RESEARCH ARTICLE

IMPACT AND INFLUENCE OF TRANSFORMATIONAL LEADERSHIP ON CONSTRUCTION SAFETY CULTURE

*,1Ramprasad, K. Samarth and 2Prabhat Kumar

1Research Scholar, Faculty of Business Administration, Sathyabama University, Chennai -600019, India
2Research Supervisor, Faculty of Business Administration, Sathyabama University, Chennai -600019, India

ARTICLE INFO	ABSTRACT
	The success and sustainability of the safety management system in a construction organization is entirely dependent on the leadership. The leader makes or breaks the organization. There is a strong need to establish, develop, assess, sustain and improve the effectiveness of the leadership and safety management system in a construction organization. The various styles of leadership available in literature for different organizations like manufacturing, services, information technology and research and development are studied, understood and compared for advantages vis-à-vis dis-advantages to assess suitability, applicability and validity for the construction organization. The transformational style of leadership is most suitable to the sustainable safety culture. The experience of assessing and reviewing the safety management systems in the 6 large- scale infra-structure organizations at different parts of India has been utilized in designing and formulating the transformational style of leadership for the successful conception to completion of the construction activities. The impact of human, organizational and technical factors on the leadership for safety in the construction organizations is evaluated through the questionnaire survey, interviews, discussions, interactions, etc involving about 700 participants at different levels in different locations. The factors for successful leadership are identified and presented in the report.

1. INTRODUCTION

Construction is a progressive, dynamic and challenging process. This has an unlimited scope to learn lessons from the accidents and injuries that are caused somewhere or anywhere in the world at regular intervals. The root cause for all the accidents that have happened in any industry is the failure of the management to proactively ensure the preventive safe measures. The management of any organisation is synonymous to leadership. This indicates the lack of an effective leadership style at senior manager's level to establish and nurture a sustainable robust safety management system in the organisation. The repeated and recurring close-calls and accidents tell us that there is a tremendous opportunity to improve the safety management system. The experience of the author and the study of the prevailing safety management practices over the past three decades also emphasize that the leadership for safety, management of safety, as an integrated management system with a systemic approach (i.e. an approach relating to the systems as a whole in which the interactions/ interrelationships/ interdependencies and influence between, human, organizational and technical factors are duly considered) are essential to the specification and application of adequate safety measures and the fostering of a strong safety culture.

*Corresponding author: **Ramprasad K. Samarth.**
Research Scholar, Faculty of Business Administration, Sathyabama University, Chennai -600019, India.

1.1 Objectives of Study

The goal of the study is to improve the safety performance in a construction project by building and sustaining a robust safety culture. To achieve the above goal the following objectives are outlined:

- To study the various styles of leadership available in literature and practice and to arrive at the best suitable leadership for the construction projects.
- To examine the influence and effect of transformational leadership of Chief Executive Officer (CEO) at Senior Managers (SM) level and subsequently down the line to the Workers level.
- To investigate and understand the cascading effect of leadership on the approach and behaviour towards safety.
- To study the impact of human, organisational and technical factors on the work place and consequently on the safety culture.
- To arrive at Key Success Factors (KSFs) for innovative changes by leadership in the project environment to improve safety performance.

1.2 Principles of Leadership:

The authors have studied various theories and principles of leadership available in literature (Amanchukwu, 2015), and

practiced in different/ distinct institutions like educational, defence, political, governments, manufacturing, services, etc. The construction industry is unique, in the sense, diverse nature of activities, short duration, risks uncontrolled, the core work force is illiterate or semi-literate and the competency is based on attitude and skill rather knowledge (science & technology), communication barriers, person centered leadership in contract system, etc. The authors examined the existing principles and practices nationally and internationally at construction industries. Based on the nature, practicability, intricacies and complexities of the construction industry, 5 simple basic leadership principles focused on the safe performance of the project are proposed for the study.

