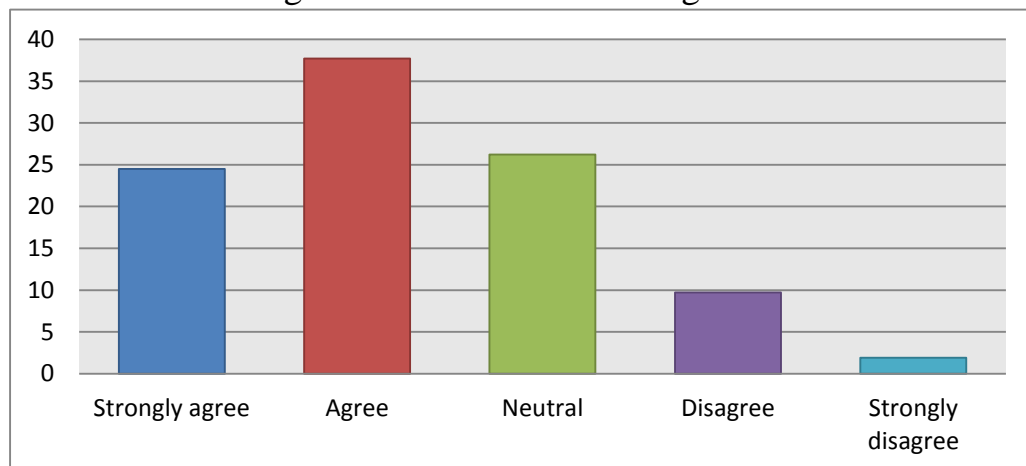


diagram (4.42):Meal managers are better in balancing

➤ Managers and employees 62.2% think meal managers are better in balancing soft and hard skills.

3. Female managers are better in balancing hard and soft skills

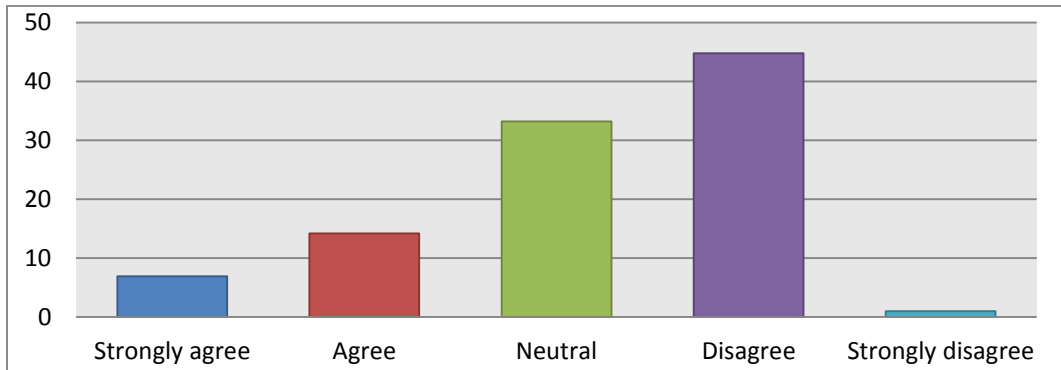


diagram (4.43):female managers are better in balancing skills

➤ 21.2% think female managers are better.

4. Employees in my organization need more training and development in soft skills

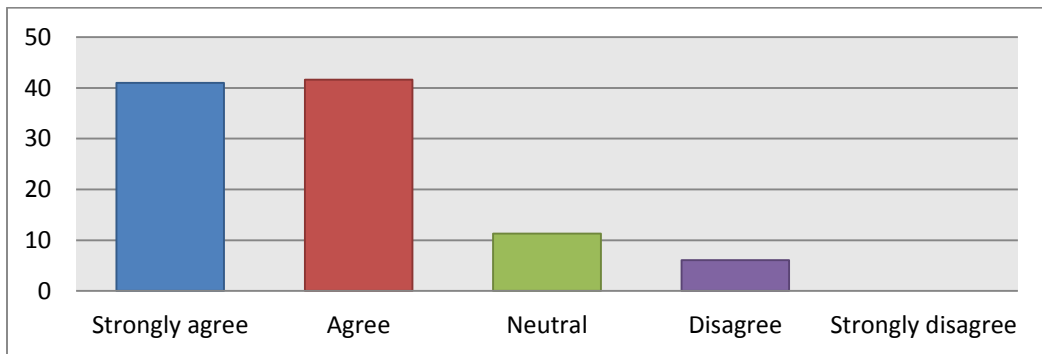


diagram (4.44):Employees in my organization need more training and development in soft skills

