



Sudan University of Science and Technology  
College of Graduate Students



# Concept and application of Learning Organization in Sudanese Construction Industry

مفهوم و تطبيق المنظمة المتعلمة  
في صناعة التشييد السودانية

*A thesis Submitted to the School of Civil Engineering in Fulfillment for  
requirements of the degree of (M.Sc.) in Construction Management*

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# Acknowledgment

I would like to acknowledge the contributions of a number of people to this thesis, through either their direct inspiration or support of my work or through the development of my skills and myself as a person through the journey. I want to thank my parents, without their understanding, I would not have been able to complete this learning journey. I also want to thank my supervisor, Dr. Osama Mohammed Ahmed, for his contribution and support to my efforts throughout the production of this thesis.

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## Abstract:

This research provide an overview of current literature in this field, highlighting the importance of development of a company as a learning organization, The main Characteristics of a learning organization and also describes the means, The rules and practical steps needed to transform a traditional organization into a learning organization.

Data collected using a structured questionnaire administered on fifty selected construction industry organizations operating in Khartoum state. In the process, thirty-five completed questionnaires received at response rate of 70%, and used (SPSS) for analyzing and processing data.

The results indicate that “Promote inquiry and dialogue” and “Establish systems to share and capture learning” ranked highest while “Connect the organization to its environment” was ranked less. Also at second part of questionnaire, the “Human Resources” and “Leadership” occupies first place while the “Structure” occupies the last rank in existence.

The research seeks to provide some recommendations for developing all dimensions of Learning Organization to consolidate the concept and importance of the Learning Organization. In addition, to set a goal of transformation to a Learning Organization as a strategic goal and increasing trend toward decentralization and encourage cooperating and collective learning, develop the suggestion system and connect the organization with its external environment.

## مستخلص:

تتناول هذا البحث نظرة عامة عن الدراسات السابقة و الحالية عن المنظمة المتعلمة و سلط الضوء على أهميتها للمنظمات السودانية، كذلك بين سماتها الأساسية و القواعد و الخطوات الفعلية التي يجب إتباعها لتحويل المنظمة التقليدية لمنظمة متعلمة قادرة على البقاء و التحمل و النجاح.

تم تصميم إستبيان لجمع المعلومات، و تكوّن مجتمع البحث من الشركات العاملة في قطاع التشييد بولاية الخرطوم، و تم توزيع 50 استبياناً بلغ العائد منها 35 إستبياناً، بمعدل إستجابة 70%، و استخدم برنامج SPSS الإحصائي لمعالجة و تحليل البيانات.

من النتائج التي توصل إليها البحث، أن أكثر أبعاد المنظمة المتعلمة توافراً في مؤسسات التشييد هما: "تشجيع الحوار و الإستفسار" و "إنشاء نظم المعرفة و التعلم"، في حين كان أقل الأبعاد توافراً هو "ربط المنظمة ببيئتها الخارجية". و قد وجد أيضاً أن أكثر الأدوات وجوداً لبناء المؤسسة المتعلمة هما "الموارد البشرية" و "القيادة الداعمة" بينما أقلها وجوداً "الهيكل".

و أوصى البحث بتطوير كل بعد من أبعاد المنظمة المتعلمة السبعة و معالجة نقاط الضعف فيها، مثل توعية و ترسيخ مفهوم المنظمة المتعلمة لدى القياديين في المؤسسات، و وضع هدف تحول المؤسسة إلى منظمة متعلمة على أنه هدف إستراتيجي، و إنشاء النظم المعرفية لتبادل المعرفة على مستوى المؤسسات، و إتاحة فرص التعلم المستمر للموظفين، و زيادة التوجه نحو اللامركزية في اتخاذ القرارات، و تشجيع التعاون و التعلم الجماعي، و تطوير نظم الاقتراحات، و ربط المنظمة ببيئتها الخارجية.

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## List of abbreviations

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### Abbreviations

**LO** Learning Organization

**DLOQ** Dimensions of Learning Organization Questionnaire

**AEC** Architecture, Engineering and Construction industry

**HRD** Human Resources Development

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## Chapter One

# Introduction



# Chapter one: Introduction

## 1.1 General:

The Architecture, Engineering and Construction industry (AEC) of the 21st century is undergoing significant changes to address issues such as the introduction of advanced technologies, the aging of the workforce, globalization, economic integration, and international partnering (P Chinowsky & P Carrillo, 2007). These fluctuating environment and unanticipated changes (Drew & Smith, 1995; Klimecki & Lassleben, 1998) are initiating a challenge for the AEC industry in regard to how to educate personnel to appropriately respond to the rapid change. The foundation of this challenge focuses on how to facilitate Learning Organization and establish continuous human resource development throughout all levels of the organization. There is a great demand of transforming into learning organization in AEC industry.

Learning is the key competency required by any organization that wants to survive and thrive in the new knowledge economy. Market champions keep asking learning questions, keep learning how to do things better, and keep spreading that knowledge throughout their organization. Learning provides the catalyst and the intellectual resource to create a sustainable competitive advantage.

The Learning Organization is a concept that is becoming an increasingly widespread philosophy in modern companies, from the largest multinationals to the smallest ventures. What is achieved by this philosophy depends considerably on one's interpretation of it and commitment to it. Many consultants and organizations have recognized the significance of organizational learning and the notion of the “learning organization” has been a central orienting point in this. Writers have sought to identify templates, or ideal forms, “which real organizations could attempt to emulate”. In this sense the “learning organization” is an “ideal”, “towards which

organizations have to evolve in order to be able to respond to the various pressures that they need to face”.

Mentoring practice therefore, serves as a medium for learning organization by continuously evolving through new knowledge and continuously educating their workforce as valuable assets. At meantime, their organizational commitment will be finally improved as an intangible organizational performance.

## **1.2 Research Problem:**

The construction industry of the 21st century is undergoing significant changes as it addresses issues such as the aging of the construction workforce, globalization, growth of the organization, and “better” client solutions. These changes are initiating a looming crisis for the construction industry in Sudan, the need to both retain knowledge within the organization and focus on continuous human resource development throughout all levels of the organizations.

Specifically, it is imperative for construction organization, engineering, and owner to be aware of the uncertain situation that may face them especially in construction industry because of its unique nature. Being flexible and able to adapt to changes, if not creating them, is required from specific characteristics organization. These are characteristics of Learning Organization.

In Construction organizations economy, the production worker had primary importance. These individuals had the primary responsibility to assemble components into the finished assemblies that drove the production era. Here in Sudan an educated workforce will work both smarter and more efficiently.

Sudanese Companies lacking proper documentation and a good Human Resources Management to make sure that every individual poses the right knowledge to perform his job properly.

### **1.3 Significant of research:**

This study attempts to determine the impact of an organizational learning culture on the outcomes of mentoring practice in Architecture, Engineering and Construction industry (AEC), which lead to improvements in organizational commitment. With the need to study relationship between organizational learning culture, mentoring practice and organizational commitment.

Every organization is continuously searching for better solutions to client problems. The key to these solutions lies with the knowledge to find and generate new solutions. The achievement of a learning culture will enhance the probability that this knowledge resides within the organization.

The organization that wants to succeed over the long-term in terms of continued growth in profits and overall performance needs to focus on evolution, not status quo. Specifically, the organization that is constantly evolving and adapting to meet new regulations, new problem areas, and new client challenges is the organization that will succeed and not just sustain. A learning organization focused on success by continuously evolving through new knowledge and preparation for the future rather than codification of the past.

### **1.4 Hypothesis:**

- There is no Construction Company in Sudan uses the concept of Learning Organization as a management philosophy.
- Tools of applying the Learning Organization concept is available, but not used in construction organizations.

## **1.5 Objectives:**

### **1.5.1 Main Objectives:**

1. To identify the dimensions of learning organization.
2. To understand how learning organization could be source of competitive advantages.
3. To identify various blocks that create a learning organization

### **1.5.2 Secondary Objectives:**

1. Introduce the concept of Learning Organization.
2. Review the current knowledge on organizational learning in construction.
3. Define The Organizational Learning tools in construction companies.
4. Detect the portion of Learning Organizations in Khartoum.

## **1.6 The research questions formulated as follow:**

1. How Learning organization is a source of competitive advantages?
2. What makes a Learning Organization?
3. What traits define a Learning Organization?
4. How to explored or applied the principles found in the literature regarding Learning Organizations?

## **1.7 Structure of the Research:**

### **1.7.1 Chapter 1: Introduction:**

This chapter contain background of the thesis and illustrate the aim and the hypothechs. It also include the research problem and methodology conducted to complete the research.

### **1.7.2 Chapter 2: Literature Review, Theory Related**

Chapter two deals with the extant literature. It is an overview of what is the learning and learning organizations. Also it's illustrate how to build a learning organization. Furthermore, the chapter show the theoretical framework of the LO.

### **1.7.3 Chapter 3: Research Methodology:**

This chapter deals with the design of the research which was in place at the outset. This chapter is meant to give the reader an idea of the journey undertaken to complete the research.

### **1.7.4 Chapter 4: Results and Dissection:**

This chapter deals with information collection and analysis in two ways, examination of similarities and differences with practitioner and academic literature on the subject and the identification of common factors from those which are specific to particular organizations.

### **1.7.5 Chapter 5: Conclusions and recommendations:**

This final chapter sets out the conclusions of the research behind this thesis and makes proposals for. In this way, the thesis is seen to make a significant contribution to the literature.

In addition, the final chapter sets out recommendations for future research that may be necessary to answer some of the questions raised within this thesis that are beyond its direct scope.

## Chapter Two

# Literature Review



## Chapter 2: Literature Review

### 2.1 Introduction:

At its most basic, organizational learning represents an organization's ability to adapt and react to change. The ultimate goal of organizational learning is to strengthen an organization's adaptive responses to its dynamic, changing environment.

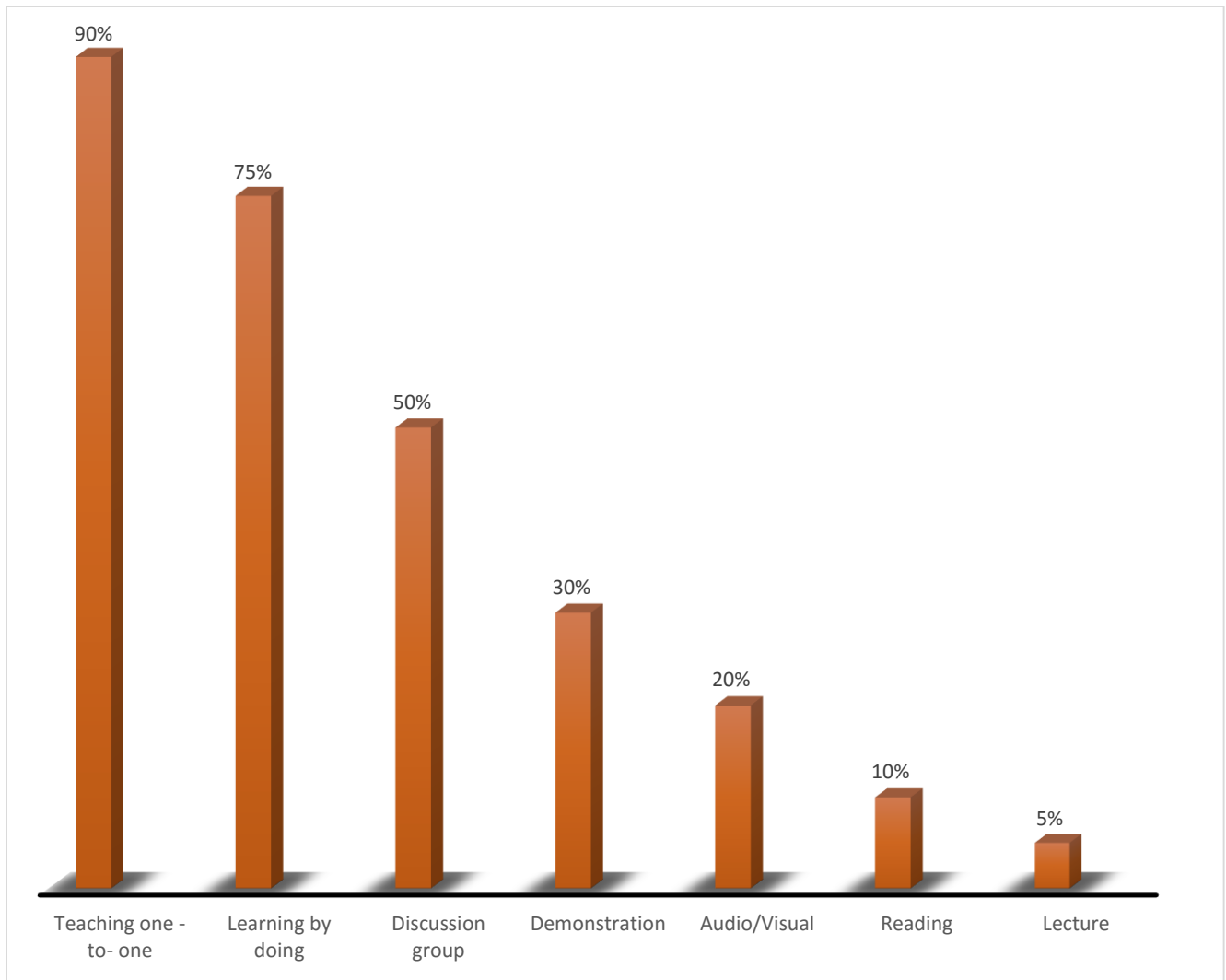
Organizational learning takes place when there is a change in an organization's knowledge that occurs as a function of experience. A learning organization is one that changes strategically as the organization acquires experience. Together, they enable the intentional use of learning processes at the individual, group and system levels to continuously transform the organization so that it is increasingly effective in meeting the needs of clients, partners, and other stakeholders.

### 2.2 Learning and Competitive Value:

Learning is the key competency required by any organization that wants to survive and thrive in the new knowledge economy. Market champions keep asking learning questions, keep learning how to do things better, and keep spreading that knowledge throughout their organization. Learning provides the catalyst and the intellectual resource to create a sustainable competitive advantage, and as it stated by Peter Senge "Over the long run, superior performance depends on superior learning."

A study made by the National Training Laboratory of USA has concluded that learning in team learning is more important than individual learning. The results of this study are presented in the following graph:

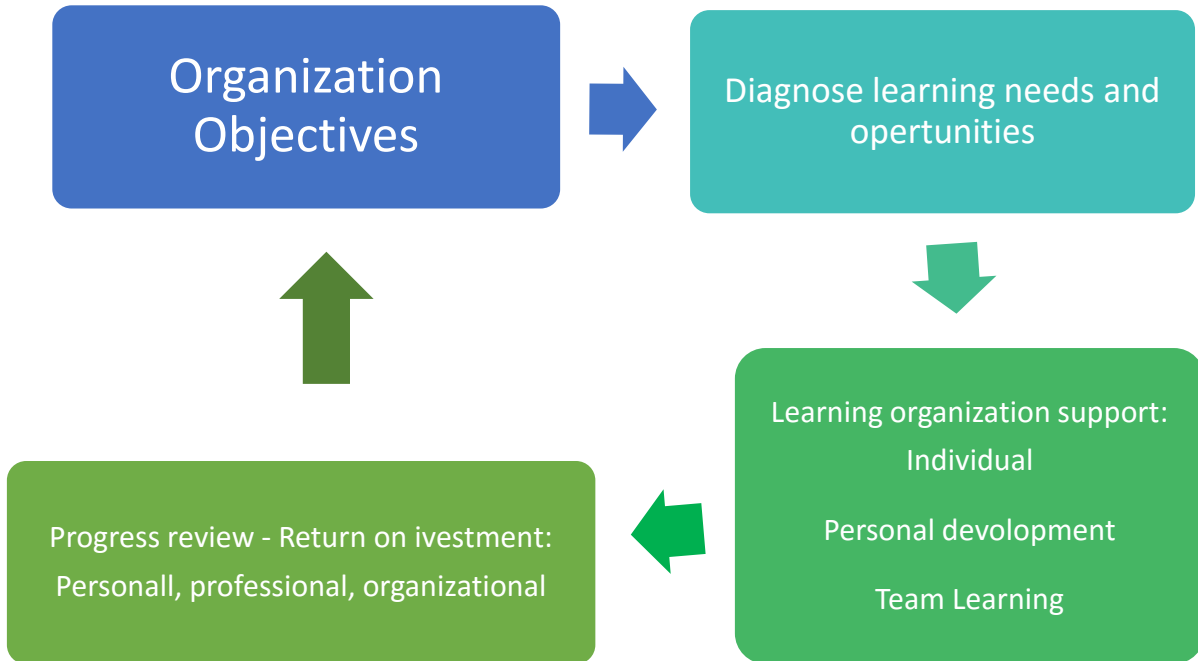




**Figure (2.1): Effective Learning Percentage of knowledge returns after completion**

**Source:** National Training Laboratory, United States (2007)

As we can see from the previous graphic, *knowledge* is the most productive when it is shared by all, but that presupposes the building of a learning organization. Today and in the future, the organizations that will truly excel will be those developing everybody's commitment and capacity to learn at *all* levels in an organization. A learning organization is "*an organization that is continually expanding its capacity to create its future*". It is continuously learning new ways of doing things and also (necessarily) involved in a continuous process of forgetting old ways of doing things.



