
Predicting effectiveness of Management Systems: Measuring Successes against Failures

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Abstract

The primary purpose of this paper is to demonstrate the difference in safety performances, amongst the construction companies in the United Arab Emirates (UAE) who employ formal HSE Management system vs the companies who do not have a formal system, using leading and lagging indicators. The present trend in Organizations is that they rely/focus more on loss/failure rates to quantify the performance of their system. Therefore, they are unreliable and inefficient parameters for measuring the confidence in the improvement of the safety practices. However using leading indicators, an organisation can manage more effectively and efficiently the safety performance as it triggers a series of interventions before a loss occurs and therefore giving more confidence to the management that the system employed is working and will continue to be effective. In this paper, we have identified and evaluated the current safety performance indicators (both leading and lagging) and established the relationship between leading and lagging indicators of performance to demonstrate the impact of formal management system on safety performance outputs. Qualitative methods are applied in this paper. Semi-structured questions were used to seek information on the sampled company safety system, and historical data of leading and lagging indicators for the period 2013 – 2016 have been collected and quantified to measure the safety system performance statistically. Previous studies were reviewed to explore the factors that is critical in safety system performance. The results show both leading and lagging indicators share an indirectly proportional relationship, which is the ideal scenario. Results indicate that the company with a formal management system is highly committed to focusing on measuring the inputs into the system by using leading indicators thereby lowering their losses and injury rates. Whereas, management system deficient organization focus more on the failures to correct and improve. Finally, the study suggests that several opportunities exist to improve the performance of organisations by formally adopting a comprehensive safety management system with an integrated performance management process and identify standards which will assist the organizations to measure their performance in real time.

Keywords: Performance Indicators, Leading & Lagging Indicators, Management System, Qualitative methods

Introduction

The measure of performance can be defined as the results of the monitoring program, focusing on progress towards pre-established objectives (the United States General Accounting Office, 1998). Management uses this process effectively to measure the efficacy of the inputs, process and outputs against their set business goals and expectations. Management for the perfection of the performance, Pope (1990) stated that excellence in business is heavily reliant on a process of continuously evaluating its current state of health, and identifying areas of improvement and the threats they are facing. For this process to be effective, management must be focusing on continuously identifying the weakness in the process and track the trend and intervene and steer it towards the achievement of objectives (Pope, 1990). The measurement of performance is of great importance for the management of quality, productivity and safety.

One way of measuring performance is the measurement of the safety management system. "Systems Safety management is the science of continuous measurement and management evaluation of gaps and weaknesses diagnosed as operational accidents, which adversely affect the best use human, material, and economic resources "(Pope, 1990). There are different models of management systems that could help in this process and include OSHAS 18001, OSHA and VPP the ISMEC model. Pope (1990) mentions that the safety performance is an indication of an organization's health. The performance of safety is an essential aspect of the success of an organization. Having a pro-active positive safety management approach the losses associated with the system is reduced to a minimum, A robust management system will reduce the chances of something going wrong, and if something goes wrong, the recovery is made as quickly as possible and thereby reducing the consequences.

Safety performances can be analysed by different methods and approaches. Usually, these metrics use leading/prospective and lagging/retrospective indicators. A retrospective indicators tends to be reactive as it look backwards and relies on lessons learnt after a loss has occurred. The leading indicator is a measure of the activity calibrated before a loss occurs. Some of the examples of performance indicators include the number of safety inspections, audits, surveys. The extent of management involvement, number of safety consultation meeting, walkthroughs. Percentage of risk assessments and job safety analysis performed against the total man-hours worked etc. Leading indicators are measuring what's being input and processed in the system (Grabowski, Ayyalasomayajula, Merrick and McCafferty, 2007). The leading performance indicators could be gathered by performing job safety analysis, conducting samplings and survey, interviews and verification of system documentation such as maintenance records, training records, inspection records etc.

There are many benefits in use of different means in measuring performance. In most of the industries, safety performance is measured using lagging indicators alone. These indicators are tangible results or easily measurable consequences. Examples of safety lagging indicators include lost time frequency rates, rates of enforcement actions, injuriesetc. There are several problems with lagging indicators. One obvious problem is that they indicate failure of the system which is a result of weak input and processes of a management system. Like Bird and Germain (1985) in their book 'Practical leadership in the control of losses' mentions that, "Only management can handle 80% of the mistakes made by people'. In other words, unsafe actions and conditions are the results of poor management processes. Lagging indicators, such as accident rates, may reflect random fluctuations in the workplace (Dial, 1992). These fluctuations may be related to the probability of events or people who report several incidents. To effectively reduce and To avoid the likelihood of a similar event, it is necessary to find the real causes. Many times, safety performance measurement focuses on lagging indicators and, therefore, focuses on the harmful consequences of a poor process. With a focus on the management of the system, the percentage of accidents could be further reduced (Bird and Germain, 1985). There are advantages in the integration of other safety measures with lagging indicators. These include leading indicators, which measures the perform much in advance so that the loss is prevented. These measures focus on the system's inputs; with the quality the resources and the process employed in the system. Other examples of various leading indicators include the compliance levels with the standards of the organization, the conclusion of training and audits and maintenance practices. When all these indicators are used, help identify shortfalls in the system that can be addressed and as a result prevent losses and reduce associated costs.