The principles are as follows

- **Be Task & Improvement Oriented:** The leader should possess conceptual, technical and human skills/ abilities, proficiency and conduct to perform the tasks safely by all levels of workers. Ensure that tasks are understood by all, well supervised, and safely accomplished
- **Be Responsive and Accountable:** The leader should be responsible and accountable and must inculcate the same amongst workers to carry out their tasks. The leader should lead by example.
- **Be Communicative:** The work force in the construction industry is diversified and heterogeneous in language, culture, traditions etc. The leader should be effective in communicating through verbal and non-verbal techniques to keep the workers updated and informed from time to time.
  The Three –way communication system as follows: (Sender ➝ Receiver ➝ Sender ➝ Receiver) should be adopted to ensure that the instructions are effectively and completely understood.
- **Be Empathetic:** The leader should be versed in basic human nature and expectations of the workers, respect for all and recognize the need of caring attitude towards workers.
- **Be Decisive:** The leader should have good skills in trouble shooting, problem analyzing and solving, decision making, and planning tools.

2. LITERATURE SURVEY AND REVIEW

The information available in the literature is assimilated and presented in the subsequent paragraphs below.

2.1 History of Construction Leadership

Leadership is a critical and key factor for success in any activity that involves collaboration among a group (or groups) of people. In construction, leadership is even more essential, this has been established in many studies (Odusami, 2002) (Long, Ogunlana and Lan, 2004). (Thamhain, 2003) highlighted the leader's importance in creating a supportive work environment for the project participants. (Munns and Bjeirmi, 1996) emphasise that the success or failure of project management is highly dependent on the project leader. (Chinyio and Vogwell, 2007) found that effective leadership of the many stakeholders in a construction project can aid in harmonising their goals and preventing conflict. Despite this recognition that leadership is important at all levels of the construction industry, emphasis is placed on the technical aspects, as well as management and leadership receives

inadequate attention (Skipper and Bell, 2006a).(Songer, Chinowsky and Butler, 2006) highlighted certain present and future leadership challenges to the construction industry and organisations. (Toor and Ofori, 2008a) catalogued current and emerging leadership challenges, including challenges that are industry specific, general to businesses and in the operating environment. In literature, certain surveys show that respondents in the construction industry had low satisfaction with their leaders' ethics and authenticity (Toor and Ofori, 2007). Many studies on industrialised nations (Arditi, Koksal and Kale, 2000) and developing countries (Jannadi, 1997) (Enshassi, Hallaq and Mohamed, 2006) show that both business and project failures are common in construction. Several reasons are cited for these failures (Bjeirmi, Begg and Scott, 2007) noted that the UK construction industry has been the subject of ongoing criticism for its fragmentation and poor record on quality, waste, financial claims, safety and efficiency. They note that a major cause for this criticism is inadequate communication throughout the construction process because inappropriate procurement approaches have been adopted. (Toor and Ogunlana (2008a)) observed that the major problems that construction projects in Thailand typically face include an inadequate procurement system, inadequate resources, discrepancies between design and construction, inadequate project management practices, order variations, communication lapses, cultural issues and differences in the participant interests. In Malaysia, (Abdul-Rahman *et al*., 2007) found that the quality of management was unsatisfactory for contractors that undertake public design-and-build projects. The quality-related factors that contributed to this situation were budget constraints, time constraints, client complexity, poor communication and design variations. (Davidson and Maguire, 2003) found that the top ten reasons for failed construction firms in the US included the following: rapid growth, work in new geographic regions, an increase in the sizes of single jobs, new types of work, high employee turnover, inadequate capitalisation, poor estimations, poor accounting systems and poor cash flow. (Pires, Teixera and Moura, 2007) highlighted the following common problems on construction projects in Portugal: frequent delays, cost overruns, insufficient quality and inadequate safety. These problems have reduced the industry's competitiveness. Their survey revealed the following reasons for such problems: design and client responsibilities, inadequate construction management and inadequate specific training. In the above studies, much of the blame for the industry's poor performance in most countries is often allocated to factors outside of the control of construction organisations and professionals. Certain authors blame economic cycles and the political environment (Enshassi, Hallaq and Mohamed, 2006). Even where the features and failings of the industry, as well as its practices and procedures, are highlighted, practitioners and certain researchers do not appreciate the importance of leadership in the construction industry. The literature survey indicates that an effective leadership for a good safety culture in construction industry is really challenging and demanding.