**Figure (2.2) : Systemized Organization Learning**

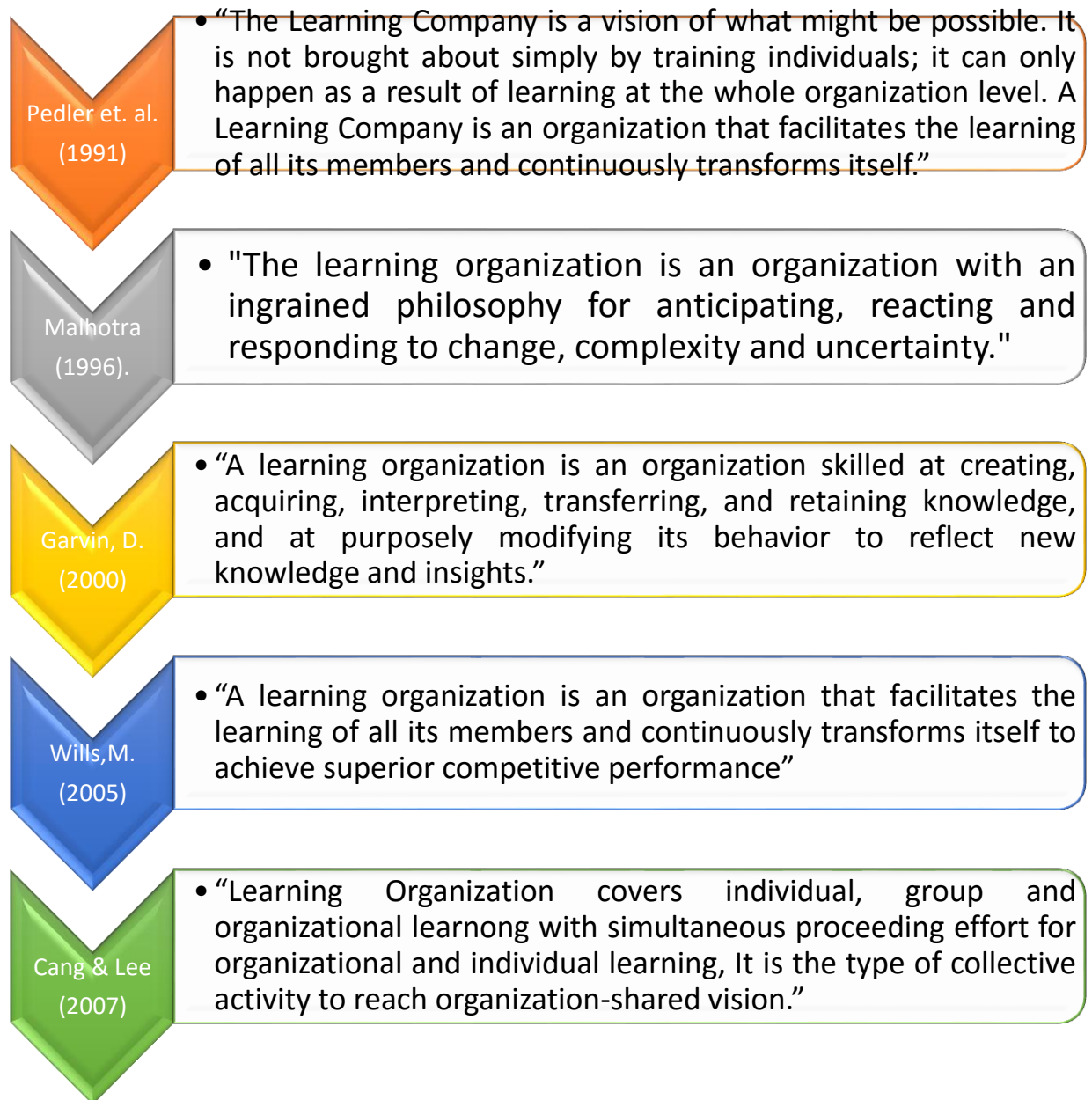
### 2.3 Definition of learning organization:

The concept of a learning organization has been around for almost two decades, yet there is considerable variation in what is meant by the term. The learning organization can be considered both as an organization which continuously learns or an organization which encourages learning in its people. There are vast differences in approach, dependent on which philosophy is adopted. Some might say that the very existence of an organization does not permit learning, since there are competitive and political factors that mitigate against the conditions required for learning. On the other hand, a number of organizations have surpassed the barriers to implementing a learning culture with consequent outstanding performance.

According to Peter Senge (1990) learning organizations are "organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective

aspiration is set free, and where people are continually learning to see the whole together”.

The number of available definitions of the learning organization illustrates the degree of confusion surrounding the concept and I present below the most important of them:



**Figure (2.3) : Learning Organization Definitions**

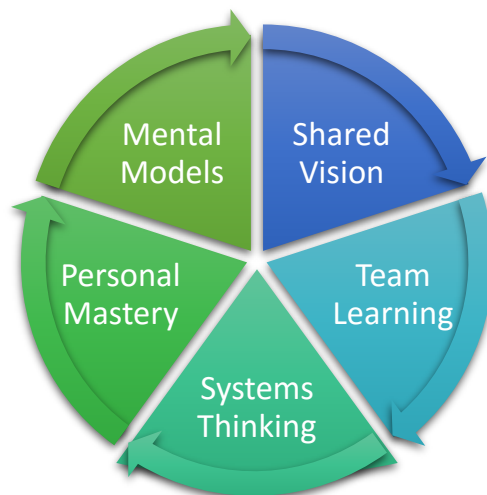
## 2.4 Learning Organization Characteristic's Models:

A learning organization is an organization that learns and encourages among its people. It promotes exchange of information between employees, hence creating a more knowledgeable workforce. This produces a very flexible organization where people will accept and adapt to new ideas and change through shared vision.

Peter Senge underlines that the key-dimension that distinguishes a learning organization from more traditional organizations is the mastery of certain basic disciplines, which he regards as a series of principles and practices that we study, master and integrate into our lives. The five disciplines that he identifies are considered to be common to all learning organizations.

According to Peter Senge (1990), the core disciplines in building the learning organization are:

- ◆ **Personal Mastery:** personal and professional development that is in sync with the organization's goals.
- ◆ **Mental Models:** internalized frameworks and generalizations of how an organization works.
- ◆ **Shared Vision:** developing commitment using "share pictures of the future.
- ◆ **Team Learning:** People work as teams. They will be more efficient if they also learn as teams.
- ◆ **Systems Thinking:** integrating all the functions in an organization into a cohesive structure.



**Figure (2.4) :** Peter Senge's Learning Organization Model

There are different models, characteristics of learning organization which measure the sort of organization that either it is a learning organization or not. Learning organization is a learning company which facilitates learning activity for all members. Many researchers have attempted to identify the specific components and variables which are associated with LO and they developed different models and several studies which attempted to identify the specific components or dimension of learning organization.

| Author                               | Main Characteristics  |
|--------------------------------------|---|
| Beck (1889)                          | Organization facilitate learning and personal development for everybody, learning is associated with transformation of the organization.  |
| Pedler, Burgoyne and Boy dell (1991) | There are eleven characteristics of learning organizations:<br>1. A learning approach to strategy, 2. Informing, 3. Participative policymaking, 4. Internal exchange, 5. Formative accounting & control, 6. Boundary workers as environmental scanners, 7. Enabling structure, 8. Reward flexibility, 9. Inter-company learning, 10. Self-development for everyone, 11. Learning climate. |
| Watkins, Marsick (1992)              | Learning and work are mutually supportive, integrated, continuous processes; learning is a strategic goal; organization has attitude that determines changes in individual and collective perception, thinking, behaviour, attitudes, values, beliefs, systems, strategies, policies and procedures.  |
| Senge, Roberts, Ross (1994)          | Possibility to reflect, continuous examination of own experience and practice.  |
| Argyris (1997)                       | Analysis of solution and correction of faulty decisions comprise a part of learning.  |
| Marquardt (2001)                     | Learning with organization takes place with at three different levels: individual, team and system. Those levels link learning organization.  |
| Garalis (2003)                       | Learning is understood as a central value of organization culture.  |
| Othman, Leman (2005)                 | Organization adopts and maintains such a form of learning that enables its members to learn in such as way that leads to positively valuable outcomes such as innovations and effectiveness.  |

**Table (2.1):** Main Characteristics of learning organization as learning environment

## 2.5 Sustainability and Organizational Learning:

Sustainable development is rapidly being accepted across the world as the effective way of addressing the social, economic and environmental concerns. Sustainable development balances environmental resource protection, social progress and economic growth and stability now and for the future. Sustainable development has been defined in many ways but the most widely accepted definition is. *“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*- From ‘Our common future’ (The Brundtland Report, 1987).

The construction industry has a significant social responsibility to minimize the damage its projects do to the social environment. Sustainability at the organizational level refers to meeting social and environmental needs in addition to the firm’s profitability (Porter 2008).

Sustainable construction is the application of sustainable development principles in the construction industry. Sustainable construction aims at reducing the environmental impact of a building over its entire lifespan, providing safety and comfort to its occupants and at the same time enhancing its economic viability. The construction industry recognizes sustainability as a key factor in the success of a project and that performance through the supply chain is, key to this achievement. Sustainability in construction has become a core issue and it is considered as one of the key vehicles for the successful completion of construction projects (Schultman and Sunke 2007) It is believed that the implementation of sustainability in any organization necessitates organizational learning (Siebenhuner and Anold 2007) Organizations that ignore and do not turn sustainability issues into competitive advantage are likely to become less effective. Learning and development processes are believed to be an important path towards the sustainable development agenda (Muller and Siebenhuner 2007).

## 2.6 How to build a “Learning Organization”:

There is no doubt that construction organizations will need to become learning organizations to remain competitive.

This is because of the following:

- ✚ Construction is a technology-based business, and innovation is the key to remaining competitive.
- ✚ Construction orders are diverse, and continuous innovations in the delivery and management of such orders are essential for remaining competitive.
- ✚ In reality, climbing to the top rank and maintaining one’s position requires learning ahead of one’s competitors.

Learning can be from past failures or successes, and it can be achieved by systematically capturing and analyzing any item of information deemed relevant to the organization’s business.

In order to create a learning organization there are two main categories of actions that can be implemented<sup>14</sup>:

- 1. Building a sound base:** achieved by taking into account the following five main points: the environment, leadership, empowerment, learning and awareness.
- 2. Applying the Golden Rules:** facilitating learning from the surrounding environment and from employees; communicating success and failure; encouraging experimentation; rewarding learning; intentionally retrieving and retaining company memory; thriving on change.

In practice, all the elements above mentioned are included in a strategy aiming the transformation of the traditional organization into a learning organization. The following figure illustrates the performance framework<sup>15</sup> in which the learning strategy is implemented. It is driven by the business outcomes desired, and, thus, promotes “individual and cluster autonomy while maintaining alignment” (Smith, 2001).

The next four steps are necessary for achieving the harmony in the process of building a learning organization:

### **2.6.1 Building a strategy for evolving to learning organization:**

An integral part of the learning process in a learning organization is **strategy**, as it focuses on the organization's development of core competencies, both in the present and in the future<sup>16</sup>. It also focuses the learning process on the desired future position that the organization would like to be in.

### **2.6.2 Building a learning structure and systems:**

The organization's **structure** and **systems** are key to fostering the development of a learning organization. The building of a learning organization involves change at all levels. It is not possible to change one without affecting change in the other. The structure and systems, in place within the organization are linked. For example, "change in the organization's systems such as the information systems, human resource practices, remuneration and rewards procedure, and policies and production systems would all have an impact on the organization's structure and this would, in turn, affect the development of the organization as a learning organization."

### **2.6.3 Implementing a leadership model and creating a managerial team:**

The best known leadership model is based on Covey's Principle-Centered Leadership<sup>18</sup>. This approach involves every member's understanding and acting according to a consistent set of principles, thus contributing to the organization's consistent sense of direction. It is important to remember that a core part of the Covey program is to facilitate people's developing personal mastery, so as to take control of their working environment and to contribute in a meaningful way to the effectiveness of an organization<sup>19</sup>. In parallel with the implementation of the Covey 7-habits program, the process of establishing a team-based culture is very important and needed for building trust between people in the organization.



#### **2.6.4 Creating a learning and development culture:**

Culture is another important aspect in the building process of a learning organization. In this context is generally recognized that learning and development are the central part of a culture. Some important aspects of an organization culture that stimulate learning and development and make from a traditional organization to a learning organization, can be summarized as follows: organization's graduates/culture, work-life balance, skills, qualifications and personalities, dialog culture among employees, respect for each national culture, innovation and experimentation. Innovation and experimentation are also needed to be an integral part of the learning organization because instead of waiting for a problem to occur, a learning process of continuous improvement can be encouraged.

The successful creation and management of an effective construction organization demands to be aware of errors. Current organizational learning and knowledge within organizations and the technological advancements have revolutionized financial transactions, management infrastructure, and knowledge workers. From knowledge management and business intelligence to data warehousing and mining, this ever-advancing field of organizational learning and knowledge is critical to the success of modern businesses, academic communities, and consumers.

The constantly changing landscape of organizational learning and knowledge makes it challenging for experts and practitioners to stay informed of the field's most up-to-date research.

#### **2.7 Theoretical Framework:**

This study is based on Watkins and Marsick's framework of learning organization (1997): the Dimension of Learning Organization Questionnaire. We review the development of the DLOQ. The second framework is the blocks of building a learning organization developed by David A. Garvin, Amy C. Edmondson, and Francisca Gino at Harvard Business School (2012).

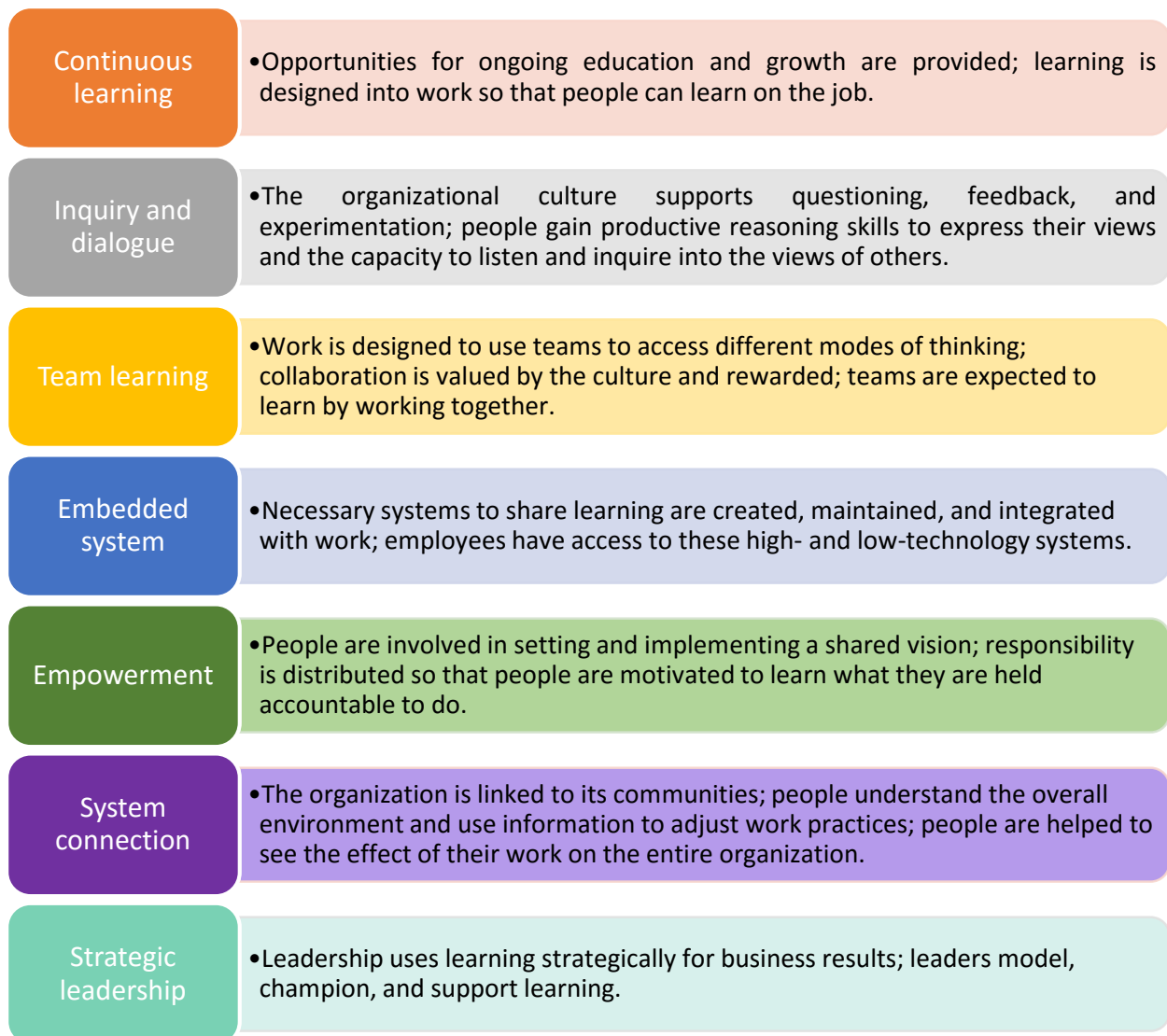
### 2.7.1 The Development of the DLOQ:

One of the most severe but common critiques of HRD Human Resources Development practices is the lack of measures to assess applications empirically in the workplace (Holton, 1996, 2005; Holton et al., 2000; Tsang, 1997; Yang et al., 2004). To date, numerous studies have been conducted to examine the substantial concept of the learning organization. However, little regard was given to how to measure the conceptualized learning organization in the workplace empirically until the 1990s.

The endeavors of Watkins and Marsick (1993, 1996, 1997) are of great importance in constructing the basic notions of the measurement factors of the learning organization. Their approach encompassed comprehensive components of the learning organization construct; in turn, in order to define the construct of the learning organization, Watkins and Marsick provided an integrative concept of the learning organization based on three approaches:

1. For systems thinking, organizational generatively (Senge, 1990).
2. For a learning perspective, comprehensive aspects of learning (Pedler, Burgoyne, & Boydell, 1991).
3. For strategic perspective, managerial practices (Garvin, 1993; Goh, 1998).