5. my organization spend more money on employees hard skills training and development

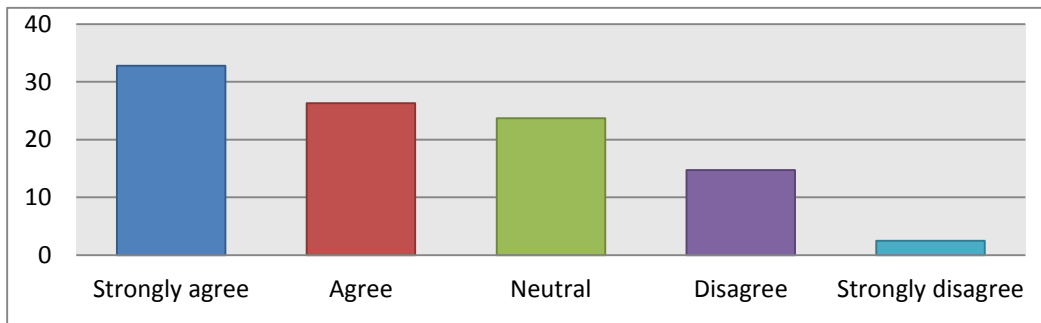


diagram (4.45):my organization spend more money on employees hard skills training and

However 82.8% think Employees need more training and development in soft skills, but organizations spend more money on employee’s hard skills training and development 58%.

**C. Managers and students:**

**6. It is realistic to expect colleges to deliver soft skills**

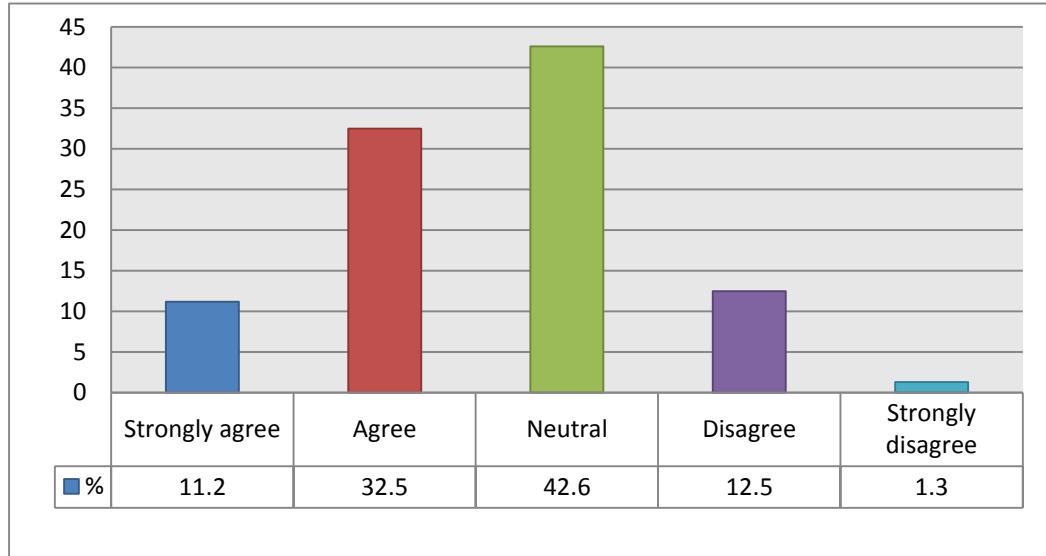


diagram (4.46):It is realistic to expect colleges to deliver soft skills

- 43.7% of managers and students think it’s realistic to expect colleges to deliver soft skills .