Problem Statement

Attention to accident rates and other lagging indicators is not reliable and ineffective points of reference to improve the safety system. It merely reflects the failures and the lessons learnt from failures. However, the proactive measurement of safety performance is more effective to improve the system, as it is a straight measure of the success of the system before failure occurs. Use of a performance measurement system using leading and lagging indicators, an organization would be more efficient and effective in resolving and improving safety performance. To measure the leading indicators, the organization must have an implemented safety management system, with all the inputs and processes identified and defined. Failure to have a formal management system will incapacitate the proactive measuring of performance, and the organization will limit monitoring based on the failures and improve by lessons learnt, which could sometimes be too costly for the organization.

Aim and Objectives of the study

The purpose of this study is to Identify and evaluate the existing safety performance indicators (both leading and lagging) and to establish any relationship between leading and lagging indicators of performance, further to demonstrate the impact of formal management system on safety performance outputs.

Literature Review

After almost thirty years of intense research on the subject, the culture of safety continues a diffuse concept for which there is no definition accepted unanimously. Further, there is very minimal agreement about its indicators. However, Fernández-Muñiz et al (2007) recommends research on organizational factors that encourage or block the creation of a safety culture and the application of a safety management system. This will be very useful for organizations to define the areas in which they have to progress if they want to improve their safety performance. The literature on the effectiveness of these measures of organizational intervention to improve the performance of safety is still scarce. However, a recent study (Haleet al. 2010) indicates that, although the change is difficult, the interventions lead to a constructive dialogue between the senior management, line managers and employees. The measurement and continuous improvement in the safety management seem to be the success. The amount of energy and creativity injected by the management and The safety professional also seems to be a distinctive factor. Training and campaigns are, at best, necessary, but were considered insufficient improvement requirements.

Having a management system addressing all the risks and control measures is practically of no use unless the stakeholders are actively using them. Consequently, human factors are the key to the efficient operation of an organisation, and addressing the issues that affect human factors is most likely to gain an excellent return for the effort expended on it.

Measurement of Performances

As mentioned above, performance measurement is defined as reports on the results of the program, in particular, the progress towards pre-established objectives " (General Accounting of the United States, 1998). Merely the measure of performance is the measures of inputs, results and consequences about organizational objectives and goals. Using this

tool can assist organisations to measure both the efficiency and effectiveness of their system, and the process is iterative in nature and continuously improving. The process of measurement of performance is necessary because of the management depends on the credibility of what it measures. Whether it is the individual or part of a system that is ineffective or ineffective, correct or substituted. Evolving continuously, correcting and fixing the weakness can help the systems improve, and positively achieve the organisation's objectives.

Several issues encounter the task of performance measurement. On the outset, due to the measurement of performance a loop of continuous changes are introduced in the organization. And this would result in resistance and hesitance by the stakeholders. It is easier to advocate change than to actually make it work in an organization (Eccles, 1991). Wrapping everyone in the process of measuring performance and provide individuals opportunities to setting goals and measure their performance, to some extent the resistance to change can be avoided. It is always a challenge to bring in and drive changes. There are no easy ways to do it (Eccles, 1991). As the business expand the managers span increases and to monitor and manage in an hierarchial manner could pose challenges, hence they become totally depended on the information gathered through monitoring strategies (Hayes, Wheelwright, and Clark, 1988). As and when the companies system matures, new means and technologies are brought in which assists in improved data collection and analysis (Hayes, Wheelwright, and Clark, 1988). Any problems encountered in implementing new technologies in performance measurement, a robust performance management is required to be integrated into the management system. One significant disadvantage is individuals manipulating the performance monitoring measures to their own benefit, unless the system and process takes care of this lacuna. A good example is when the manager decides to hide his performance figures out a fear of retribution or to preserve the company records (Meyer, 2002). A consistent approach in performance measurement and implementing meaningful solutions to improve and not having a blame culture, this challenge can be to a great extent managed.

Irrespective of the type of performance metrics organisations use, whether it is profit per share, customer satisfaction etc, the ultimate goal of any organization must remain active. Identify, measure and verify properly all the different aspects of the organization can improve and continue operation continuously. Organisations also consider the new innovations and initiatives also as a performance measure (Eccles, 1991). In brief the performance measures could be quantified as monetary means as well the non-monetary means (Meyer, 2002).

Management System Standard

A management system's essential focus is to identify and develop various management standard against which the system can operate, and these standards are an essential inputs into the management system. This serves as a requirement for organizational improvement and performance (Bird & Germain, 1985). If a system has to be efficient, every element in the system must have an identified performance standard against which it can be measured. For example standards of risk assessments, trainings, audits, emergency response, communication, task analysis etc. Every business is unique and hence the standards that are developed must be with active consultation of all stake holders, forming a cross-functional team. The team should include all the different business functions, representatives from employees and the supply chain partners. Standards must be developed to measure the process activities instead of just the outputs (Fulwiler, 1993). Once the input and processes standards are developed and monitored, the end result will be the realization of a quality and safe product.