From a broader theoretical standpoint, Watkins and Marsick (1993, 1996, 1997) proposed the DLOQ, a constructive concept of learning organization measures that has seven dimensions of learning-related factors in both people-oriented and structure-oriented components. The model of an effective learning organization is considered one that has the capability to integrate people and organizational structures in order to facilitate continuous learning and encourage organizational changes (Yang et al., 2004). Through integration of the aforementioned dimensions of the learning organization, Watkins and Marsick (1997) proposed an integrated model. The specific seven dimensions of a learning organization culture are described here in Figure (2.5).



**Figure (2.5): Watkins and Marsick’s Model (1997) of the Seven Dimensions of the Learning Organization**

Watkins and Marsick (1993) conceptualize a model with seven components. The specificity of their approach lies in their expertise as adult educators who are interested in learning and organizational change. They note that learning occurs at four interdependent levels - individual, team, organization and society - and that learning transforms the organization. The authors further lay out six action imperatives for the creation of a learning organization, each complementing the others. A seventh action imperative (providing strategic leadership for learning) was added in a later work (Watkins & Marsick, 1996). The model proposed by Watkins and Marsick (1993), which depicts the action strategies, is presented below:

## **1. Create Continuous Learning Opportunities:**

The authors note that “yesterday’s organizations can be described as machine-like, today’s as systems-like, and the future’s as brain-like” (pp. 23-24). In today’s workplace, a continuous learning opportunity means that: learning becomes an everyday part of the job and is built into routine tasks; employees are expected to learn not only skills relating to their own jobs but also the skills of others in their work unit and how their work unit relates to the operation and goals of the business; employees are expected to teach, as well as learn from, their co-workers. In short, the entire work environment is geared toward and supports the learning of new skills. The authors developed a model of continuous learning based on the problem-solving cycle. The model features alternating cycles of judgment or reflection with taking action, which results in the deepening of learning from work experience (Watkins & Marsick, 1993). Based on the model, they argue that there is no specific time for learning since every challenge can be converted into a learning possibility.

## **2. Promote Inquiry and Dialogue:**

In a learning organization, people gain productive reasoning skills to express their views, and the capacity to listen and inquire into the views of others; the culture of the organization supports questioning, feedback and experimentation (Watkins & Marsick, 1993). Through inquiry, people explore ideas, questions and potential actions; inquiry is based on open-minded curiosity that suspends presuppositions and judgments in the interests of truth for a better solution (Watkins & Marsick, 1993).

## **3. Encourage Collaboration and Team Learning:**

Work is designed to use groups to access different modes of thinking and these groups are expected to learn and work together. Therefore collaboration is valued by the organizational culture and rewarded (Watkins & Marsick, 1993). However, they also note that it may also happen that when individuals learn, they fail to share the results. Despite this, Watkins and

Marsick (1993) argue that teams are “crucibles” in which ideas can be challenged.

#### **4. Establish Systems to Capture and Share Learning:**

Watkins and Marsick (1993) note that both high and low technology systems for sharing learning are created and integrated in the work; access is provided and systems are maintained. The authors also observe that even if organizational learning is supported by individual learning, it is the way the organization does business, the systems put in place that favor learning.

#### **5. Empower People toward a Collective Vision:**

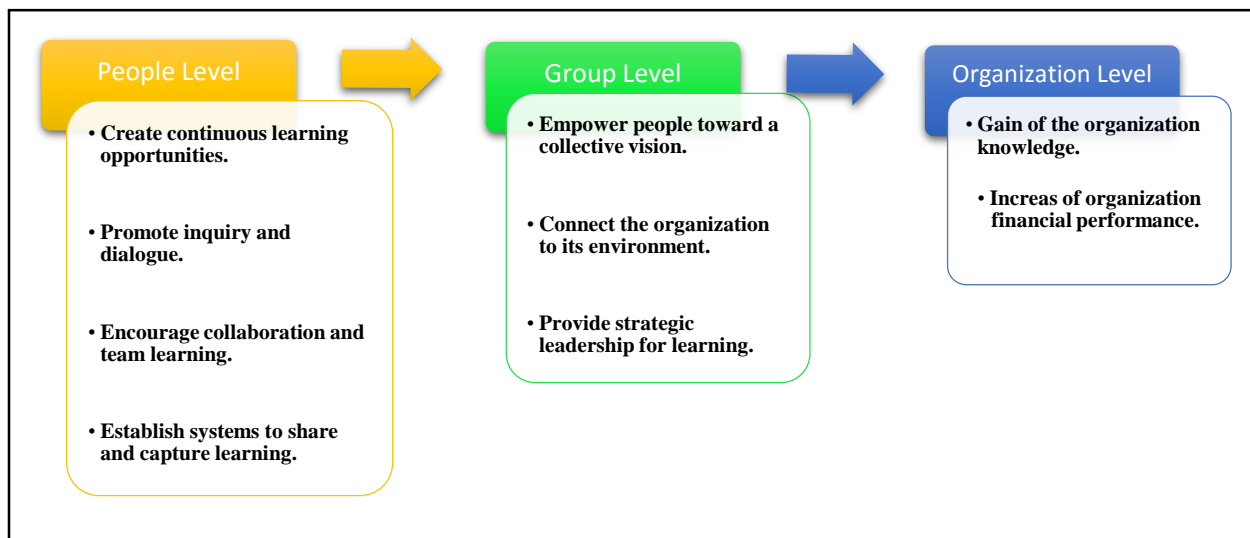
Watkins and Marsick (1993) argue that in a learning organization people are involved in setting, owning and implementing a joint vision. Responsibility is distributed close to decision making to motivate people to learn what they are accountable for. This is what they call “empowerment”. Learning organizations depend on the participation of many individuals in a collective vision and on the release of the potential locked within them. The learning organization begins with a shared vision and learning is directed toward that vision.

#### **6. Connect the Organization to its Community and Environment:**

According to Watkins and Marsick (1993), learning organizations have a healthy relationship with their physical, social and cultural environments. The learning organization acknowledges its dependence on its environment. People are helped to see the impact of their work on the entire enterprise. They scan the environment and use the information obtained to adjust work practices. The organization is linked to the community through continuous interaction.

#### **7. Providing Strategic Leadership for Learning:**

Leaders model, champion and support learning, which is why leadership uses learning strategically for business results.



**Figure (2.6):** Nomo logical Network of the Dimensions of Learning Organization and Performance Outcomes

## 2.8.2 Building Blocks of Learning Organization:

1. **Building Block 1: A supportive learning environment:** Allow time for a pause in the action and encourage thoughtful review of the organization's processes. An environment that supports learning has four distinguishing characteristics:
  - a. **Psychological safety:** To learn, employees cannot fear being belittled or marginalized when they disagree with peers or authority figures, ask naive questions, own up to mistakes, or present a minority viewpoint. Instead, they must be comfortable expressing their thoughts about the work at hand.
  - b. **Appreciation of differences:** Learning occurs when people become aware of opposing ideas. Recognizing the value of competing functional outlooks and alternative worldviews increases energy and motivation, sparks fresh thinking, and prevents lethargy and drift.
  - c. **Openness to new ideas:** Learning is not simply about correcting mistakes and solving problems. It is also about crafting novel approaches. Employees should be encouraged to take risks and explore the untested and unknown.

## **2. Building Block 2: Concrete learning processes and practices:**

A learning organization is not cultivated effortlessly. It arises from a series of concrete steps and widely distributed activities, not unlike the workings of business processes such as logistics, billing, order fulfillment, and product development. Learning processes involve the generation, collection, interpretation, and dissemination of information. They include experimentation to develop and test new products and services; intelligence gathering to keep track of competitive, customer, and technological trends; disciplined analysis and interpretation to identify and solve problems; and education and training to develop both new and established employees.

For maximum impact, knowledge must be shared in systematic and clearly defined ways. Sharing can take place among individuals, groups, or whole organizations. Knowledge can move laterally or vertically within a firm. The knowledge-sharing process can, for instance, be internally focused, with an eye toward taking corrective action.

## **3. Building Block 3: Structure:**

It is well known that a rigid organizational structure hinders changes in business processes.

Business process is performed by employees who are parts of formal or informal organizational structures. People may be organized in particular formal organizational units according to power, decision making, functional or other relationships. Formal organizational structures tend to be more stable than business processes because of legal relationships between employees and organization, which define their right to occupy a particular position in the organizational structure. To achieve high effectiveness of business process performance it is necessary to consider not only formal, but also informal organizational structures, which are formed by informal leadership, friendship or skill (knowledge) based relationships between the employees.

#### **4. Building Block 4: System:**

Organizational charts, procedures, planning and control systems, informative systems are not very effective in defining and organizing a priori the activities of the cognitive worker. The first and most stringent conflict is the a synchronism between the time needed for cognitive work, which is the time for creativity, research, innovation, and the time, methods and standards imposed by the productive machine. Although most managers are aware of this challenge, in practice there is a strident contrast between the rhetorical exaltation of the centrality of knowledge, creativity and the managerial apparatus still strongly inspired by the Tayloristic approach.

#### **5. Building Block 5: Human Resources:**

Besides being a basic way to understand the world and an appropriate behavior to survival and development of organizations, the knowledge acquisition, updating, and use - must be managed to increase creativity, and should be taken as a force to drive the human being in the field of competitive innovation. This specificity should be considered in the policies of human resources management and also in the formulation of competitive strategies. Some suggestions are made for improving the utilization of knowledge workers to increase the level of productive creativity.

#### **6. Building Block 6: Culture:**

In order to create a learning organization learning must be made operational and in alignment with the organization's structure, processes, rewards, underlying assumptions, values, attitudes, and behaviors in order to support this cultural change. The only way organizations can achieve lasting change is by creating a learning culture.

Culture can be defined as the collection of individual and group values, attitudes, perceptions, and assumptions that guides the group members'

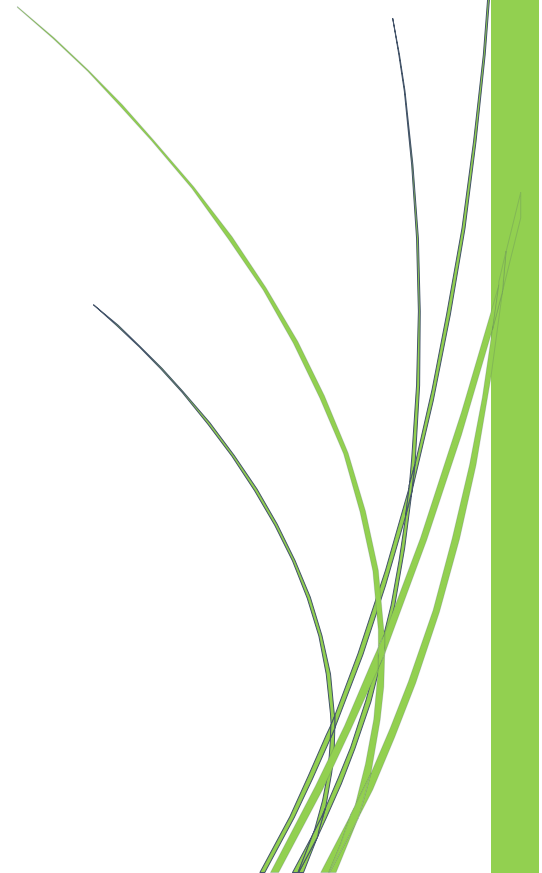


behaviors. Business cultures do not always lend themselves toward collaboration and communication which are key components of a learning organization.

### **7. Building Block 7: Leadership that reinforces learning:**

Organizational learning is strongly influenced by the behavior of leaders. When leaders actively question and listen to employees and thereby prompt dialogue and debate people in the institution feel encouraged to learn. If leaders signal the importance of spending time on problem identification, knowledge transfer, and reflective post-audits, these activities are likely to flourish. When people in power demonstrate through their own behavior a willingness to entertain alternative points of view, employees feel emboldened to offer new ideas and options.

# Methodology



## Chapter 3: Research Methodology

### 3.1 Introduction:

This study is totally based on existing literature. The main purpose of this research is to integrate the viewpoints of different companies and to make a conclusion on the basis of the literature. Initially the research is conducted by the use of Google scholar search engine with the keywords of “Learning organization”, “learning organization and competitive advantages” as well as “Learning organization Characteristic’s” to understand the basic information about terminologies.

### 3.2 Research Method:

A quantitative survey method was employed to collect data. The research design consisted of a self-report questionnaire to evaluate perceptions on learning organization and to detect if there is any learning organization in Sudan.

This research will adopt a pragmatic philosophical stance. Pragmatism is an epistemological position where one believes that the meaning of an idea or a proposition lies in its observable practical consequences. The pragmatic approach to research involves mixing data collection methods and data analysis procedures.

### 3.3 Instrument:

Dimensions of Learning Organization Questionnaire (DLOQ) developed by Watkins and Marsick (1996), employed in the first part of the questionnaire. The DLOQ measures respondents’ perceptions on seven learning organization dimensions. The dimensions describe actions or practices by individuals, teams, leaders, and the organization as a whole to create a learning organization. The second part of the questionnaire is the building blocks of the Learning Organization. It’s developed by David A. Garvin, Amy C. Edmondson, and Francisca Gino at Harvard

Business School (2012). The whole questionnaire contain 40 items in part one plus 30 items in part two. The questionnaire was translated into Arabic to get precise information, using the forward- then-back translation approach (Chen, Holton, & Bates, 2005). The structures of variables which the instrument is supposed to measure are shown in Figure (3.1) for the first hypothec and figure (3.2) for the second hypothec.

### **3.4 Geographical scope:**

This research conducted in construction organizations of Sudan, Khartoum.

### **3.5 Time scope:**

The research considered the time period between May to August 2016.

### **3.6 Research Sample:**

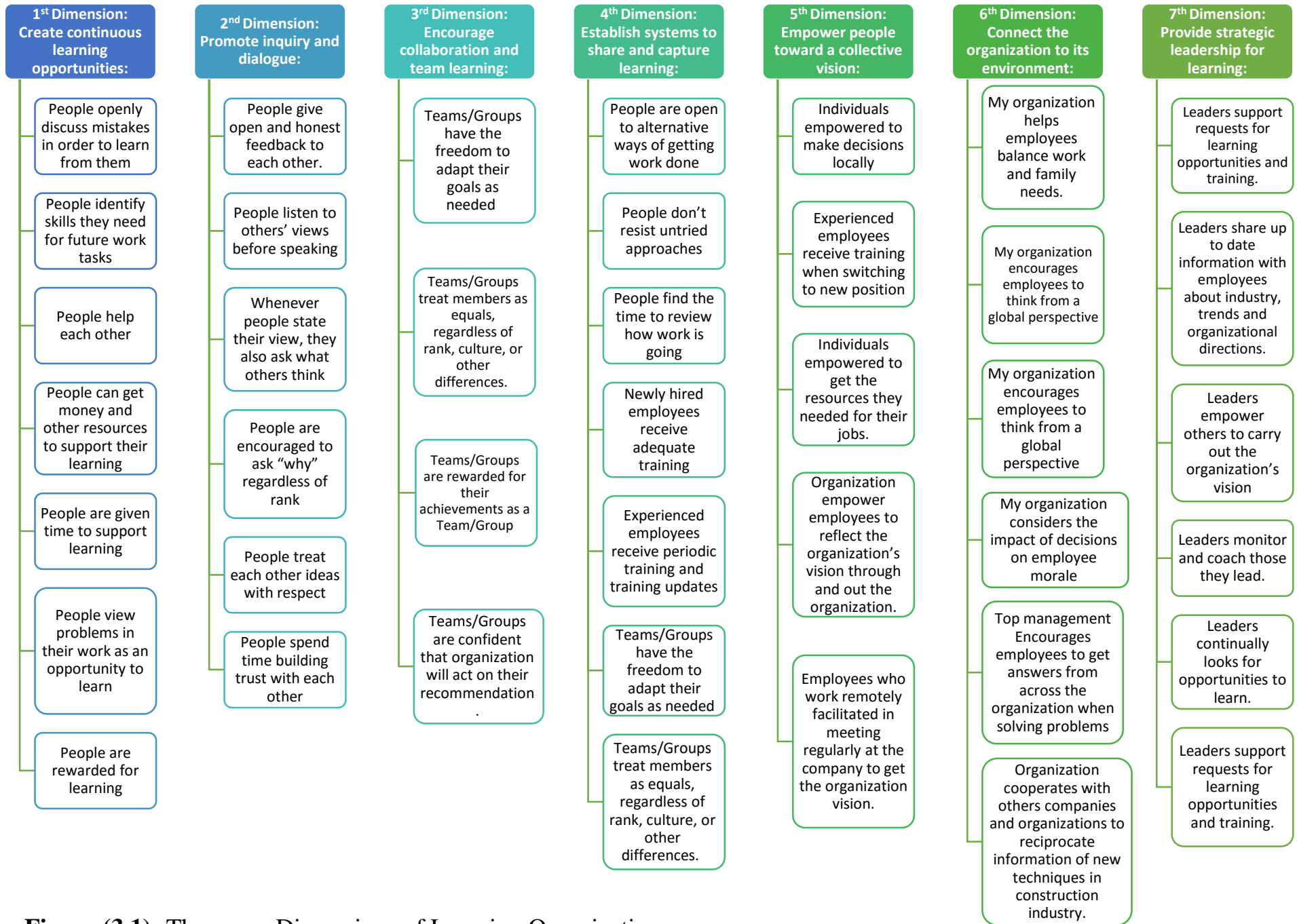
All types of Construction Companies in Khartoum State were chosen as the statistical population of the study. The organizations that the research subject contain many fields. It includes roads and bridges companies, construction companies, consultant companies and contracting companies.