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATIONS:

#### 6.1 Conclusion:

Based on the analysis of the results of the questionnaire presented in the research, the following is found:-

1. As a society we are lack using soft skills because of the lack of awareness and full understanding of them
2. Engineering institutions focus more on developing hard skills without the soft skills of their employees, and more money is being spent on hard skills , despite the employees need for more to develop their soft skills
3. Educational institutions can provide and develop managerial skills for students despite the focus of the curriculum on hard skills
4. Work experience directly affects the understanding of management skills and the recognition of their importance, managers are more familiar with the terms on the management skills then the employees and then students.
5. Manager's skills directly affect project performance and employee job satisfaction in the organization.
6. Employees hard skills have a relationship with their employment and soft skills have a direct relationship to their promotion and lay off work
7. Managers provide their employees with the most important skills in their opinion, but in an unclear way (employees do not know the skills most important to their managers)
8. Hard and soft skills of both employees and managers at the average or above average.
9. Male managers are more able to balance management skills
10. Hard skills make the manager good while soft skills create an effective manager
11. Soft skills will become more important during the coming (3-5) years in Engineering institutions.
12. Balancing hard management skills and soft skills is a product of practical experience as it needs training and development

## **6.2. Recommendations:**

### **6.2.1 .recommendations:**

1. Managers in engineering institutions must clarify the most important skills for staff so they can train and develop themselves.
2. Focus on developing hard and soft skills equally because each has its importance.
3. Focus on training and developing managers more on balance management skills.
4. Cooperation between educational engineering institutions and engineering companies to identify the skills that graduates need to learn and develop to be qualified for their work environment upon the need of construction industry.
5. Find programs that help employees develop their skills.

### **5.2.2. Recommendations for future research:**

1. I recommend the researchers coming to study more broadly and comprehensively and to show each skill separately, its importance and its role in each category.
2. Focus on soft skills in future research such as emotional intelligence.
3. Added research on the activation of soft skills in engineering institutions.
4. More expansion in how to balance management skills and effective training methods.



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# APPENDENX (QUESTIONNAIRES)

بسم الله الرحمن الرحيم

A questionnaire about management hard and soft skills

Good greeting and then

This questionnaire aims to study and analyses the management skills, their importance, how to improve and balancing them in Sudanese construction industry .

This questionnaire is a part of supplemental research to obtain a master degree in construction management at Sudan University of Science & Technology . hoping that this research gives a clear vision about managerial skills and how importance they are .

All information in this questionnaire will be used just for research purposes and results will published as statistical results for research samples.

Researcher :- hameeda tag elsser abdein .

Supervision :- Dr. Awad Saad Hassan .

Name :-.....(not mandatory )

Age:-.....

Gender:- .....

Soft skills:-

refer to interpersonal skills and include traits such as leadership, communication, negotiation and expectations management. They are largely intangible, difficult to measure and are not associated with a measurable deliverable or a concrete output.

hard skills :-

(technical skills) are the technical aspects of the project managers role and include development of tangible deliverables such as project schedules, budgets and work breakdown structures. Hard skills often involve the use of templates and tools such as scheduling software, spreadsheets and modeling tools.

## Mangers

Experience years	
Less than 5	
More than 5 and less than 10	
More than 10 and less than 20	
More than 20	

1- Are you familiar with these terms:-

Term	Don't know this term	know this term but don't understand it fully	know this term and understand it fully
1-Transferable skills			
2- soft skills			
3- generic skills			
4- key skills			
5- Hard skills			
6- People skills			
7- Core skills			
8- Key competences			

2- How important you thing soft skills are :-

Very important	Important	Slightly important	Unimportant	Slightly unimportant

Please select answer by (√) :-

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Hard skills are more important in project management than soft skills					
soft skills are more important in project management than hard skills					
Hard skills are more important when hiring new employees than soft skills					
soft skills are more important when hiring new employees than hard skills					
Hard skills are more important when promoting employees than soft skills					
soft skills are more important when promoting employees than hard skills					

Hard skills are easy to learn and improve than soft skills					
soft skills are easy to learn and improve than hard skills					
Soft skills are acquired					
Using managerial skills (hard or soft ) depends on managerial level					
Managers soft skills affect on project performance					
Soft skills depends on mangers personality					
Being manager force you to use less of soft skills ( to have a strong personality )					
Hard and soft skills can be balanced					
Balancing hard and soft skills is a result of experience					
Balancing skills needs training					