2.2 Leadership Vs Management for Safety

In the earlier years, it was conceived by the corporates that leadership is the integral part of management and the functions are obvious and synonyms. The distinction between the terms management and leadership is an evolving and novel concept for a construction industry. The traditional definitions,

characteristics and styles of leadership for safety management available in literature for organizations carrying out varied and different activities were surveyed and studied to assess the suitability for a construction organization. The outlook of Leaders Vs Mangers, corroboration of a comparative study in an organisation is presented in Table 1.

Table 1. Outlook of Leaders Vs Managers

Leaders	Managers
Long term goals	Short term goals
Immemorial	Modern
Vision mode	Mission mode
Future tasks	Routine tasks
Dynamicity and Change	Consistency and Stability
Personal power (Charisma)	Positional power
Creates positive culture	Maintains status quo
Personal influence	Impersonal influence
Shared culture values	Policies and procedures
Associated with followers	Aloof

The distinction is clearly brought out in International Atomic Energy Agency (IAEA) Safety Standards, Leadership and Management for Safety (2016), which mentions that 'Leadership' is the use of an individual's capabilities and competences to give direction to individuals and groups and to influence their commitment to achieving the safety objective and to applying the safety principles, by means of shared goals, values and behaviour. 'Management' is a formal, authorized function for ensuring that an organization operates efficiently and that work is completed in accordance with requirements, plans and resources. Managers at all levels need to be leaders for safety.

2.2.1 Concept of Leadership for Safety

The concept of Leadership for safety means establishing and integrating the organization's vision, goals, strategies, plans and objectives; by advocating individual commitment to the protection of people from the hazards at work environment; and by advocating the safety principles, addressing behavioural issues and establishing behavioural expectations and fostering a strong safety culture.

2.2.3 Concept of Management for Safety

The concept of Management for Safety, includes establishing and applying an effective management system. This management system has to integrate all elements of management so that requirements for safety are established and applied coherently with other requirements, including those for human performance, quality and security; and so that safety is not compromised by the need to meet other requirements or demands. The management system also has to ensure the fostering of a strong safety culture, the regular assessment of safety performance and the application of lessons from experience. The management system also supports the development of proactive and responsive management.

2.3 Safety Culture Vs Leadership

A safety culture is an organisational culture that places a high level of importance on safety beliefs, values and attitudes — and these are shared by the majority of people within the company or workplace. It can be characterised as 'the way we do things around here'. A positive safety culture can result in

improved occupational health and safety (OH&S) and organisational performance. For a safety culture to be successful it needs to be led from the top — that is, safety culture needs to be embraced and practised by the leadership i.e Chief Executive Officer (CEO) and Senior Managers(SMs) of any organisation. Their behaviour is directly related to safety performance as it demonstrates by example to employees what actions will be rewarded, tolerated or punished, which in turn influences what actions and behaviour employees initiate and maintain. The study of leadership under report is focussed on CEOs and SMs only.

2.4 Leadership Styles

According to Research by asaecenter, leadership style is the way a person uses power to lead other people. Research has identified a variety of leadership styles based on the number of followers. The most appropriate leadership style depends on the function of the leader, the followers and the situation. There is no single leadership style which is universally applicable to all organisations. Some leaders cannot work comfortably with a high degree of followers' participation in decision making. Some employers lack the ability or the desire to assume responsibility. Furthermore, the specific situation helps determine the most effective style of interactions. Sometimes leaders must handle problems that require immediate solutions without consulting followers. Based on above situations, circumstances and boundary conditions, the leadership styles available in the literature vary and are up to 12. They are briefly explained below. Different styles of leadership means different ways people tend to lead organizations or other people. Not all of these styles would deem fit for all kind of situations, one can read them through to see which one fits right to your company or situation.

Style 1: Autocratic Leadership

Autocratic leadership style is centred on the boss. In this leadership the leader holds all authority and responsibility. In this leadership, leaders make decisions on their own without consulting subordinates. They reach decisions, communicate them to subordinates and expect prompt implementation. Autocratic work environment does normally have little or no flexibility. In this kind of leadership, guidelines, procedures and policies are all natural additions of an autocratic leader. Statistically, there are very few situations that can actually support autocratic leadership.

Style 2: Democratic Leadership

In this leadership style, subordinates are involved in making decisions. Unlike autocratic, this headship is centred on subordinates' contributions. The democratic leader holds final responsibility, but he or she is known to delegate authority to other people, who determine work projects. The most unique feature of this leadership is that communication is active upward and downward. With respect to statistics, democratic leadership is one of the most preferred leadership, and it entails the following: fairness, competence, creativity, courage, intelligence and honesty.