The sampling was done through the purposive sampling method, one of the non-probabilistic techniques. Proportional stratified sampling and simple random sampling method were utilized.

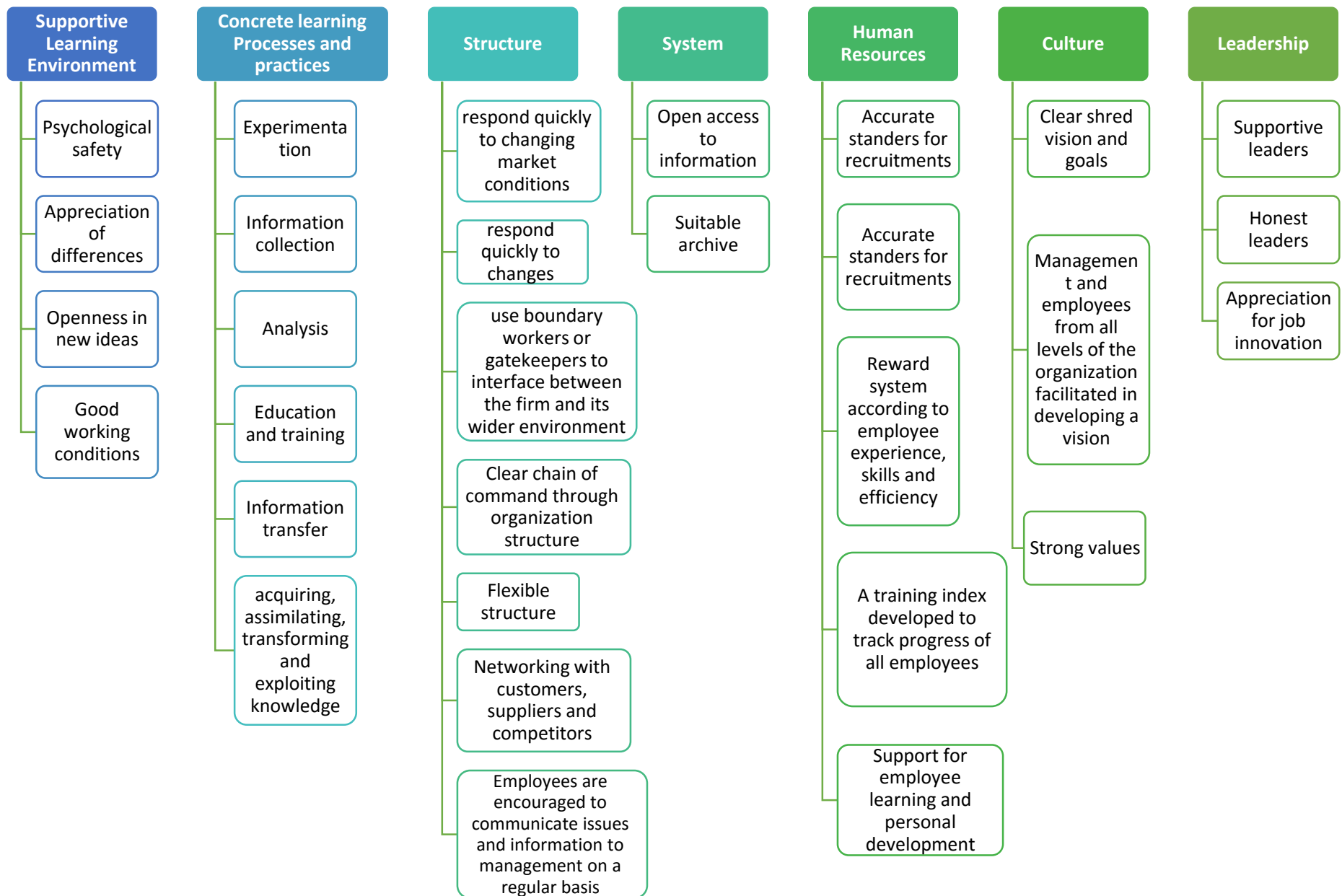
### **3.7 Data Collection:**

Data was collected using a structured questionnaire contributed on 50 selected construction industry organizations operating in Khartoum, Sudan. Proportional stratified sampling and simple random sampling method were utilized to collect data.

Follow-up efforts including telephone calls and reminders on some of the respondents with repeat visits were made. In the process thirty five completed questionnaires were received. The response rate to the questionnaire was 70%. This is judged to be a high rate of response which can be attributed to the follow-up efforts.



**Figure (3.1):** The seven Dimensions of Learning Organization



**Figure (3.2):** Building blocks of the Learning Organization

# Results & Discussion

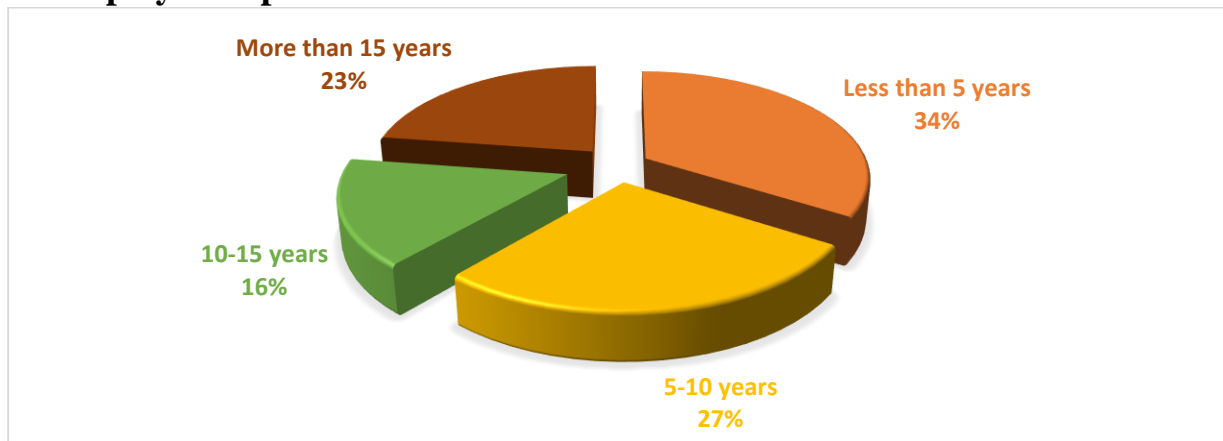


## Chapter four: Results and Discussions

### 4.1 Data Analysis:

The primary concern of this research was assessing the applicability of the Dimensions of Learning Organization Questionnaire (DLOQ) to the Khartoum cultural organization, also the blocks building of a learning organization. Data analyses were performed with SPSS 18 and the diagrams drawn by Excel 2013.

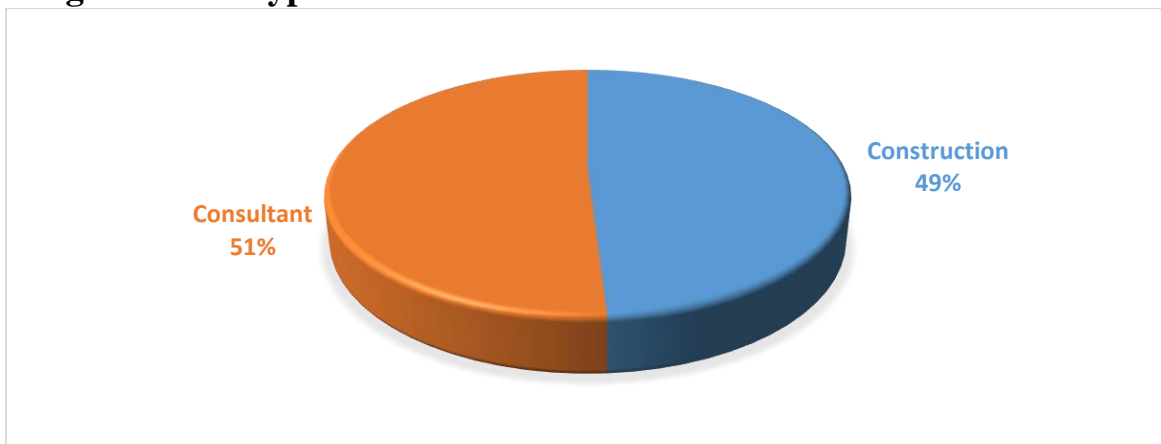
### 4.2 Employee Experience:



**Figure (4.1): Experience of employees**

This diagram shows that the respondents experience largest percentage is less than five years, with rapprochement between the categories of years of experience

### 4.3 Organizations types:

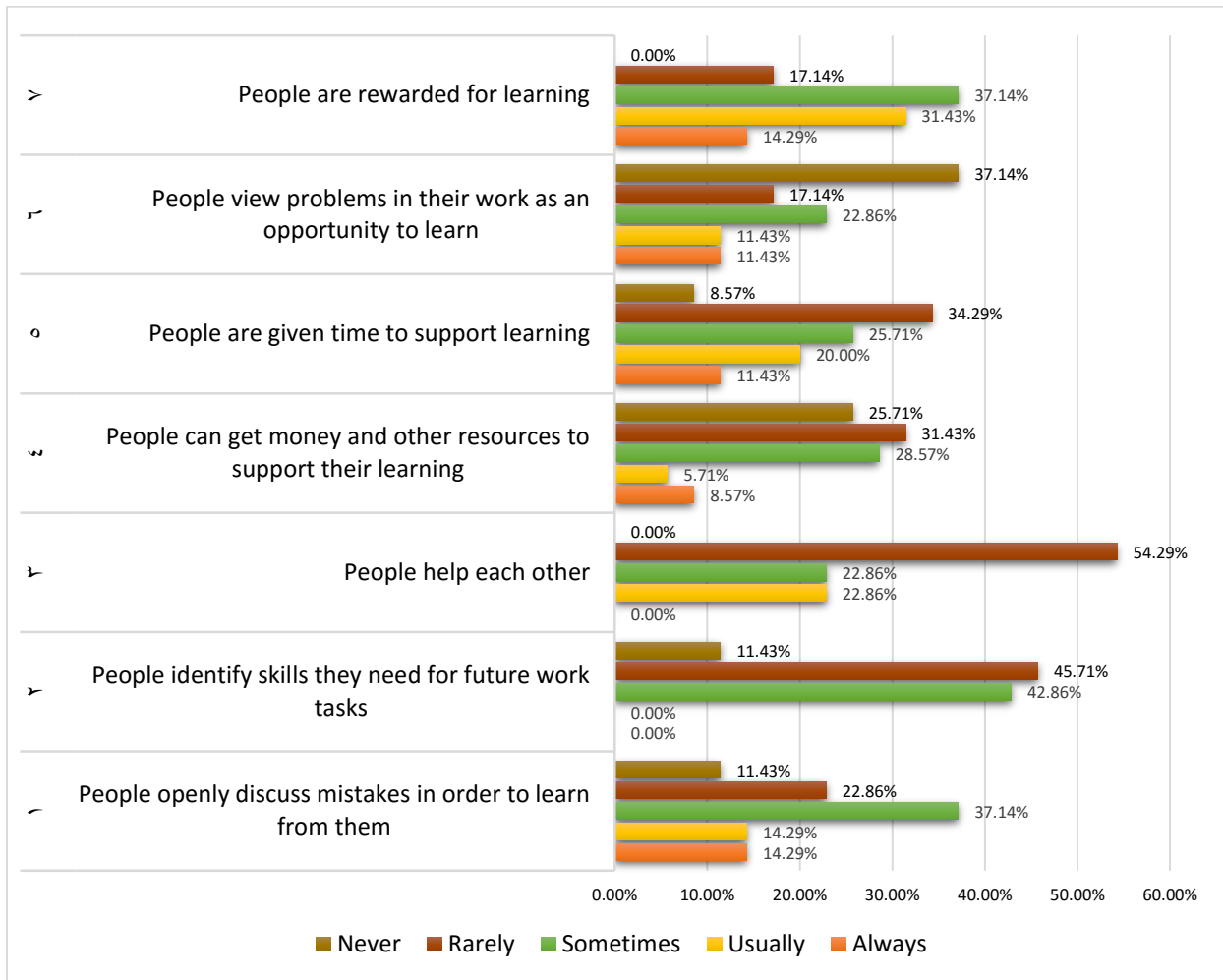


**Figure (4.1): Organizations' Types**

The percentage of chosen organization types is approximately equal.



### 4.3 Create continuous learning opportunities:



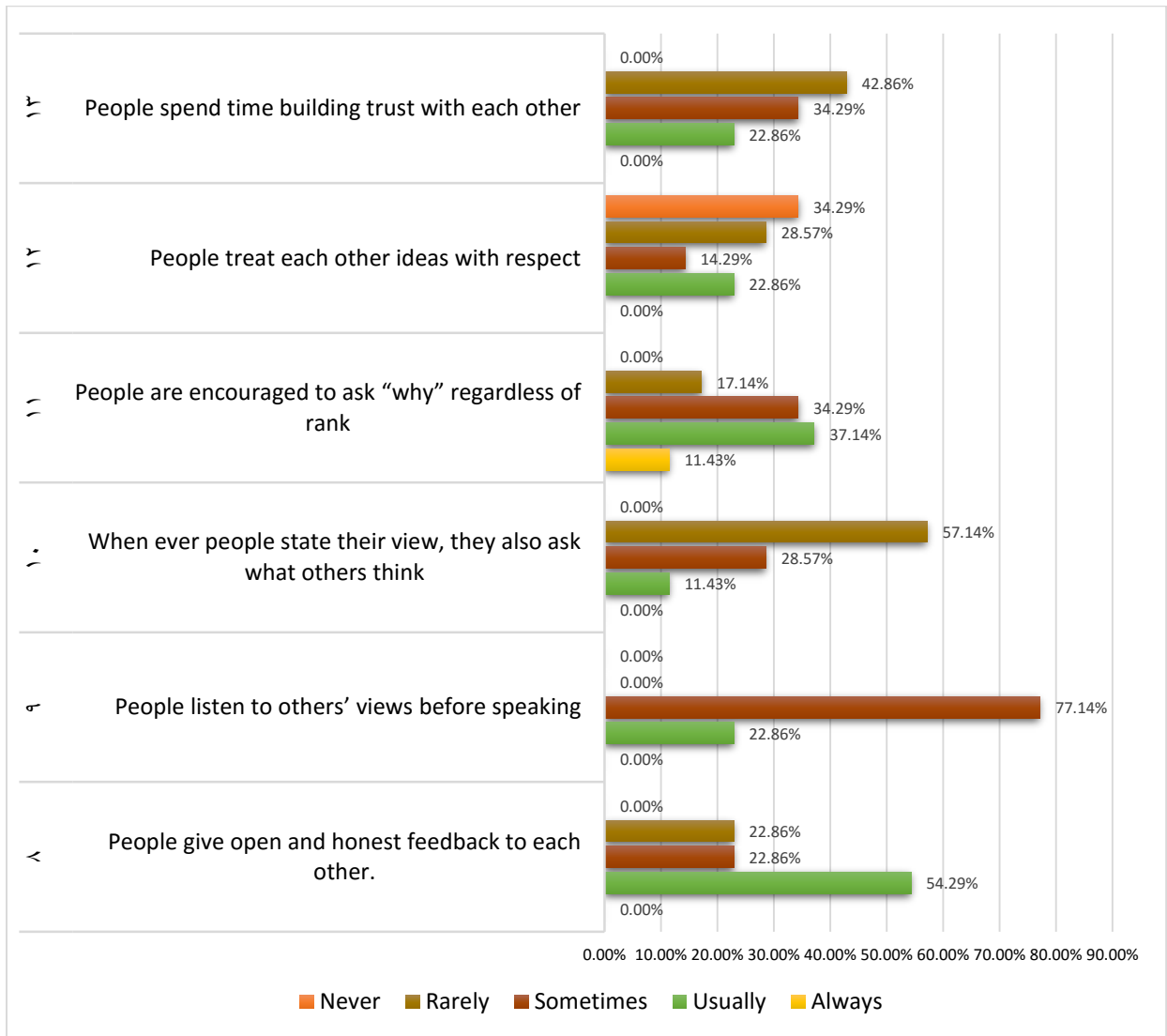
**Figure (4.3): 1<sup>st</sup> Dimension: Create continuous learning opportunities**

The diagram shows that the percentage of the open discussion and viewing problems are low because the employees fear from wrong impression and it possibly could cost them a job.

The needed skills are rarely identified as represented above by percentage equal 46% which means that the employees will not improve their skills periodically.

Helping percentage is high because the nature of Sudanese employee that compel him to help others anyway. The logistic (resources) support is very poor as shown above in the diagram and time support is swinging between existence and nonexistence. Finally the percentage of education rewards is high which means that there is appreciation of knowledge and expert employee.