Employees Soft skills have a real relation with employees firing					
As a community we lack using soft skills					
Using soft skills makes the manger looks like a weak person					
My employees have satisfactory hard skills					
My employees have satisfactory soft skills					
It is realistic to expect colleges to deliver soft skills					
Using hard and soft skills don't depend on gender					
Meal managers are better in soft skills					
Female managers are better in hard skills					
Meal managers are better in balancing hard and soft skills					

Female managers are better in balancing hard and soft skills					
Employees in my organization need more training and development in soft skills					
my organization spend more money on employees hard skills training and development					

- How do you believe your organization will view soft skills in the next (3-5 ) years

Less important	Remain the same	More important

Do you provide your employees with clear understanding of type of skills you value most?

YES	NO



- Please rank these skills in order of importance to hire employees  
(Starting with (1) for the most important)

skill	Rank
Communication	
Teamwork	
Flexibility, adaptability	
Problem solving	
Technical skills	
Dependability, reliability	
Strong work ethics	

- How would you compare hard skills level of the experienced workers versus the recent graduates with in your organization

	Lowest ability	Below average	average	Above average	Highest ability
experienced workers					
recent graduates					

- How would you compare soft skills level of the experienced workers versus the recent graduates with in your organization

	Lowest ability	Below average	average	Above average	Highest ability
experienced workers					
recent graduates					

- In your opinion how feasible is it to train and develop soft skills in students and experienced

	Very difficult	Somewhat difficult	Neutral	Somewhat easy	Very easy
Students					
experienced workers					

- As a whole please rate your employees in term of their abilities in the following skills :-

skills	Lowest ability	Below average	average	Above average	Highest ability
Critical thinking					
Communication					
collaboration					
Creativity and innovation					
Technical skills					

- Please rank these skills in order of construction employees need more training on (( 1) for the skill need more training)

skill	rank
Presentation skills	
Specific language skills	
Negotiation skills	
Technology	
Adaptability	
Analysis skills	
Listening skills	

## EMPLOYEES

1-Are you familiar with these terms:-

Term	Don't know this term	know this term but don't understand it fully	know this term and understand it fully
1-Transferable skills			
2- soft skills			
3- generic skills			
4- key skills			
5- Hard skills			
6- People skills			
7- Core skills			
8- Key competences			

2.How important you think soft skills are :-

Very important	Important	Slightly important	Unimportant	Slightly unimportant

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Mangers skills affect directly on their employees performance					
Managers Soft skills have a real relation with employees job satisfaction					
As a community we lack using soft skills					
Using soft skills makes the manger looks like a weak person					
My manager has satisfactory hard skills					
My manager has satisfactory soft skills					
Using hard and soft skills don't depend on gender					
Meal managers are better in soft skills					
Female managers are better in soft skills					
Meal are managers better in balancing hard and soft skills					
Female managers are better in balancing hard and soft skills					
Employees in my organization need more training and development in soft skills					
my organization spend more money on employees hard skills					

training and development					
Hard skills are more important to be in my manager than soft skills					
soft skills are more important to be in my manager than hard skills					
My manager balanced when using managerial hard and soft skills					
Hard skills make the good manager					
soft skills make the effective manager					

4.How do you rate your managers on this skills

skills	Excellent	Good	Enough	Poor
Management Soft skills				

5.Does your manager provide you with clear understanding of type of skills they value most?

YES	NO

6.What is your manager level at this skills :-

Skills	Lowest Ability 40%	Below average 49-40%	Average 59%-50%	Above Average 69-60%	Highest ability 79-80%
Self-management					
Communication					
Technical skills					
Decision- making					
Motivating skills					
Influencing					

7.Please rank these skills by their importance (Starting with (1) for the most important)

Skill	rank
Presentation skills	
Specific language skills	
Negotiation skills	
Technology	
Adaptability	
Analysis skills	
Listening skills	

8. How do you believe your organization will view soft skills in the next (3-5) years

Less important	Remain the same	More important



## Students

- Are you familiar with these terms:-

Term	Don't know this term	know this term but don't understand it fully	know this term and understand it fully
1-Transferable skills			
2- soft skills			
3- generic skills			
4- key skills			
5- Hard skills			
6- People skills			
7- Core skills			
8- Key competences			