Style 3: Strategic Leadership

Strategic leadership is one that involves a leader who is essentially the head of an organization. The strategic leader is

not limited to those at the top of the organization. It is geared to a wider audience at all levels who want to create a high performance life, team or organization. The strategic leader fills the gap between the need for new possibility and the need for practicality by providing a prescriptive set of habits. An effective strategic leadership delivers the goods in terms of what an organization naturally expects from its leadership in times of change. Literature says 55% of this leadership normally involves strategic thinking.

Style 4: Transformational Leadership

Unlike other leadership styles, transformational leadership is all about initiating change in organizations, groups, oneself and others. Transformational leaders motivate others to do more than they originally intended and often even more than they thought possible. They set more challenging expectations and typically achieve higher performance. Statistically, transformational leadership tends to have more committed and satisfied followers. This is mainly so because transformational leaders empower followers.

Style 5: Team Leadership

Team leadership involves the creation of a vivid picture of its future, where it is heading and what it will stand for. The vision inspires and provides a strong sense of purpose and direction. Team leadership is about working with the hearts and minds of all those involved. It also recognizes that teamwork may not always involve trusting cooperative relationships. The most challenging aspect of this leadership is whether or not it will succeed. According to Harvard Business Review, team leadership may fail because of poor leadership qualities.

Style 6: Cross-Cultural Leadership

This form of leadership normally exists where there are various cultures in the society. This leadership has also industrialized as a way to recognize front runners who work in the contemporary globalized market. Organizations, particularly international ones require leaders who can effectively adjust their leadership to work in different environs. Most of the leaderships observed in the United States are cross-cultural because of the different cultures that live and work there.

Style 7: Facilitative Leadership

Facilitative leadership is too dependent on measurements and outcomes – not a skill, although it takes much skill to master. The effectiveness of a group is directly related to the efficacy of its process. If the group is high functioning, the facilitative leader uses a light hand on the process. On the other hand, if the group is low functioning, the facilitative leader will give more directives in helping the group run its process. An effective facilitative leadership involves monitoring of group dynamics, offering process suggestions and interventions to help the group stay on track.

Style 8: Laissez-faire Leadership

Laissez-faire leadership gives authority to employees. Departments or subordinates are allowed to work as they

choose with minimal or no interference. According to research, this kind of leadership has been consistently found to be the least satisfying and least effective management style.

Style 9: Transactional Leadership

This is a leadership that maintains or continues the status quo. It is also the leadership that involves an exchange process, whereby followers get immediate, tangible rewards for carrying out the leader's orders. Transactional leadership can sound rather basic, with its focus on exchange. Being clear, focusing on expectations, giving feedback are all important leadership skills. According to a study, transactional leadership behaviors can include: clarifying what is expected of followers' performance; explaining how to meet such expectations; and allocating rewards that are contingent on meeting objectives.

Style 10: Coaching Leadership

Coaching leadership involves teaching and supervising followers. A coaching leader is highly operational in setting where results/ performance require improvement. Basically, in this kind of leadership, followers are helped to improve their skills. Coaching leadership does the following: motivates followers, inspires followers and encourages followers.

Style 11: Charismatic Leadership

In this leadership, the charismatic leader manifests his or her revolutionary power. Charisma does not mean sheer behavioral change. It actually involves a transformation of followers' values and beliefs. Therefore, this distinguishes a charismatic leader from a simply populist leader who may affect attitudes towards specific objects, but who is not prepared as the charismatic leader is, to transform the underlying normative orientation that structures specific attitudes.

Style 12: Visionary Leadership

This form of leadership involves leaders who recognize that the methods, steps and processes of leadership are all obtained with and through people. Most great and successful leaders have the aspects of vision in them. However, those who are highly visionary are the ones considered to be exhibiting visionary leadership. Outstanding leaders will always transform their visions into realities.