#### 4.4 Promote inquiry and dialogue:

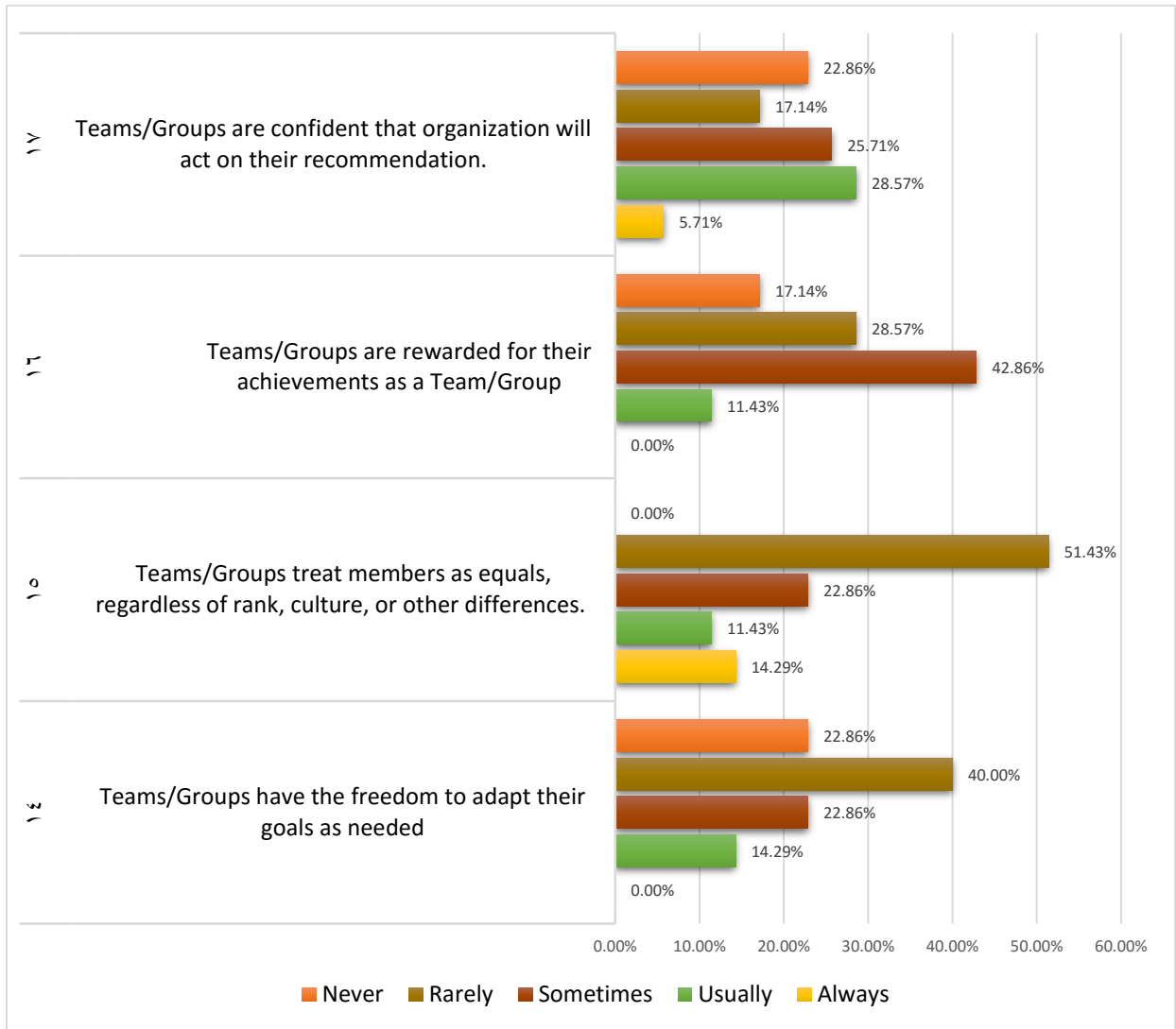


**Figure (4.4): 2<sup>nd</sup> Dimension: Promote inquiry and dialogue**

The diagram shows that the percentage of honest feedback is approximately high and that the employee sometimes listen to each other and that attributed to appreciation of social relationships. The employees have shown strong tendency to their point of view because they insist to their opinion.

To ask "why" in not quite easy in construction organization as the diagram shown above. The ideas of employees not always welcome by others, in other side the employees work hard to attain trust of each other.

#### 4.5 Encourage collaboration and team learning:

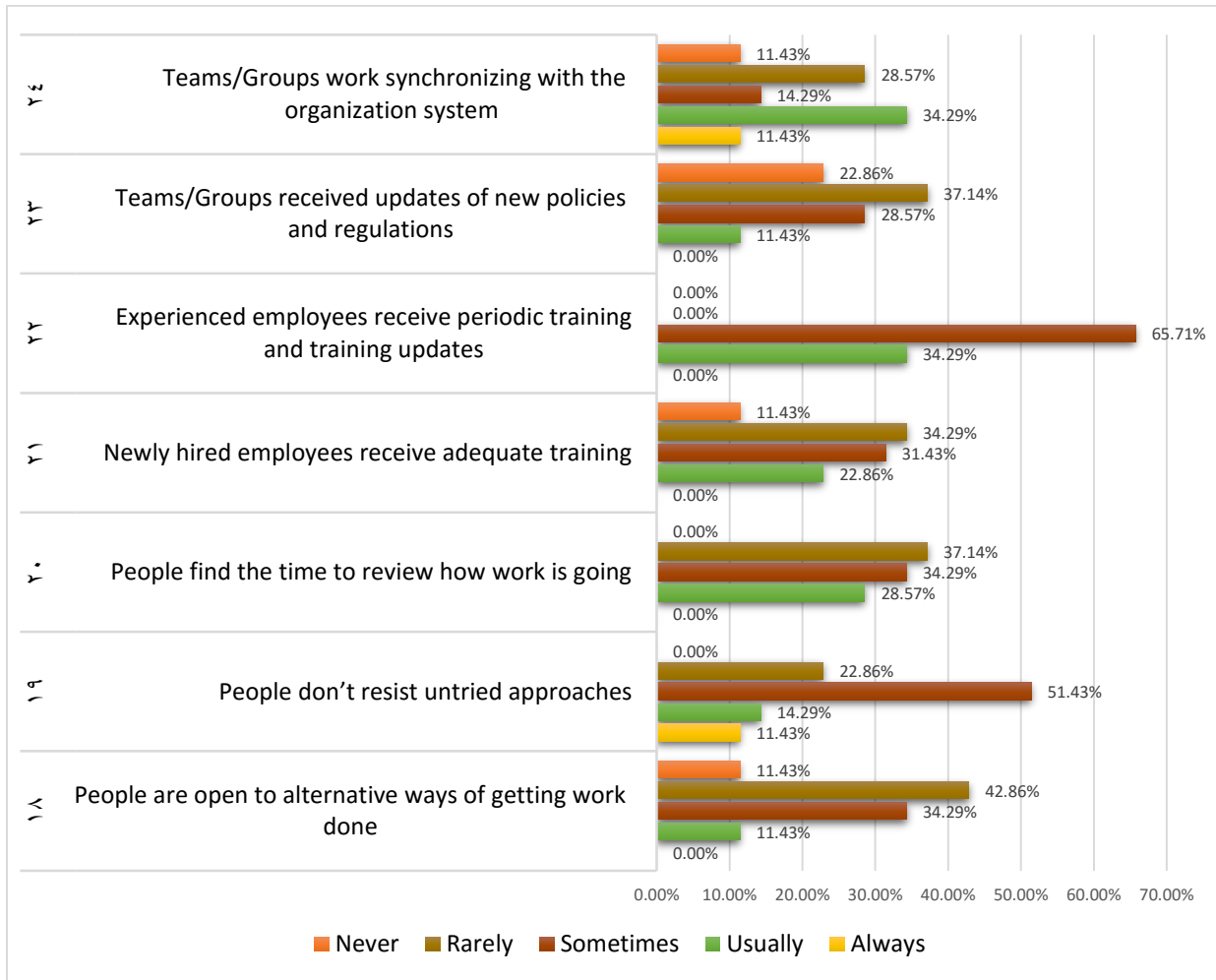


**Figure (4.5): 3rd Dimension: Encourage collaboration and team learning**

It is very difficult for teams to adjust their goals as the diagram shows, because there is a discrimination in dealing with each other in teams/groups as represented in item 15 above.

Few organizations reward their teams for good performance. Most of teams think that the top management will not pay attention to their recommendations inasmuch of the structure of construction organization which has tall structure and that means a wide span of control. So the employees' issues will not directly go to the top management.

## Establish systems to share and capture learning:



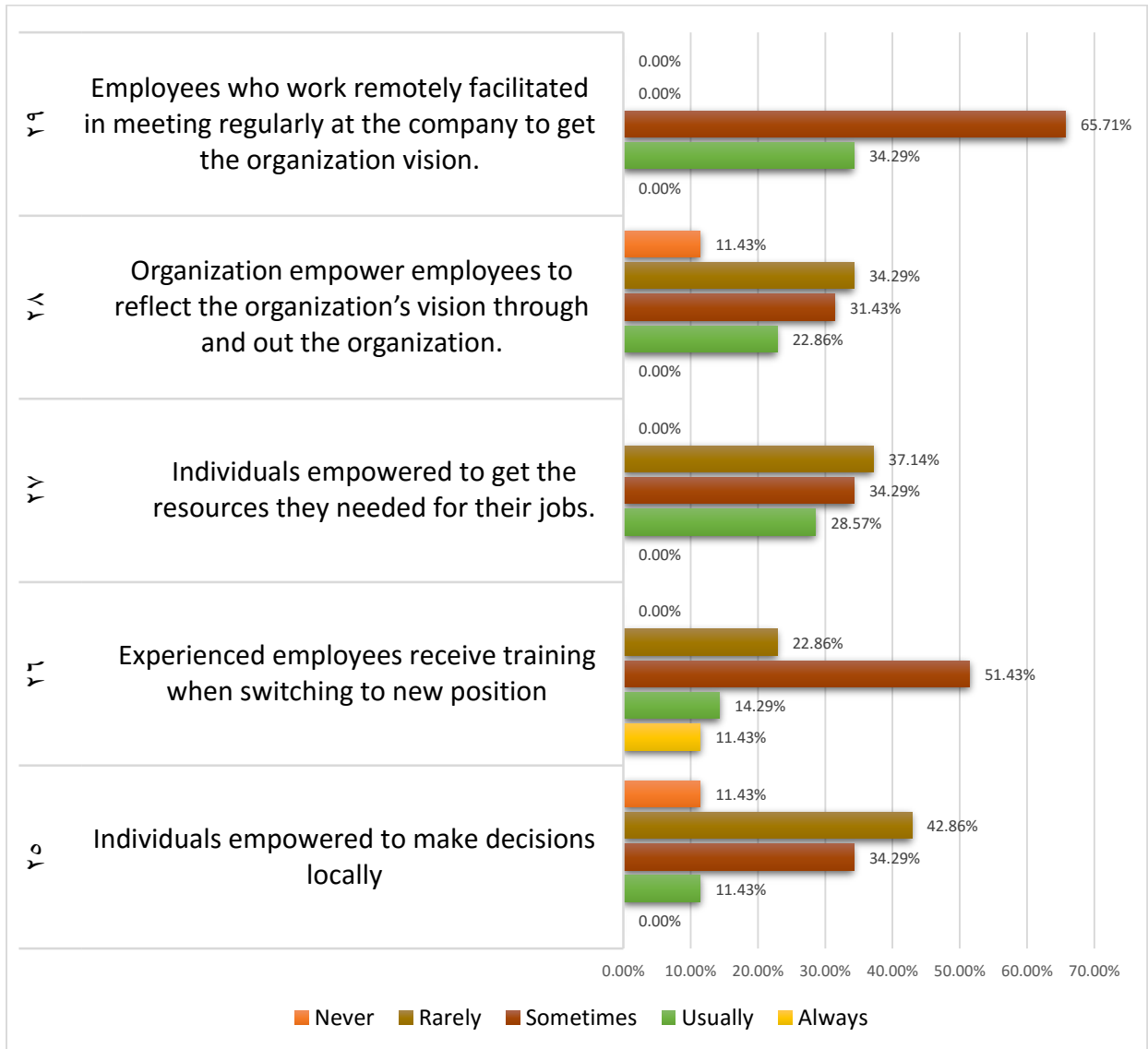
**Figure (4.6): 4<sup>th</sup> Dimension: Establish systems to share and capture learning**

Employees have little freedom to decide how to do the work and mostly resist untried approaches. The diagram show that the employees have no time to review done work to collect “Lesson Learned”.

The new employees receive training in most organizations, but not adequate in some organizations and the experienced employees received training as possible as could, not periodic.

The teams do not catch up with new polices, and that could be because of the tall structure of the construction organizations and they try to be able to adapt and synchronize with main system.

## Empower people toward a collective vision:

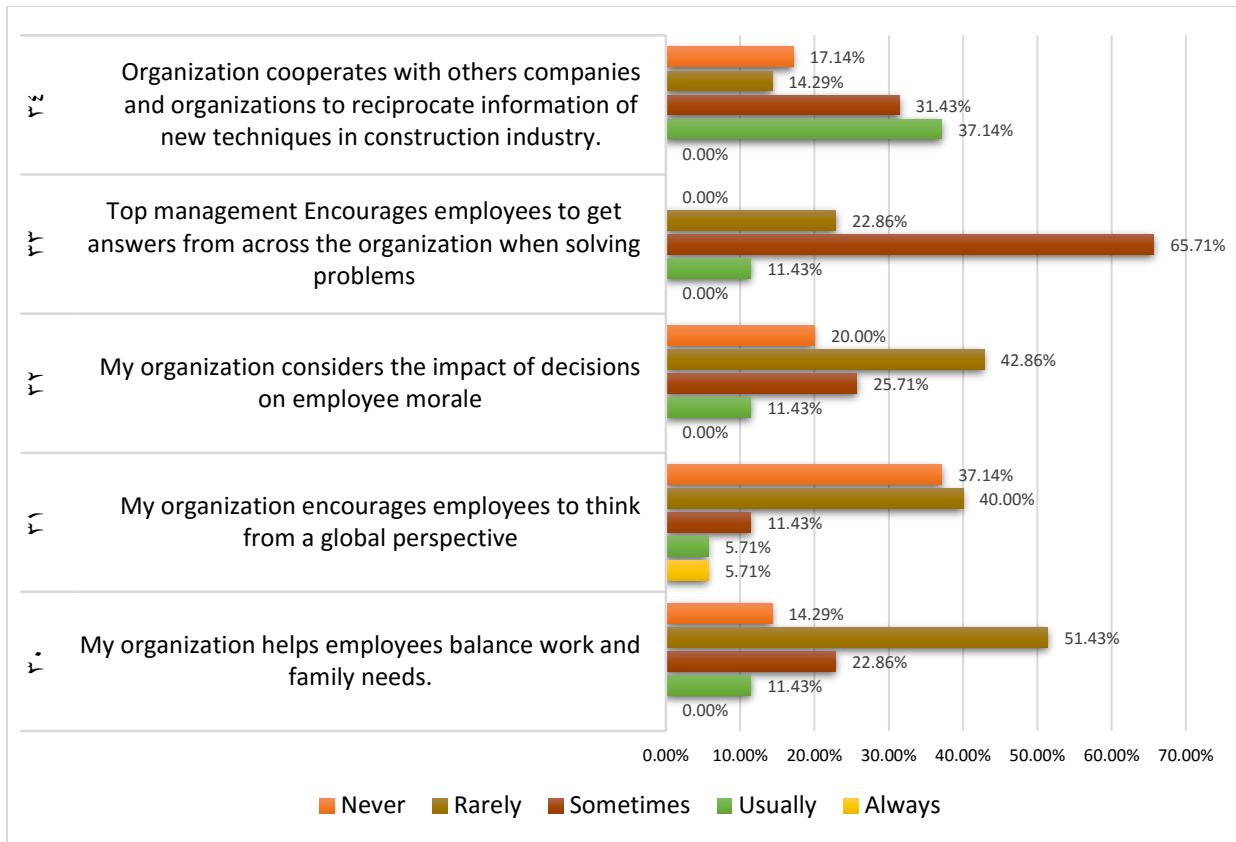


**Figure (4.7): 5<sup>th</sup> Dimension: Empower people toward a collective vision**

Employees is not allowed to make decisions locally and the training for the new position is not enough. The resources that needed to get work done is not available most of the time as the diagram represents above.

The percentage of organization vision reflection is low due to unshared values and vision and because of the nature of the construction industry that depend basically on separate projects in different locations. This nature make it difficult to arrange meeting regularly at main office to get the organization vision.

## Connect the organization to its environment:



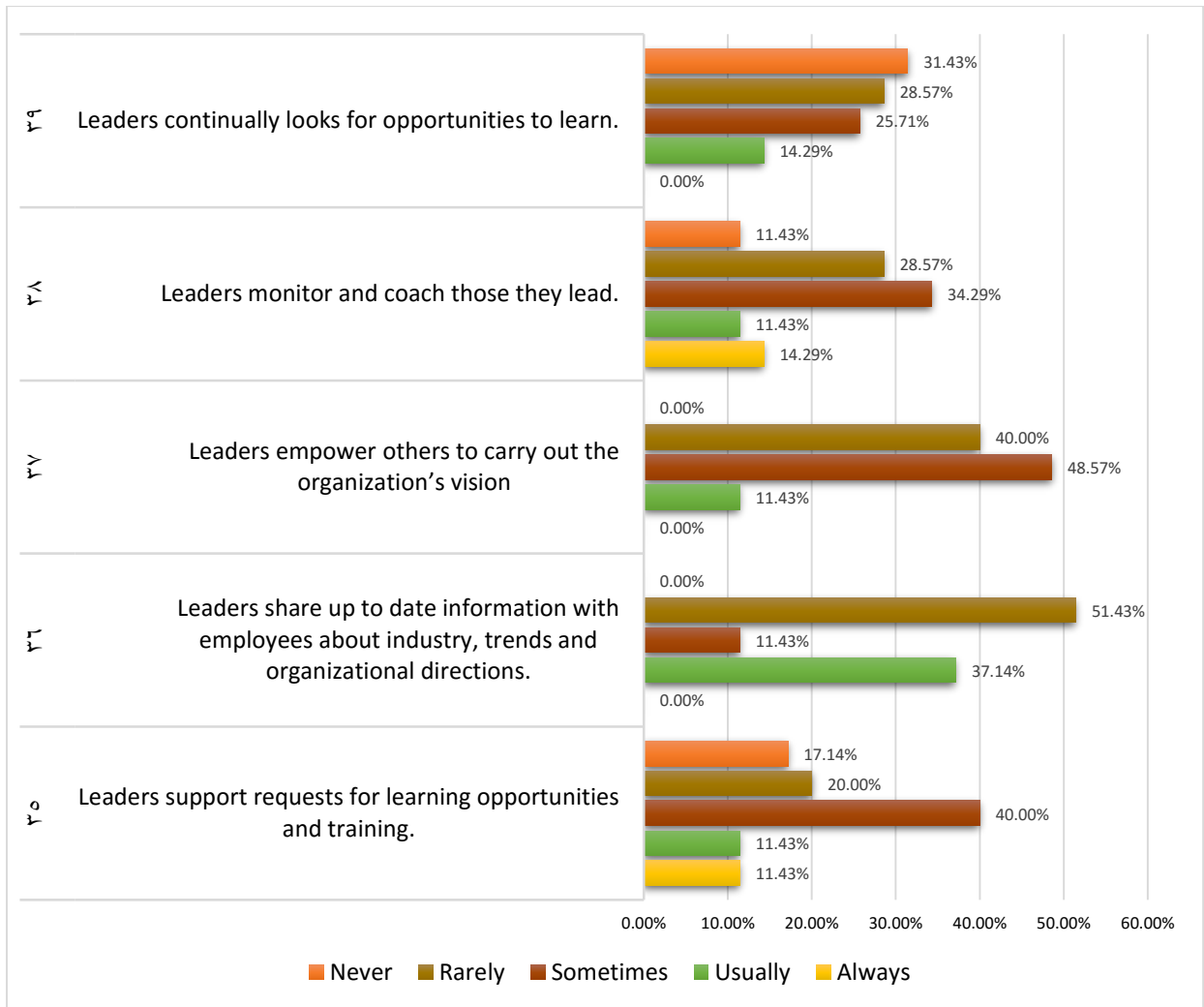
**Figure (4.8): 6<sup>th</sup> Dimension: Connect the organization to its environment**

Work and family needs do not cope with each other on jobs world especially in construction organizations because time is very precious element on construction projects that affect the family time.