Please select answer by (√) :-

Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Hard skills are more important to be hired					
soft skills are more important to be hired					

College curriculums emphasize on hard skills					
Managerial soft skills can't be learned					
Managerial soft skills are acquired					
Balancing hard and soft skills is a result of experience					
Balancing skills needs training					
Lecturer are very clear in explaining why it is important to be learning soft skills					
activities we do in class help us to develop new skills					
I only want to learn skills that are relevant to the job or industry I want to work in					
I want to learn a broad set of skills that will allow me to change jobs or industries if and when I want to					
I think our lecturers are innovative in how they help us learn new skills					
Lecturers have a very practical focus in what they teach us					
It is realistic to expect colleges to deliver soft skills					
As a community we lack using soft skills					

- Please rank these skills in order of importance to work place :-  
(Starting with (1) for the most important)

SKILL	RANK
Communication	
Teamwork	
Flexibility, adaptability	
Problem solving	
Technical skills	
Dependability, reliability	
Strong work ethics	

Students need to train on these skills please rank them by students needs of training on them (( 1) for the skill need more training)

SKILL	RANK
Presentation skills	
Specific language skills	
Negotiation skills	
Technology	
Adaptability	
Analysis skills	
Listening skills	

- Do you think you ready for workplace in term of

			YES	Maybe	NO
hard skills					
soft skills					

# THE POWER POINT PRESENTATION:



*Sudan University of Science & Technology  
College of Graduate Studies  
M.Sc. Construction Management*



## ***Balancing hard and soft skills in Sudanese construction project management***

**موازنة المهارات الادارية الصعبة والناعمة في ادارة مشاريع التشييد  
السودانية**

*Name:  
Hameeda Tag Alsser Abdein  
Ahmed*

*Supervised by:  
DR. Awad Saad Hassan*

June 2018

### **Introduction :**

Despite the importance of management skills hard and soft, but not all of the members of engineering community aware of their importance, role and impact on the performance of projects and job satisfaction

#### **Hard skills**

teachable abilities or skill sets that are easy to quantify ,specific abilities, or capabilities, that an individual can possess and demonstrate in a measured way  
**(Technical skills )**

Proficiency in a foreign language  
Typing speed  
Machine operation and Computer programming

#### **soft skills**

competences that are not directly connected to a specific task they are necessary in any position as they mainly refer to the relationships with other people involved in the organization  
**(people skills)**

communication,, negotiation, problem solving and decision making

#### Research problem statement:

The ability to effectively manage projects has become an increasingly important skill. However, a number of managers are unable to successfully manage projects due to a lack of management skills

Personal skills are as important as technical skills in managing construction projects and organizations want to recruit managers who have both these skills and can balance these skills .

#### Research objectives:

This research aims to know how to balance administrative skills through, Learn about different types of management skills , Identify differences in project performance depending on the type of management skill, Studying the impact of personal skills and technical skills on the performance of projects and Study how to balance management skills

#### Research Methodology:

##### *First :-*

(3) questionnaire forms were adopted to collect the information required for the study, then they were divided into three categories with a view to identifying managerial skills and their importance in the view of employees, managers and students

The questionnaire consists of

**Part I** General information describes the nature of the target group and the most important information about it.

**Part 2** determines how each group know and understand the managerial skills and the terminology used.

**Part 3** aims to know the importance of administrative skills in the eyes of each category and its impact on the category and the extent of the impact of experience and gender on the use of these skills in addition to other questions that serve the research

**Part 4** aims to assess the skill level of each category and identify the skills most needed for training

## Research Methodology: CONT

### *Second:*

Secondary sources :it consists of books ,references , previous researches and internet sites which deal with subject of study