There is no single style of leadership proved successful in any organisation. An optimum mix of styles of leadership is essential for the effective functioning of the organisation. In the study of leadership for safety culture management in a construction organisation, the integrated model of styles 1, 2, 4, 9 and 10 as shown in Figure 1 is most appropriate and suitable. The safety culture evolves and revolves around this styles. As per the Occupational Safety and Health Management System (OSHMS), the management shall identify roles to provide a leadership in the health and safety management system of a construction organisation through commitment and employee involvement. The other actions include, formulating a written policy statement that describes management's commitment to a safety and health management system, determine roles and responsibilities, identify types of

employee involvement tools, analyse barriers and challenges to employee involvement, arrive at ways to proactively involve employees in the safety management system.

Figure 1. Leadership Styles (Evolving & Revolving) Integrated Model

3. MATERIALS AND METHODS

3.1 Materials: The data for the study is collected from primary and Secondary Sources. The methods adopted for primary source of data collection are by Questionnaire, Opinionnaire, Observation and Interview from different sections of the people like workers, engineers, managers, SMs, CEOs, national and international experts, regulators, etc. The methods for secondary source of data collection are through Corporate reports, Research reports, Web sites and Published professional works /reports. Data collection is an activity comprising the process of gathering, measuring and assimilating information on targeted variables in an established systematic fashion, which facilitates one to answer relevant questions and evaluate outcomes. Data collection is a critical component in the research study. While methods vary depending upon the nature of problem and information required for the purpose of the study. The goal for data collection on the leadership in management of safety culture in a construction industry is to capture quality evidence that allows analysis to lead to the formulation of convincing and credible solution to the successful and sustainable management of safety in a construction industry.

3.2 Methods: The methods adopted for the study on leadership and safety management involves top to bottom (CEO to worker), bottom to top (Worker to CEO), and lateral (Peers to Contemporaries and vice –versa) levels. A pragmatic and participatory methodical approach is essential to understand the leadership and safety management related issues thread-bare up to the grass root level. Pragmatic approach has the flexibility and freedom to use any of the methods, techniques and procedures typically associated with quantitative or qualitative research. Different techniques are used at the same time or one after the other. For example, face-

to-face interviews with several people or have a focus group and then the findings are used to construct a questionnaire to measure attitudes and behavior at work. The aim of the study is to bring about a positive change in the minds of the persons to achieve safe working environment. The participatory approach is more relevant and appropriate which involves participation, contribution, commitment and ownership of all

4. RESULTS AND DISCUSSION

4.1 Results

A survey on safety culture was conducted in 6 –large scale infrastructure construction organizations spread over different parts of India. The construction activities of the structures and systems as well as leadership is similar at all the 6 organizations under study. The survey consists of questions / opinions on items relevant to organizational safety performance which consists mainly role, responsibility, commitment, leadership, etc of management. There were 6 – different questionnaires / opinionnaires developed for study consisting of 10 to 15 items mainly focused on leadership. The Likert Scale (5-point) was used to elicit information from the respondents ranging from Strongly Agree, Agree, Neutral, Disagree to Strongly Disagree. 700 persons which includes CEOs (8), Senior Managers (76), Managers (132), Engineers (192) and Supervisors (292) responded to the survey from the 6 – organizations during the period 2014 -2017 (3 years). The survey report is presented in Table -2. The survey includes various aspects like leadership responsibility, safety values, management commitment, safety improvements, safety meetings, safety motivation, top-down approach, management accountability, etc. The human, organizational and technical/ technological factors are taken into consideration at all stages of the survey.

Table 2. Survey Report on Role of Leadership in Safety Culture in an Organization

Opinion / Question	Percentage of Response				
	A	B	C	D	E
Leadership is responsible for promoting safety culture.	72	18	8	2	--
Safety as a value in an organization	59	22	12	5	3
Management committed to learning/teaching	52	40	5	1	2
Safety can be improved by management inspections /audits	67	15	10	5	3
Key management meetings should have safety agenda	74	20	6	-	-
Leaders should encourage suggestions for improvement in working areas.	42	26	10	14	8
Top-down(CEO to Worker) approach is best for improving safety culture	62	12	5	3	18
Leaders should strengthen mutual trust and faith.	42	36	16	6	-
Leaders should motivate workers towards safe behavior	68	28	4	-	-
Management accountability towards safety should be defined.	81	10	9	-	-

Total no of Respondents(N) = 700
A- Strongly Agree
B - Agree
C- Neutral
D- Disagree
E- Strongly Disagree

The findings of the survey and highlights are as follows:

- 81% strongly agree to the point that Management accountability towards safety should be defined

"In practice it is observed that the management accountability towards safety should be more strengthened in construction activities "

- 74 % strongly agree to the point that key management meetings should have safety agenda

"The periodic management meetings in construction industry should devote more time and attention in safety rather than in work progress, schedules and financial aspects."