The organization encouragement to get global perspective is very low, and it linked with the percentage of cooperating with other organizations on item 34, which seemed to be moderate and tends to usual on the diagram above. It means that the organizations do not keeping up with others on both sides local and global.

The percentage of getting answers across the organization is quite low due to limited access to information. The scheme shows that the organization do not contemplation the decisions impact on employees' morale before applying them and that refers to bureaucratic system which is adopted by most of the Sudanese organizations.

**Provide strategic leadership for learning:**



**Figure (4.9): 7<sup>th</sup> Dimension: Provide strategic leadership for learning**

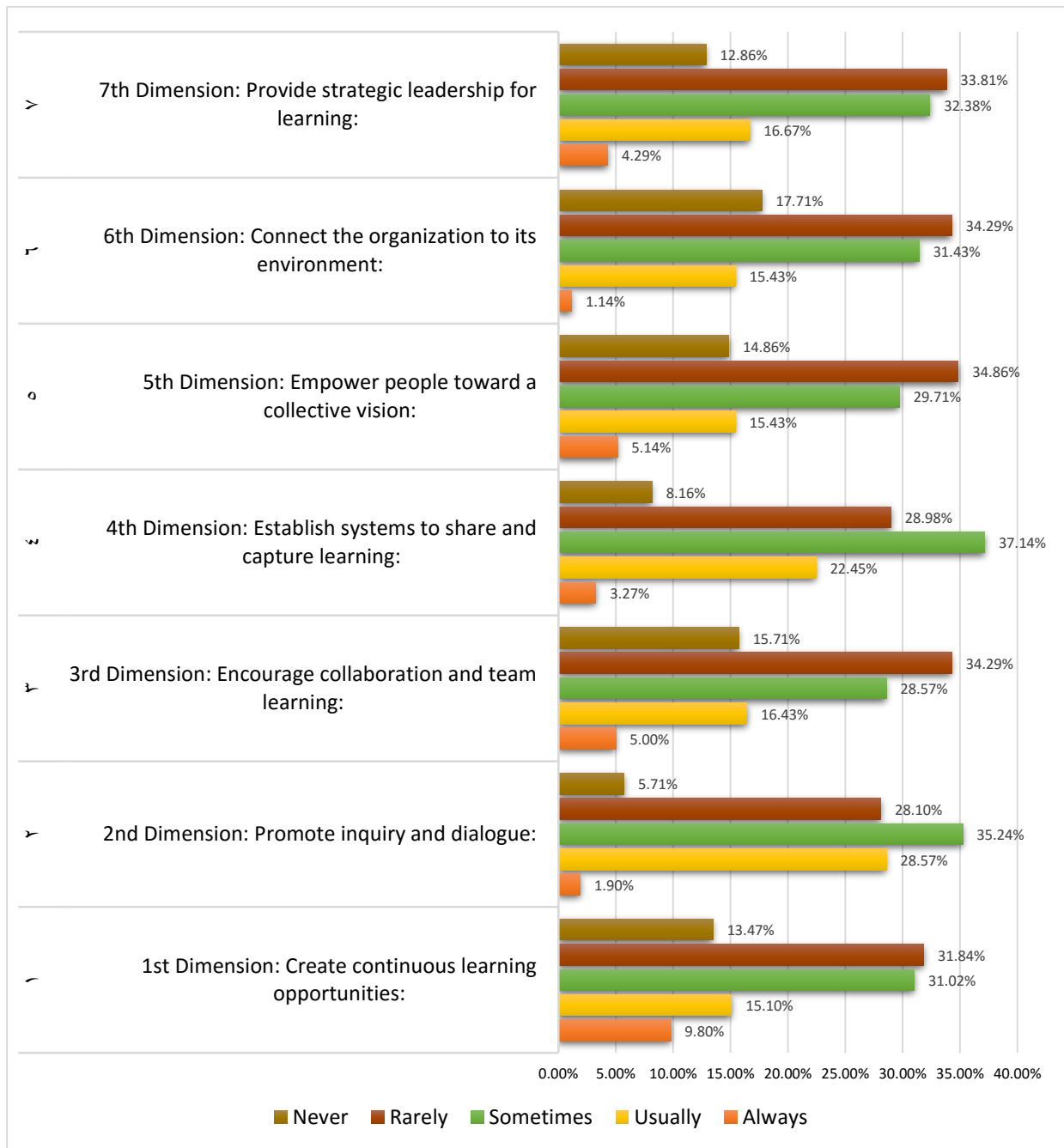
Requests for learning opportunities and training have percentage equal 37% for rarely and never both beside 22% for always and usually both.

Leaders do not share information and trends with employees with percentage of 51.43% for “rarely”.

The percentage of leaders that empower employees to reflect organization vision is 48.57% and 40% for “sometimes” and “rarely” sequential, while the percentage of leaders who coach and monitor at same time is quite high.

The leaders who looking for learning opportunities is very low.

## Hypothesis No. (1):

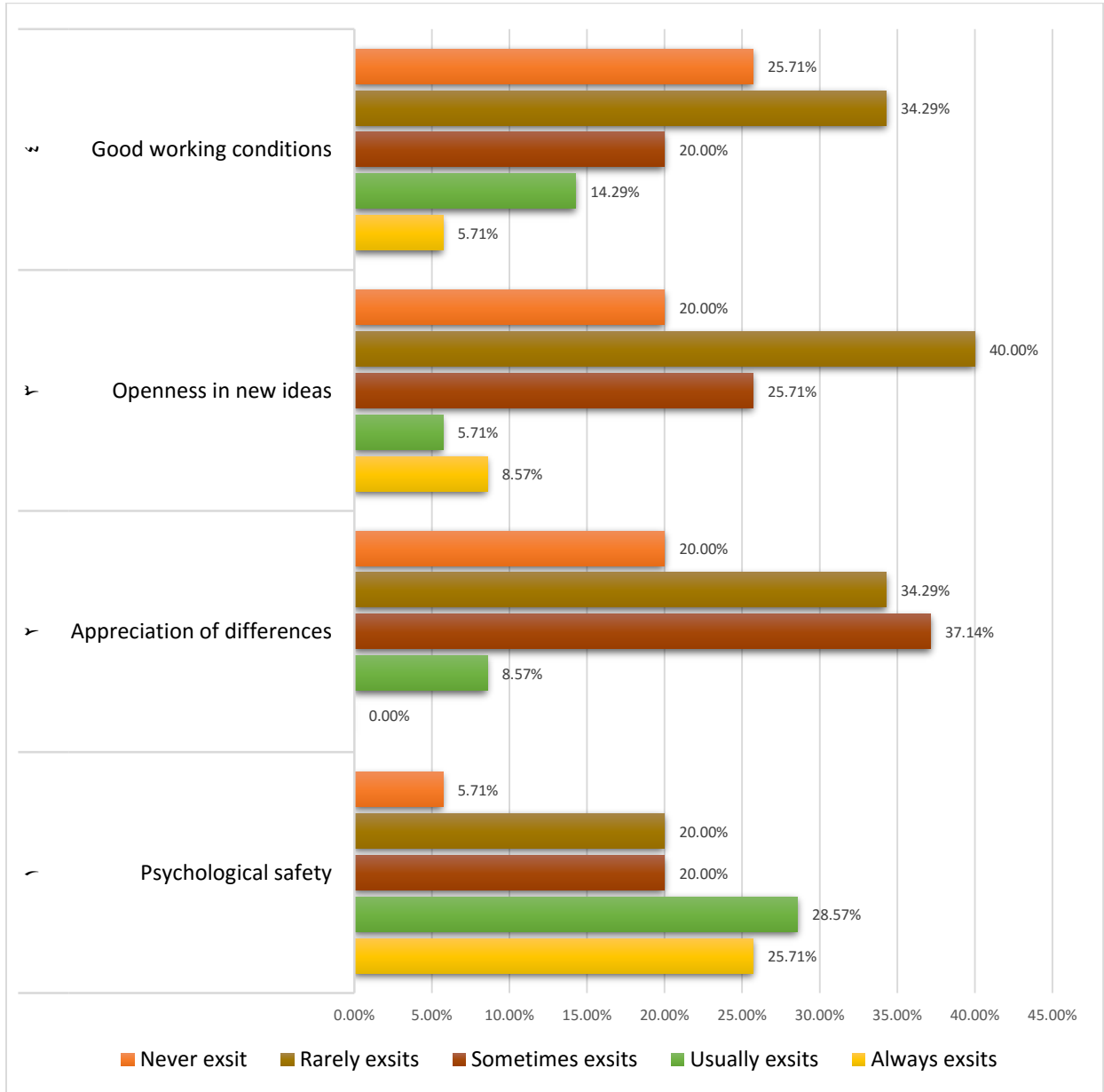


**Figure (4.10): Hypothesis 1**

The percentage of sometimes and rarely poses the first rank for all the summations of total frequencies of all dimensions.



## Supportive Learning Environment

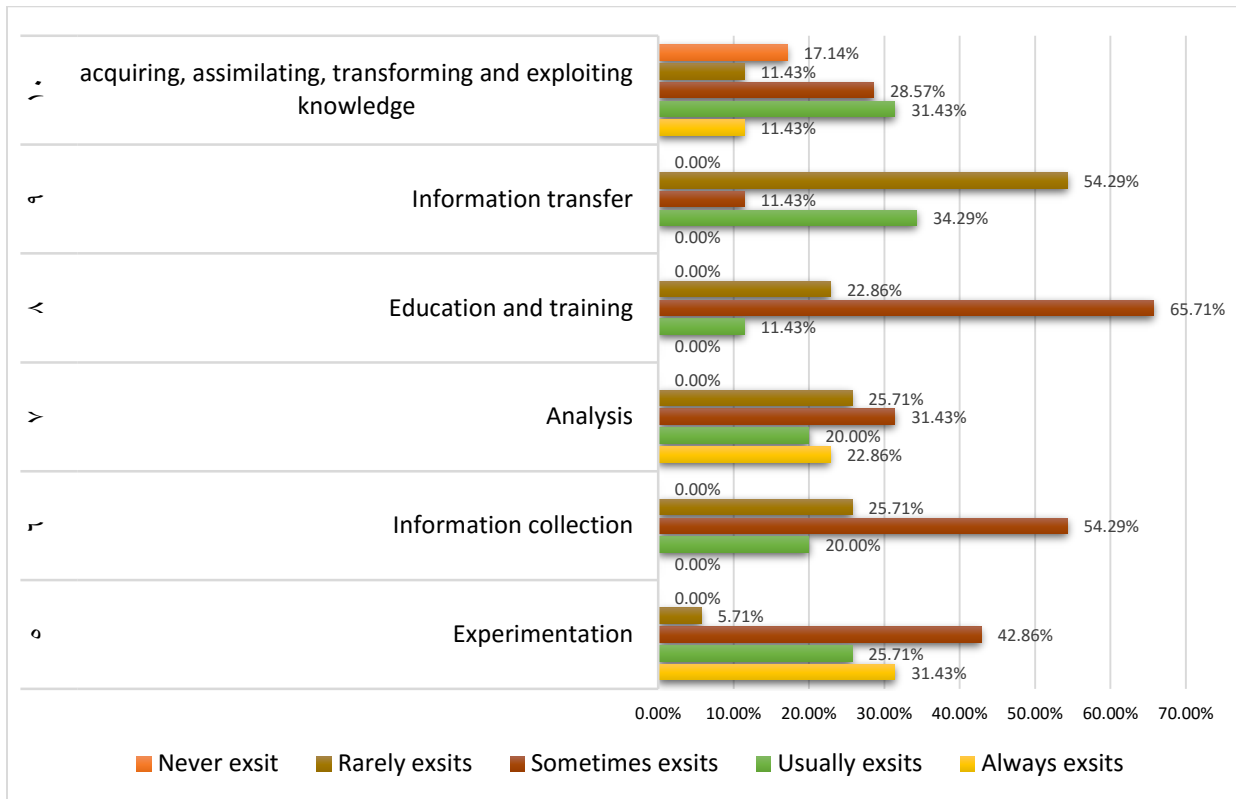


**Figure (4.11): Supportive Learning Environment**

The psychological safety is mostly high, while the next three items is quiet low.

The new ideas has no appreciation, because the top management fear from changes. Working conditions are not satisfied for most of respondent employees.

## Concrete learning Processes and practices:

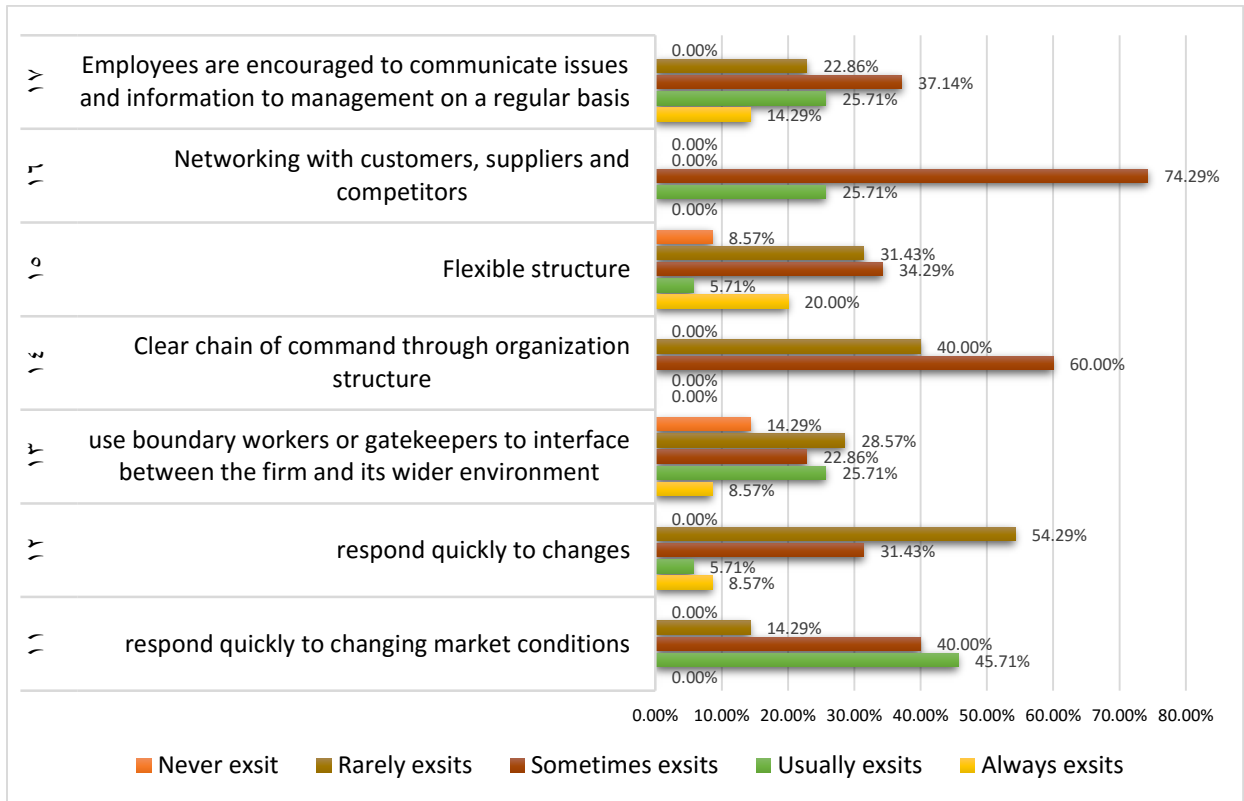


**Figure (4.12): Concrete learning Processes and practices**

Experimentation percentage is high relatively to information collection. Lean construction results from the application of a new form of production management to construction. Analysis portion is high due to awareness of its increasing benefits that could save time and money for organization which adopted analysis. The percentage of training and education based in the middle, because Sudanese organizations aware of its benefits.