### *Third :*

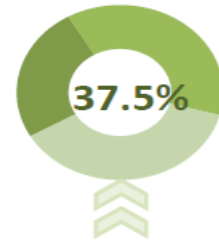
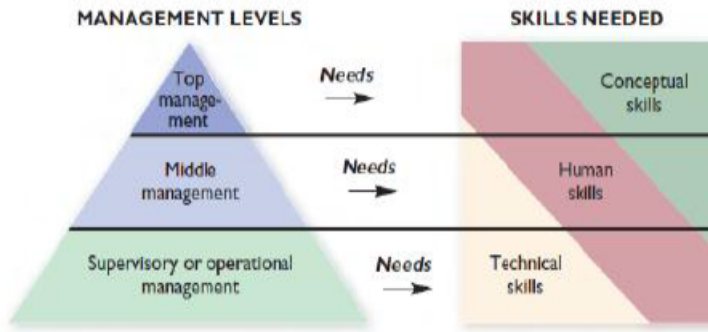
Statistical methods used in data analysis

**250** copies of an electronic questionnaire were distributed to the research sample, which included managers of contracting companies, employees of engineering companies and students of the College of Civil Engineering specialty construction were **retrieved 218** questionnaires

The statistical analysis of the results of the questionnaire was based on the Google tables and Microsoft Excel for analysis

## Results :

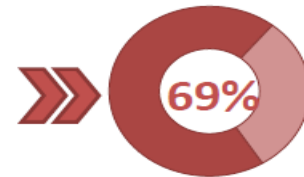
- Work experience directly affects the understanding of management skills and the recognition of their importance ,managers are more familiar with the terms on the management skills then the employees and then students.
- Manager's skills directly affect project performance and employee job satisfaction in the organization.
- Employees hard skills have a relationship with their employment and soft skills have a direct relationship to their promotion and lay off work.
- Hard skills make the manager good while soft skills create an effective manager
- Balancing hard management skills and soft skills is a product of practical experience as it needs training and development.



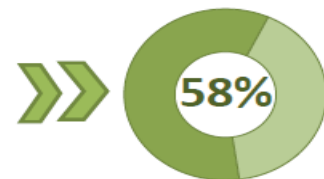
think using managerial skills **depends** on managerial level

**Male managers** are better in balancing soft and hard skills(69%)

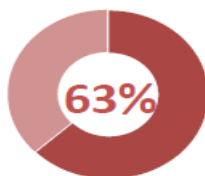
think as a community we lack using **soft skills**



managers think **hard skills** are more important in construction projects management than soft skills



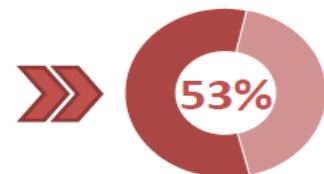
**but**



managers think **soft skills** will be more important in the next (3-5) years

**WHILE**

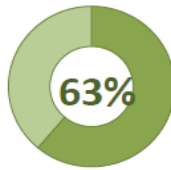
employees think **soft skills** will remain the same in the next (3-5) years





**Only 31%**

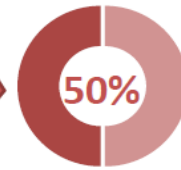
of managers provide their employees with clear understanding of type of skills they value most



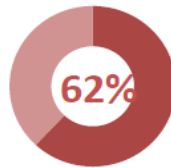
managers think **hard skills** are more important **hiring** new employees

**While**

managers think **soft skills** are more important **promoting** employees

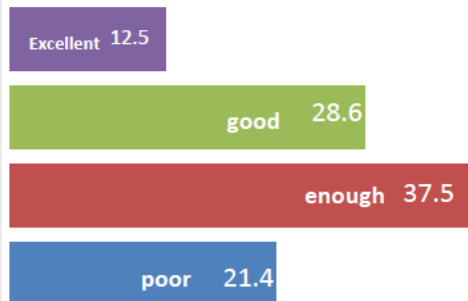


**and**



managers said **soft skills** have real relation with employees **firing**

Managers level in soft skills



**While**

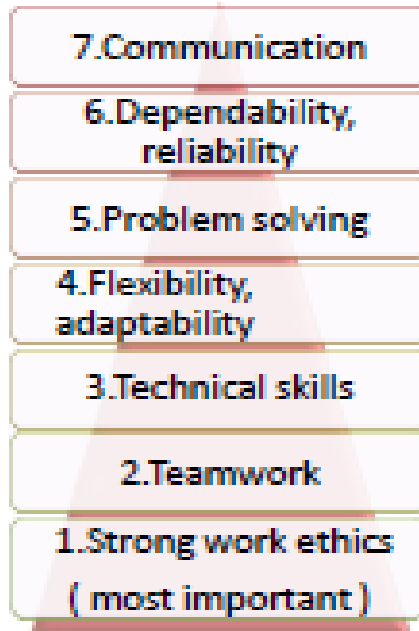
**Only 25%** of employees have satisfactory **soft skills** and **50%** of them have satisfactory **hard skills**.