- 72% strongly agree to the point that Leadership is responsible for promoting safety culture.

"Leadership through visible commitment plays a crucial and critical role in promoting and strengthening safety culture in a construction organization".

- 68% strongly agree to the point that Leaders should motivate workers towards safe behavior.

"In general, it is observed that short-cuts are ignored in construction industry. Leadership should encourage safe behavior at work by motivating the workers. The leaders should discourage at –risk behaviors and chance takers".

- 67% strongly agree to the point that Safety can be improved by management inspections /audits

"The author has also experienced that the CEOs visit to the work place has a long way to improve the work place safety. The management team's periodic inspection and audits had significantly improved the safety culture of the construction organization"

- 62% strongly agree to the point that Top-down (CEO to Worker) approach is best for improving safety culture

"In theory, literature and practice it is proved and established beyond doubt that 'leading by example' is the best thought and visible commitment of management towards safety. This encourage workers to emulate the safe practices. This practice has a major role in transforming the safety culture in a construction organization".

- 59% strongly agree to the point that Safety as a value in an organization.

"The construction organization in its business plan / vision statement should recognize safety as a value and work out policies and programs to achieve high safety standards".

The results of the survey indicate that leadership in construction industry should have a prognostic outlook and dynamic insights of the changing scenarios. There is a need of transformational leadership to change the organizational thinking, behavior of persons at work, challenging unsafe situations and enhancing expectations to achieve high standard safety performances. The transformational leadership has highly committed and contended followers. The reason is that transformational leaders empower followers for excellence.

4.2 DISCUSSION

The author in the past 15 years, during the site inspections and in the construction safety review process interacted with Project CEOs and SMs on the factors that can improve the safety. During the interactions / discussions / interviews / investigation, etc, it is understood the Project CEOs have a commitment towards safety but the SMs and down the line are more focussed on time –schedules and over –dependent on contractors. The excessive faith and reliance on contractors has diluted the safety performance of the construction industry. This has become a challenge to leader (CEO). More strenuous and rigorous efforts are needed to percolate / trickle down the safety commitment and concerns to the lower levels.

4.2.1 Accidents Vs Leadership

The accident trends vs the leadership approaches in the past 60 years as shown in Figure 2 indicate a paradigm change in leadership style. The leadership of 1950s at the helm of emerging engineering and technologies had a reactive approach i.e action after an incident / accident. Further, due to some leaders learning lessons by experience and by virtue of their knowledge and wisdom along with the aid of techniques / technologies had reduced the accident trends over the years. In 1980s with evolution of management systems, the leaders with preventive/ predictive approach and evolving systems has led to the improvement of safety and further declined accident rates / trends. In 2010s and forward with the accidents happening around, an asymptotic trend which suggests that further reduction in accident rates are possible only with addressing human factors as the root cause of any accident including construction related accidents is the human error. The human performance can be enhanced by transforming the persons through an effective leadership style.

4.2.2 Effectiveness of Transformational Leadership Style

Recent worldwide experiences in construction activities have indicated a need for a change of leadership style which can transform the dynamic construction conditions into a safe haven. The transformational leadership style is associated with the positive outcomes in relation to other leadership styles. According to studies performed by Lowe, Kroeck, and Sivasubramaniam, charisma (or Idealized Influence) was found to be a variable that was most strongly related to leader effectiveness among Multifactor Leadership Questionnaire (MLQ) scales [23].