Information transfer is a process depend on the ease of communication and intimacy of the overall organization which presents to be low on the diagram above. Knowledge Management which contains acquiring, assimilating, transforming and exploiting external source to generate new knowledge and technology are critical components for organization to survive, grow and compete in market. The Sudanese companies have shown good attention to knowledge acquisition in rate of 31.43% for “usually”. That means there is a quiet high appreciation for knowledge.

**Structure:**

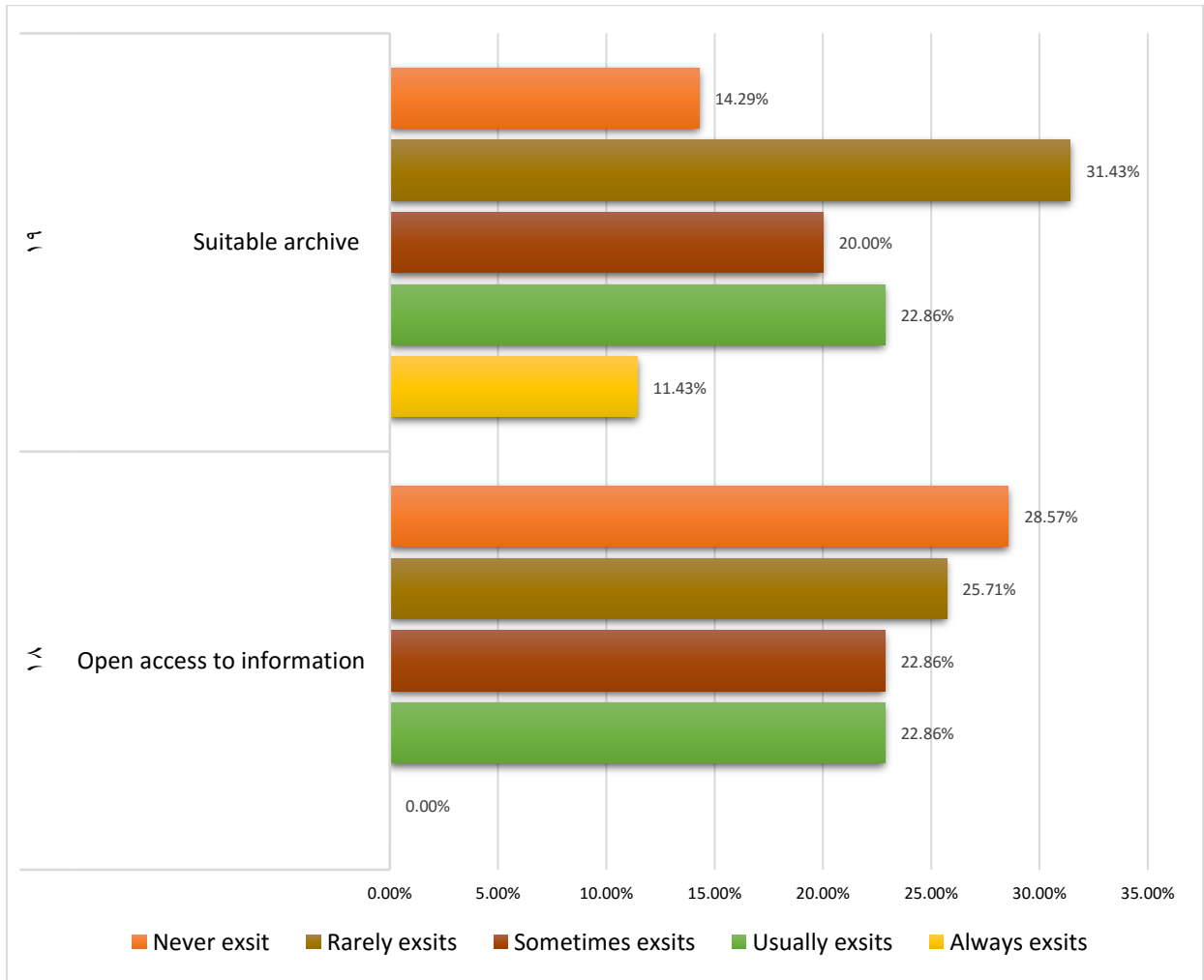


**Figure (4.13): Structure**

Organizations tried to stay aware of markets conditions and the percentage of it in Sudanese companies is moderately high. The Sudanese construction organizations fail in keeping up to changes radically. High-performance organizations understand that it requires a sort of double vision. That means approaching inside-out perspectives to stay competitive by scanning and monitoring the markets, client’s interests and changings in external environment. Item 11 and 12 depends on item 13 which has percentage of 28.57% for “rarely”.

The clear chain of command has 60% for “sometimes” and it could get better with little effort. The structure of our organizations tends to be rigid which hinders the adaptability to external changes. This concern with item 17 which has a quiet high percentage. The percentage of network with suppliers, customers and competitors is high because contractors and customers tends to deal with specific suppliers and contractors respectively.

**System:**

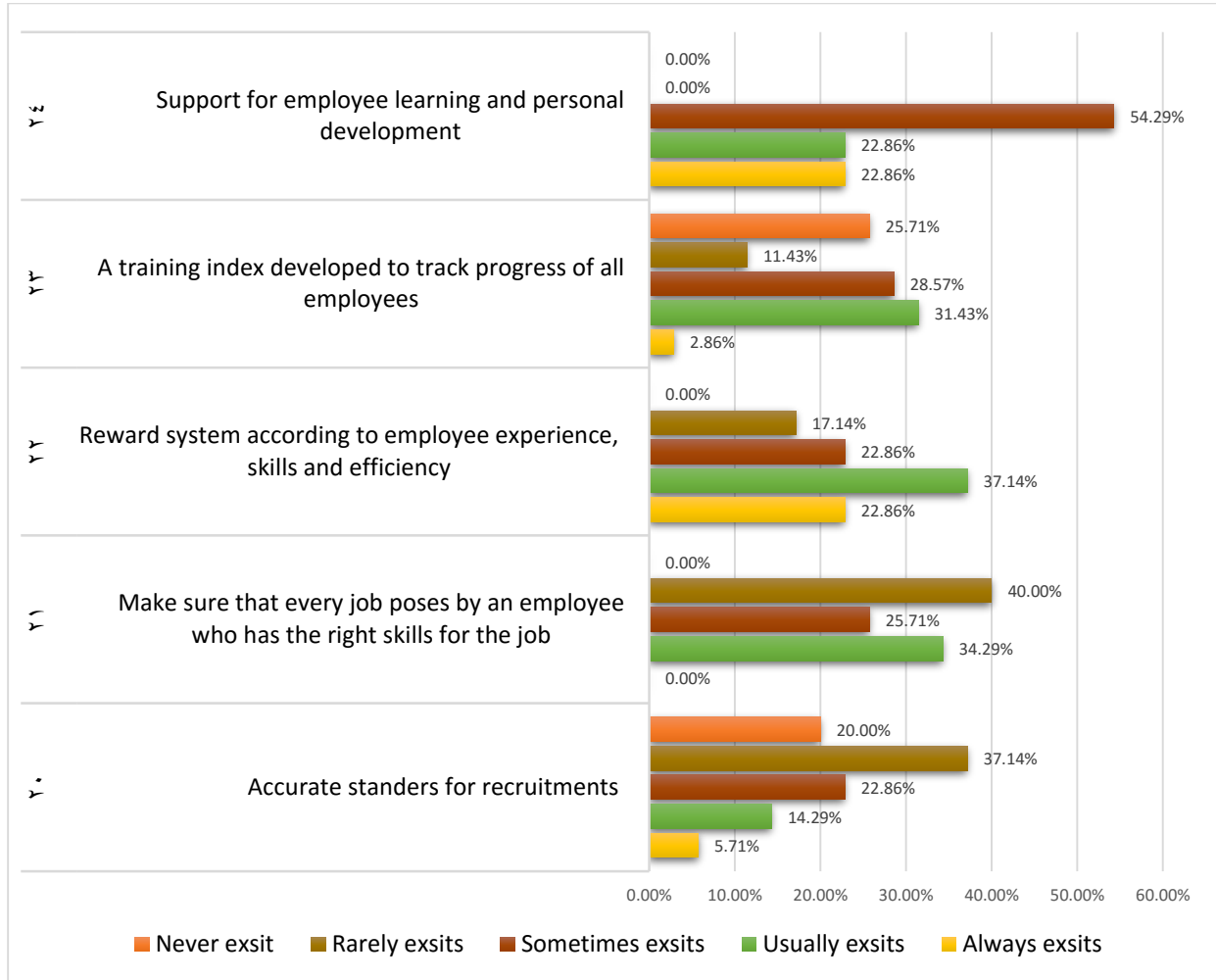


**Figure (4.14): System**

The information access is limited with percentage of 28.57% for “never exist”. This result connected with the organization internal environment weather it allowed to get answer across the organization or not.

The organizations suffer from poor archive with percentage 31.43%, while some of them succeed to make suitable one with percentage 22.86%. This could be because of inadequate documentation procedures’ policies.

## Human Resources:



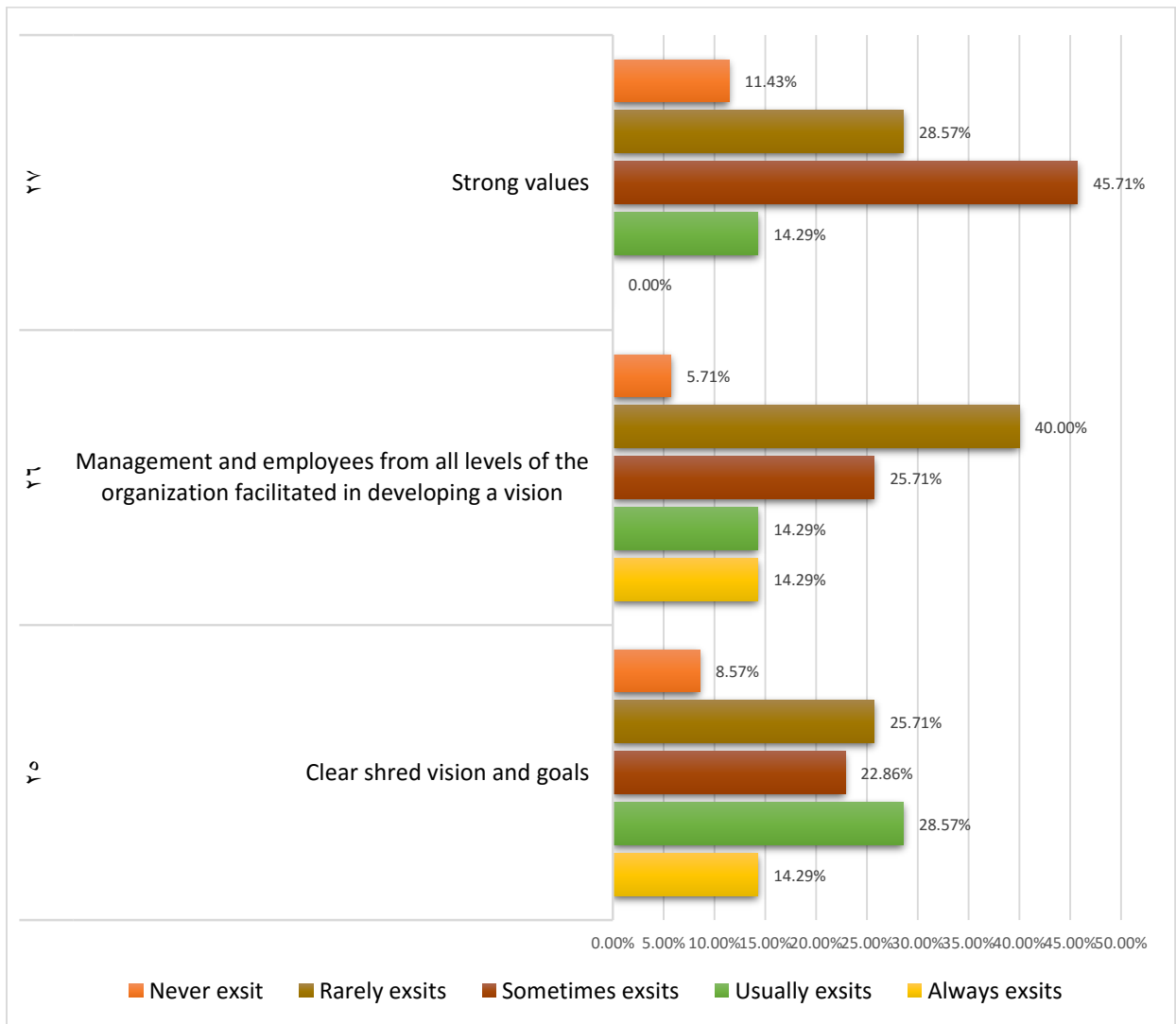
**Figure (4.15): Human Resources**

Recruitments process have no ideal procedures and standers as presented above and this relates to making sure that every employee poses the skills require for the job. The values for both items 20 and 21 are sort of close to each other grounded to the phrase “rarely”.

Reward system has 37.14% for “usually” and it a good sign to get employees to loyal and commitment for the company.

The training schedule and support for learning is very low and this because the managers think of it as a waste of work time and could cost the company money.

## Culture:

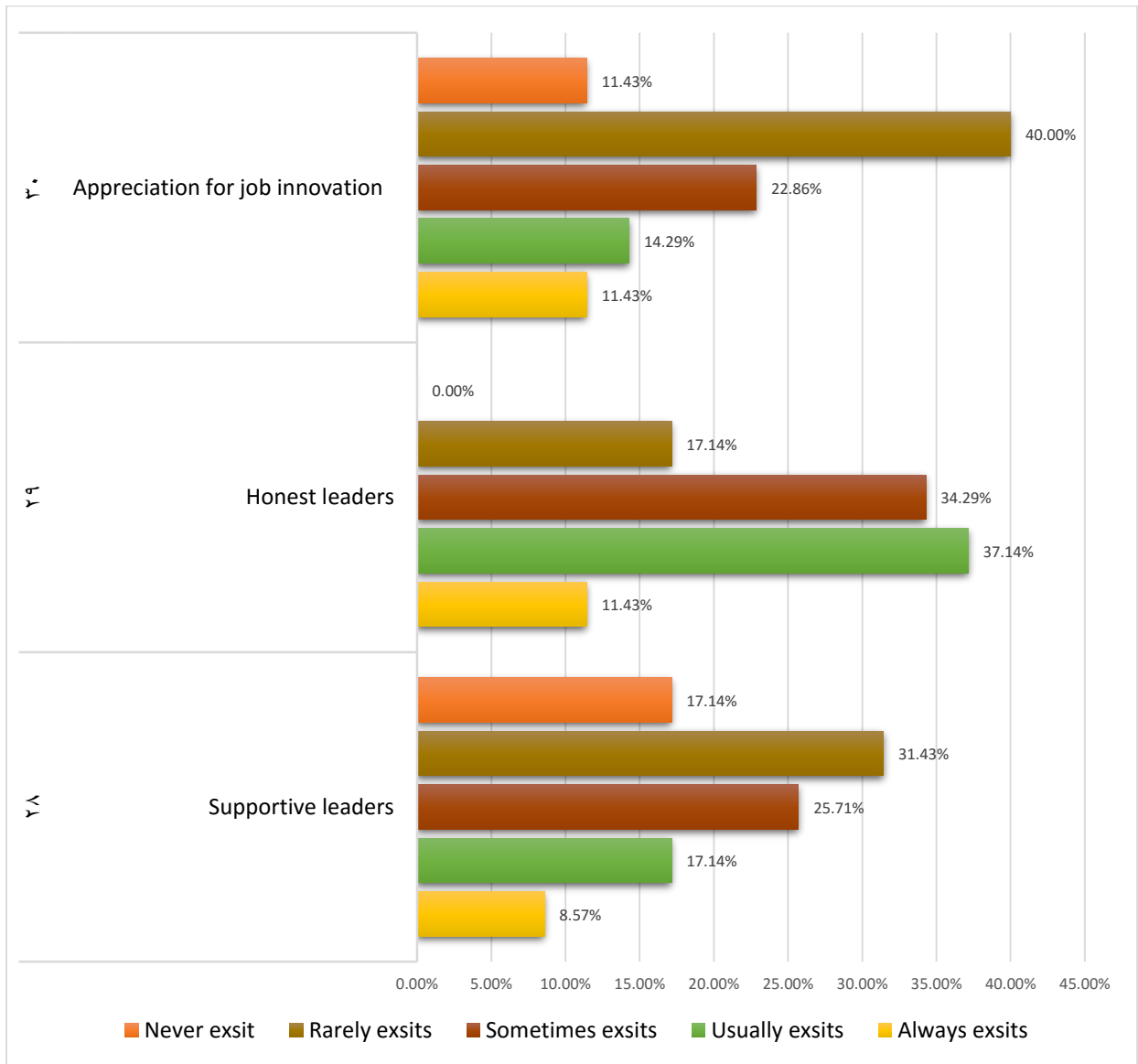


**Figure (4.16): Culture**

Sharing clear goals and vision are quietly high, but the employees are not allowed to involving in developing them.

The organizations seems to have quiet strong values, but it's not strong enough to reflect them to outside world and to gain employees commitment.