**83%** think Employees need more training and development in soft skills

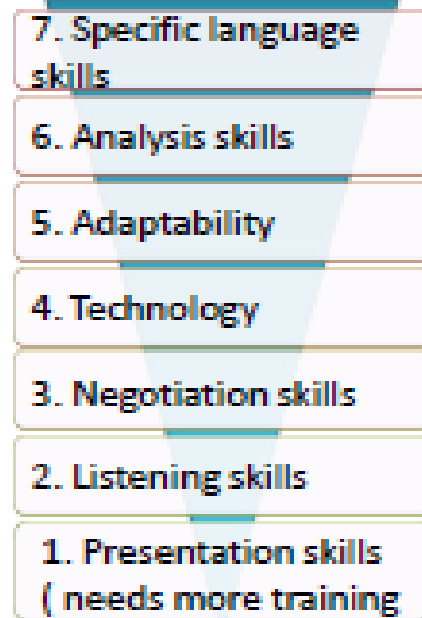


But only **17%** of organizations spend money on employee's soft skills training and development

rank skills in order of importance to hire employees

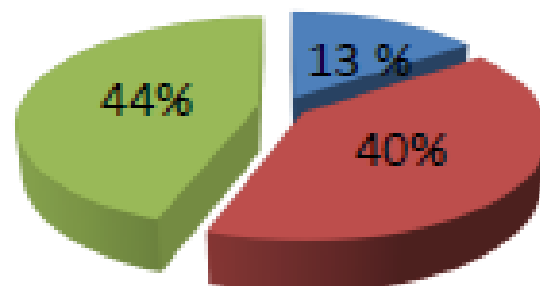


rank skills in order of construction employees need more training on



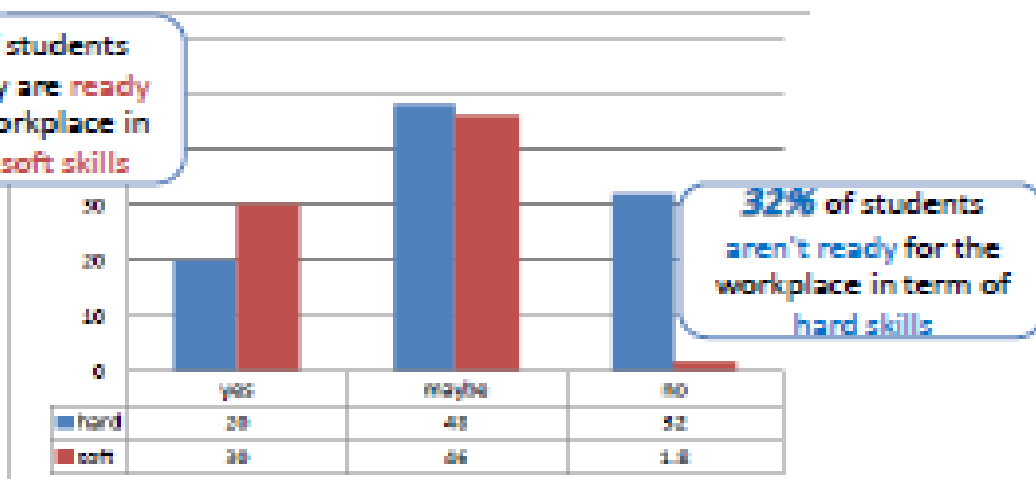
- 54% of students thought that College curriculums emphasize on hard skills .
- 34% said the lectures aren't clear in explaining the importance of learning soft skills.
- 34 % thought lecturers aren't innovative in how they help them learn new skills .

44% of managers and students think it's realistic to expect colleges to deliver soft skills



Do you think you ready for workplace in term of

**30%** of students think they are **ready** for the workplace in term of **soft skills**



**32%** of students aren't ready for the workplace in term of **hard skills**

*Thank you*