Other studies show that transformational leadership is positively associated with employee outcomes including commitment, role clarity, and well-being [24]. Consequently, by viewing the future with a positive attitude, followers are motivated. The charismatic leaders of positive attitude / attribute influence the followers by focusing on higher-order ideals and values. The followers built close emotional ties to the leader and positively contribute to the safety culture in the construction organization / industry. Mutual trust and confidence is likely to be built between the leaders and followers
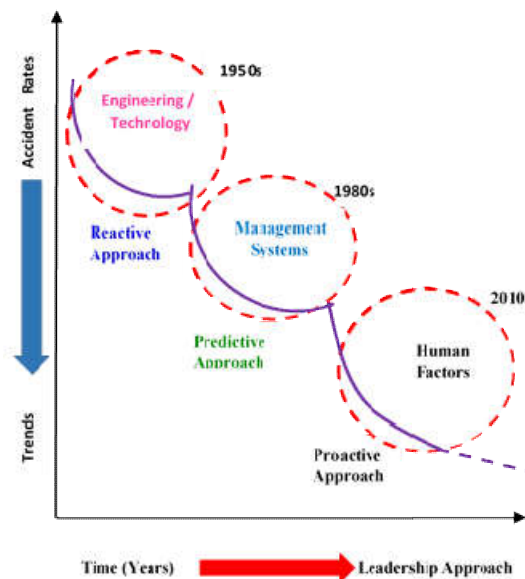
Figure 2. Accident trends Vs leadership approach with time

4.2.3 Factors for Successful Leadership

The success of the leadership is measured in terms of degree of safety in the construction organization. The human, organizational and technical / technological factors have a crucial role in the success of leadership at a construction organization. The leaders should ensure a safe workplace for all employees and committed to a zero-accidents workplace by believing that allaccidents can be prevented/ averted. The construction projects involve persons coming from different backgrounds, locations and cultures for limited duration for specific function. Most of the project participants are contract persons and have limited interest in the project. They want to perform their assigned tasks with minimum effort through short-cuts and in minimum time. They may not be too much aligned to the organized way of thinking about the project. In such circumstances, to create a safety culture with migratory resources require management commitment and tactical approach through transformational leadership. The effectiveness of leadership is dependent on pre-evaluation of the dangers and risks of activitiesso that the risk factors can be eliminated or minimized. The supervisors responsible for occupational safety as part of day-to-day leadership shall keep their eyes open and make observations to improve the safety of the working environment. The leadership shall ensure that workers have sufficient occupational safety training, orientation and personal protective equipment to perform their work safely. The human, organizational and technological factors are to be considered under the leadership qualities to improve the safety culture in the construction organization, these shall include:

- Acts /Rules / Regulations/ Technologies - Awareness and compliance
- Policies / Programs / Processes / Procedures
- Empowerment / Enforcement
- Feed-back mechanism
- Communication (Top down / Bottom up/ Three way)
- Learning / Training including refresher training
- Review (Management / Peer/ Expert, etc)
- Change Management / Safe behavior / Motivational Leadership, etc programs for all levels

- Appraisals and analysis of the project safety performance
- Improvement in safety performance

The study suggest a 5Cs transformational leadership model presented in Figure 3, for the effective and efficient management of the construction organization. The management functions and the required competencies/ abilities like knowledge, skills and attitudes/ attributes are contained in the 5Cs and are self-explanatory.

The5Cs are Committing, Consulting, Collaborating, Communicating, and Co-ordinating. The interlinks, inter-dependencies, interrelationships and interactions between each and on the total leadership is shown in Figure 3.

Figure 3. 5- Cs Transformational Leadership Model

The study results conclude that the transformational leadership has the positive impact and influence on developing, sustaining, strengthening and improving construction safety culture.

5. CONCLUSION

To safeguard the construction activities sufficient resources consistent processes, proper tools, robust methods/ procedures, unambiguous instructions and strong leadership are essential. Unlike historical, classical, neo-classical and traditional styles of leadership available in literature, theory and practice, the leadership for construction organization is to be tailored to the circumstances and the situations. The leadership traits for transforming the situations by changing the minds/ attitudes of persons and working environment is the need of the hour. The leadership with vision and positive attributes should transform the construction organization. The goal of the leadership shall be to develop and improve occupational safety at all levels in the organization. The leadership should encourage transparency, blame –free and learning attributes for continually strengthening the organization. The leadership qualities of Chief Executive Officer (CEO) and Senior managers (SM) becomes determining factor in the safety culture and safety performance of the project activities. The transformational leadership with 5Cs (Committing, Consulting, Co-ordinating, Co-operating and Collaborating) shall propagate the safety agenda. The determined leadership

should empower the team to perform by providing direction, resources, money and motivational schemes.

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