**Leadership:**

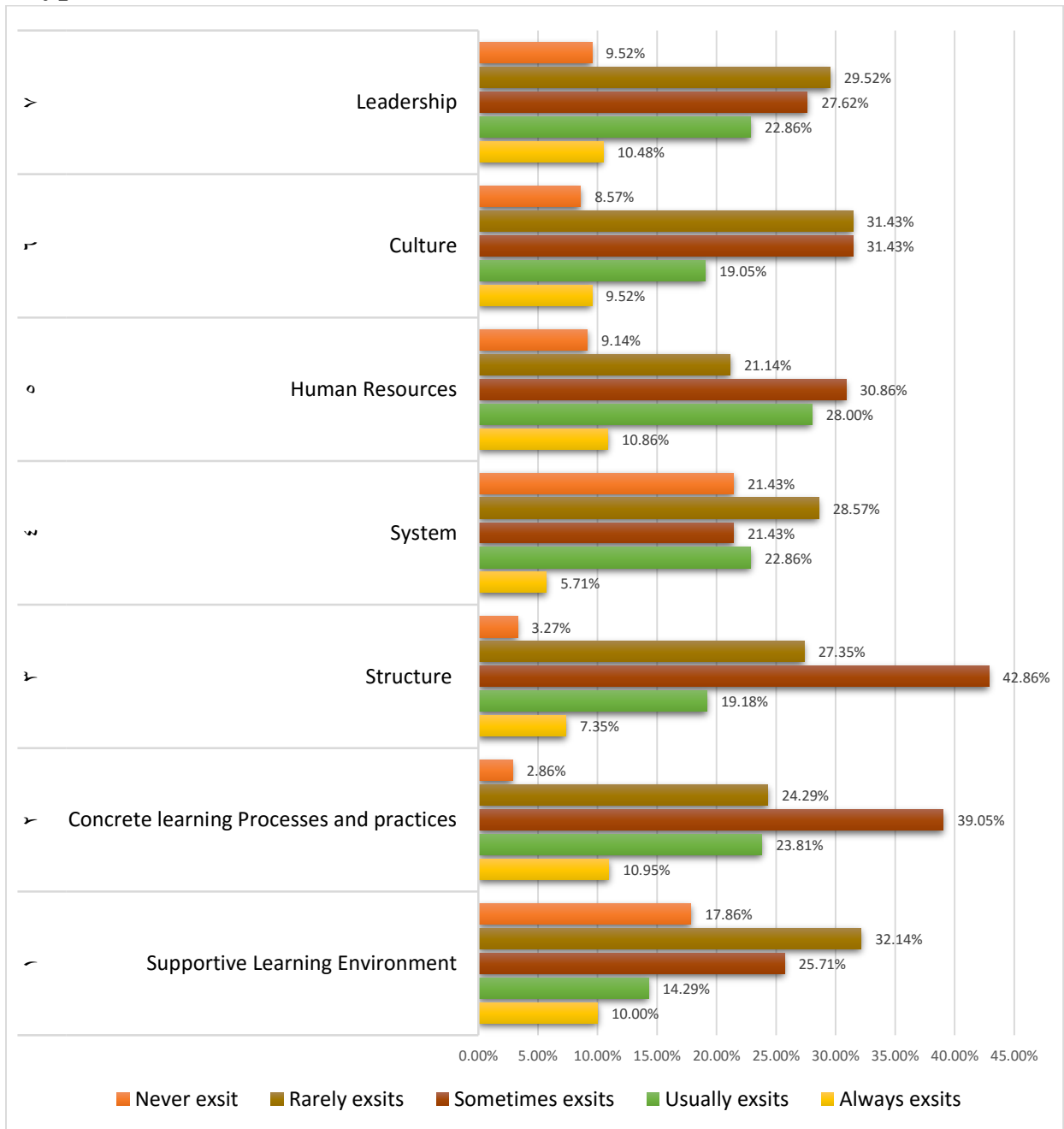


**Figure (4.17): Leadership**

The supportive leaders are rarely exist while there are quite high portion of the honest leaders.

The leaders do not usually appreciate innovation and creation. The new approaches could cost organization more resources and supplies.

## Hypothesis No. (2):



**Figure (4.18): hypotheses 2**

All the items of the second hypothesis are centered in the middle. The blocks of “Human Resources” and “Concrete learning processes and practices” have the top results of existence.



# Conclusion & Recommendations



## Chapter five: Conclusion and Recommendations

### 5.1 Conclusion:

This research began with a survey of the literature on learning organizations in order to provide greater definitional clarity. Although the literature is highly disparate and there is nothing like a unified definition or concept of the learning organization that has been developed and empirically tested in a cumulative manner, some common definitional ground has been identified.

The aim of this research is to investigate if there is a learning organization in Khartoum. It was hypothesized that the tools of applying a learning organization is available.

To test these hypotheses, primary data was collected using a questionnaire consists of two sections. The data was analyzed using descriptive statistics methods. The result of data analysis confirmed the first hypothesis, but the second hypothesis is not quite true.

The seven categories to build a learning organization is not available as supposed to be.

The analysis of the theoretical framework condition for organization learning provides some guidance for the building a learning organization.

The research main conclusions are:

1. There is no simple path to the learning organization. It does not provide the Strategic Roadmap to the Learning Organization. Every organization must figure out its own path. If this primer takes you just a step or two down this path by raising the right questions, it will have achieved its primary objective.

2. The results indicate that the way work is organized is closely connected to the structure of the organization flexibility and to the level of top management commitment.
3. There are alternative ways to build systems of learning and innovation, and different systems tend to organize work and distribute security and protection differently among citizens.
4. Most authors see the learning organization as a multi-level concept involving interrelations between individual behaviours, team, organization, and organizational practices and structure.
5. There is an important emphasis in the literature on the role of learning cultures understood as beliefs, attitudes and values supportive of employee learning. Further, an important strand in the literature identifies specific HRM policies which are supportive of, or constitutive of, learning cultures.

## 5.2 Recommendations:

Learning organizations are not built overnight. Most successful examples are the products of carefully cultivated attitudes, commitments, and management processes that have accrued slowly and steadily over time. Still, some changes can be made immediately. Any company that wishes to become a learning organization can begin by taking a few simple steps.

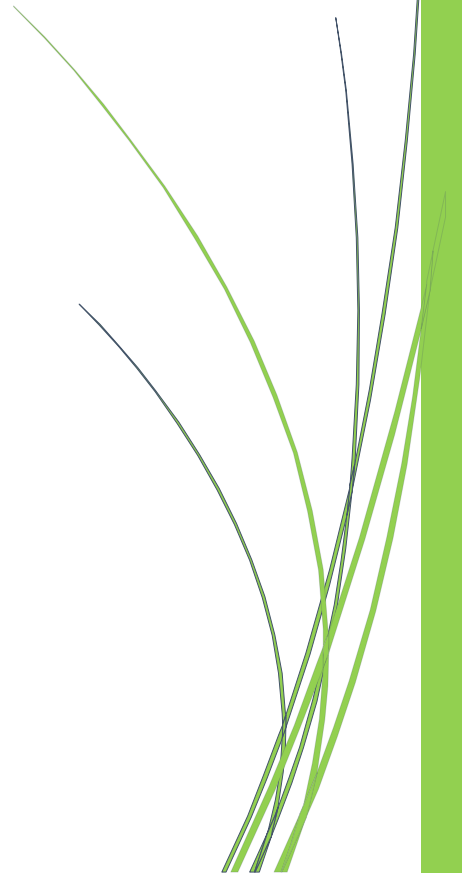
Experts in the field highlight and agree on the importance of understanding and promoting cultural change in order to become successful as a learning organization.

It is, thus, considered that to be successful, organizations should work with all staff members to:

1. Create and communicate a shared vision for all in the organization
2. Make information in the organization accessible to all.
3. Help employees manage change by anticipating change and creating the types of change desired by the organization.
4. Empower employees to act.
5. Acknowledge and support the need to take risks.
6. Learn to manage the organization's knowledge by: Keeping information current, Maintaining historical knowledge, Addressing increasing volumes of information.
7. Establish and use individual and organizational learning strategies
8. Systematic problem solving: thinking with systems theory; insisting on data rather than assumptions; using statistical tools.
9. Experimentation with new approaches: ensure steady flow of new ideas; incentives for risk taking; demonstration projects.
10. Learning from their own experiences and past history: recognition of the value of productive failure instead of unproductive success.
11. Learning from the experiences and best practices of others: enthusiastic borrowing.
12. Transferring knowledge quickly and efficiently throughout the organization: reports, tours, personnel rotation programs, training programs.
13. Foster an environment that is conducive to learning. There must be time for reflection and analysis, to think about strategic plans, dissect customer needs, assess current work systems, and invent new products. Encourage training, brainstorming, problem solving.

14. Open up boundaries and stimulate the exchange of ideas. Boundaries inhibit the flow of information; they keep individuals and groups isolated and reinforce preconceptions. Opening up boundaries, with conferences, meetings, and project teams, which either cross organizational levels or link the company and its customers and suppliers, ensures a fresh flow of ideas and the chance to consider competing perspectives.
15. Create learning forums. These are programs or events designed with explicit learning goals in mind, and they can take a variety of forms: strategic reviews, technology, and market positioning; systems audits, which review the health of large, cross-functional processes and delivery systems; internal benchmarking reports, study missions, and jamborees or symposiums, which bring together customers, suppliers, outside experts, or internal groups to share ideas and learn from one another.
16. Eliminate barriers that impede learning and begin to move learning higher on the organizational agenda. They also suggest a subtle shift in focus, away from continuous improvement and toward a commitment to learning. Coupled with a better understanding of the “three Ms,” the meaning, management, and measurement of learning, this shift provides a solid foundation for building learning organizations.

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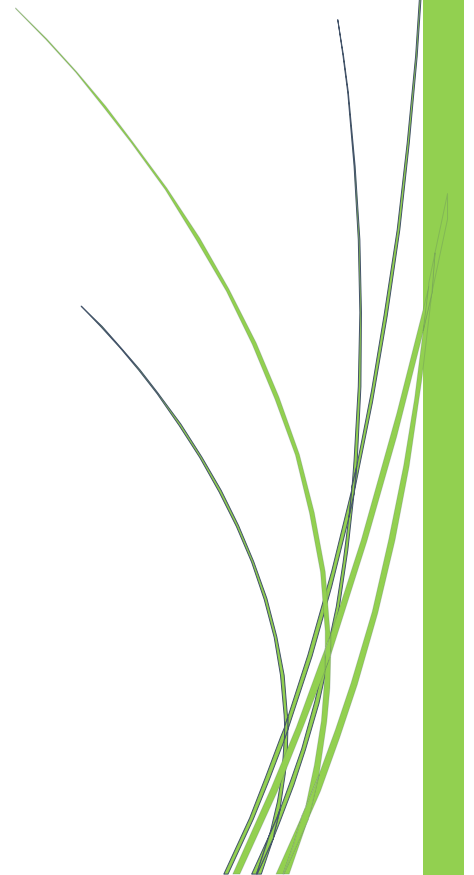
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# Appendices





## Questions:

**Instruction:** Please respond by marking with (√) to each item of how descriptive it is of your organization.

| Dimensions:   |  | Always | Usually | Someti<br>mes | Rarely | Never |
|---|--|--------|---------|---------------|--------|-------|
| <b>1<sup>st</sup> Dimension: Create continuous learning opportunities:</b>        |  |        |         |               |        |       |
| 1   | People openly discuss mistakes in order to learn from them                               |        |         |               |        |       |
| 2   | People identify skills they need for future work tasks                                   |        |         |               |        |       |
| 3   | People help each other   |        |         |               |        |       |
| 4   | People can get money and other resources to support their learning                       |        |         |               |        |       |
| 5   | People are given time to support learning  |        |         |               |        |       |
| 6   | People view problems in their work as an opportunity to learn                            |        |         |               |        |       |
| 7   | People are rewarded for learning   |        |         |               |        |       |
| <b>2<sup>nd</sup> Dimension: Promote inquiry and dialogue:</b>                    |  |        |         |               |        |       |
| 8   | People give open and honest feedback to each other.                                      |        |         |               |        |       |
| 9   | People listen to others' views before speaking   |        |         |               |        |       |
| 10  | Whenever people state their view, they also ask what others think                        |        |         |               |        |       |
| 11  | People are encouraged to ask "why" regardless of rank                                    |        |         |               |        |       |
| 12  | People treat each other ideas with respect   |        |         |               |        |       |
| 13  | People spend time building trust with each other   |        |         |               |        |       |
| <b>3<sup>rd</sup> Dimension: Encourage collaboration and team learning:</b>       |  |        |         |               |        |       |
| 14  | Teams/Groups have the freedom to adapt their goals as needed                             |        |         |               |        |       |
| 15  | Teams/Groups treat members as equals, regardless of rank, culture, or other differences. |        |         |               |        |       |
| 16  | Teams/Groups are rewarded for their achievements as a Team/Group                         |        |         |               |        |       |
| 17  | Teams/Groups are confident that organization will act on their recommendation.           |        |         |               |        |       |
| <b>4<sup>th</sup> Dimension: Establish systems to share and capture learning:</b> |  |        |         |               |        |       |
| 18  | People are open to alternative ways of getting work done                                 |        |         |               |        |       |
| 19  | People don't resist untried approaches   |        |         |               |        |       |
| 20  | People find the time to review how work is going   |        |         |               |        |       |
| 21  | Newly hired employees receive adequate training  |        |         |               |        |       |
| 22  | Experienced employees receive periodic training and training updates                     |        |         |               |        |       |
| 23  | Teams/Groups received updates of new policies and regulations                            |        |         |               |        |       |
| 24  | Teams/Groups work synchronizing with the organization system                             |        |         |               |        |       |
| <b>5<sup>th</sup> Dimension: Empower people toward a collective vision:</b>       |  |        |         |               |        |       |
| 25  | Individuals empowered to make decisions locally  |        |         |               |        |       |
| 26  | Experienced employees receive training when switching to new position                    |        |         |               |        |       |
| 27  | Individuals empowered to get the resources they needed for their jobs.                   |        |         |               |        |       |

|   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| 28  | Organization empower employees to reflect the organization's vision through and out the organization.                                  |  |  |  |  |  |
| 29  | Employees who work remotely facilitated in meeting regularly at the company to get the organization vision.                            |  |  |  |  |  |
| <b>6<sup>th</sup> Dimension: Connect the organization to its environment:</b> |  |  |  |  |  |  |
| 30  | My organization helps employees balance work and family needs.   |  |  |  |  |  |
| 31  | My organization encourages employees to think from a global perspective  |  |  |  |  |  |
| 32  | My organization considers the impact of decisions on employee morale   |  |  |  |  |  |
| 33  | Top management Encourages employees to get answers from across the organization when solving problems                                  |  |  |  |  |  |
| 34  | Organization cooperates with others companies and organizations to reciprocate information of new techniques in construction industry. |  |  |  |  |  |
| <b>7<sup>th</sup> Dimension: Provide strategic leadership for learning:</b>   |  |  |  |  |  |  |
| 35  | Leaders support requests for learning opportunities and training.  |  |  |  |  |  |
| 36  | Leaders share up to date information with employees about industry, trends and organizational directions.                              |  |  |  |  |  |
| 37  | Leaders empower others to carry out the organization's vision  |  |  |  |  |  |
| 38  | Leaders monitor and coach those they lead.   |  |  |  |  |  |
| 39  | Leaders continually looks for opportunities to learn.  |  |  |  |  |  |

**Instruction:** Please respond by marking with (√) to each item of how descriptive exist in your organization.

| Category   |   | Always exists | Usually exists | Sometimes exists | Rarely exists | Never exist |
|--|---|---------------|----------------|------------------|---------------|-------------|
| <b>Supportive Learning Environment</b>           |   |               |                |                  |               |             |
| 1  | Psychological safety  |               |                |                  |               |             |
| 2  | Appreciation of differences   |               |                |                  |               |             |
| 3  | Openness in new ideas   |               |                |                  |               |             |
| 4  | Good working conditions   |               |                |                  |               |             |
| <b>Concrete learning Processes and practices</b> |   |               |                |                  |               |             |
| 5  | Experimentation   |               |                |                  |               |             |
| 6  | Information collection  |               |                |                  |               |             |
| 7  | Analysis  |               |                |                  |               |             |
| 8  | Education and training  |               |                |                  |               |             |
| 9  | Information transfer  |               |                |                  |               |             |
| 10   | acquiring, assimilating, transforming and exploiting knowledge                              |               |                |                  |               |             |
| <b>Structure</b>                                 |   |               |                |                  |               |             |
| 11   | respond quickly to changing market conditions   |               |                |                  |               |             |
| 12   | respond quickly to changes  |               |                |                  |               |             |
| 13   | use boundary workers or gatekeepers to interface between the firm and its wider environment |               |                |                  |               |             |
| 14   | Clear chain of command through organization structure                                       |               |                |                  |               |             |
| 15   | Flexible structure  |               |                |                  |               |             |

|                        |   |  |  |  |  |  |
|------------------------|---|--|--|--|--|--|
| 16                     | Networking with customers, suppliers and competitors  |  |  |  |  |  |
| 17                     | Employees are encouraged to communicate issues and information to management on a regular basis |  |  |  |  |  |
| <b>System</b>          |   |  |  |  |  |  |
| 18                     | Open access to information  |  |  |  |  |  |
| 19                     | Suitable archive  |  |  |  |  |  |
| <b>Human Resources</b> |   |  |  |  |  |  |
| 20                     | Accurate standers for recruitments  |  |  |  |  |  |
| 21                     | Make sure that every job poses by an employee who has the right skills for the job              |  |  |  |  |  |
| 22                     | Reward system according to employee experience, skills and efficiency                           |  |  |  |  |  |
| 23                     | A training index developed to track progress of all employees                                   |  |  |  |  |  |
| 24                     | Support for employee learning and personal development  |  |  |  |  |  |
| <b>Culture</b>         |   |  |  |  |  |  |
| 25                     | Clear shred vision and goals  |  |  |  |  |  |
| 26                     | Management and employees from all levels of the organization facilitated in developing a vision |  |  |  |  |  |
| 27                     | Strong values   |  |  |  |  |  |
| <b>Leadership</b>      |   |  |  |  |  |  |
| 28                     | Supportive leaders  |  |  |  |  |  |
| 29                     | Honest leaders  |  |  |  |  |  |
| 30                     | Appreciation for job innovation   |  |  |  |  |  |