There are different reference and guidance models available on management systems. They include the ISMEC system, OSHAS 18001 and OSHA Voluntary Protection Program (VPP). Using these system models, organisation's can proactively measure their performance. The ISMEC and OSHAS 18001 systems, in particular, have control circuits that integrate continuous improvement of the process. Thanks to these paintings, patterns and The elements can be developed to be used in the measurement of safety performance.

Effectiveness of Safety Management Systems

It is a universally accepted truth that safety management systems are adopted by organizations to improve their safety performance. Related to the efficiency of the systems very few literature are available in this context. One such study of Bottani et al. (2009) directed an empirical study comparing safety performance levels of companies who have adopted the safety management systems and who have not adopted. The results of the studies show that there is a low level of performance level in non-adopted firms. The major weakness of Bottani et al. (2009) studies is that it did not measure the managements involvement or commitment to safety standards. Research studies of Vinod Kuman and Bhasi (2010) related to safety management systems efficiency also focused only on limited parameters of safety management systems. The same is the case of Arocena and Nunez (2010) and Hamidiet al. (2012) study. Most of these studies have not focused a full system performance of safety management systems, and accordingly, the results cannot be compared to approved performance indicators. A most recent study is conducted by the Australian Transportation safety Bureau in 2012, the study was based on the existing literature reviews to identify the efficiency of the safety management systems. The study results show that safety management system enhances safety performance. However, the study shows lack of various safety attributes of high-risk areas (Thomas, 2012), All the above studies has somehow derived that the safety management systems outcomes safety performance but Gallaher et al. (2003) argued that these outcomes are ambiguous and are not valid. Valid research till date is not available to the measure the impact of safety management systems on safety performance that includes all the elements of a safety culture.

Methodology

The most suitable method to identify the influence of safety management systems on performance is Qualitative methods. This study has adopted a qualitative method with the interview as the method, interviewing four Senior Management Representatives from the four selected companies using a semi-structured questionnaire, and further obtained the historical data for the leading and lagging indicators from these selected organizations to measure the influence levels. Data collected for the period from 2013 till 2016 has been and quantified to measure the safety system performance statistically. Previous studies were reviewed to explore the factors that is critical in safety system performance.

Among the four companies sampled, Company A has a fully implemented and functional HSE Management system while B, C and D do not have a formal written management system.

The questionnaires chosen included exploring the awareness level of management system and performance monitoring, along with the areas of improvement that the company representatives believes that could help the company achieve its

safety objectives. Interview questions also explored the challenges and confidence the representatives have on their current performance management process/system.

Data Analysis

Interview Results

The interview generated several varying points of view on the safety system in the sampled companies. The structure of the safety system has several elements. However, one of the interviewee of company 'C' suggested that this system was reactionary. Interviewee from company 'A' suggested that all were involved in the safety system, while the interviewee from company 'B' said very limited people were involved in the objective setting and monitoring and often limited to the HSE department. This would essentially mean that there is a need to involve all stakeholders in the process (Williams, 2008). This will enable accountability and confidence and commitment in the process. As a response to another question the company 'A' representatives mentioned that the performances in their company are measures through setting targets for training, risk assessment rates, safety inspections carried out etc. The interviewees suggested opportunities for improvement including the presentation of data in a different way, more incentives and definition of departmental objectives. These Suggestions can help increase employee responsibility and participation in safety management system. Company 'A' respondent expressed his confidence in their systems, as the objectives and performance measures are set with an active consultations with the stakeholders and is continuously monitored by all levels of management. When asked about the performance of the safety system, the respondents of 'B', 'C' and 'D' answered slightly affirmatively. This could indicate a lack of awareness of the significance of a systems approach, suggesting a need for change.

It was interesting to note that the company 'A' responded that the increased paperwork as a weakness of their performance management process, which triggers a need to simplify the process. At the same time company 'B', 'C, and 'D' seem to suggest that the employees are not fully aware of the need and method of reporting and they felt a pressing need to have a structured performance management system. The various attributes explored as a result of the interview is tabulated below, with the assessment factors included in the question, and the explored attributes from the responses received, which clearly indicates that the company 'A' with a management system clearly seems to be more effectively managing their performance measurement compared to others.

Table 1 : Qualitative Analysis

SN	Assessment Factor	Explored/Identified Attributes			
		Company A (Benchmark)	Company B	Company C	Company D
1	Safety Policy Statement	<ul style="list-style-type: none"> Company OHS goals and objectives 	<ul style="list-style-type: none"> Project objectives 	<ul style="list-style-type: none"> Project objectives 	<ul style="list-style-type: none"> Project objectives
2	Performance Management System	<ul style="list-style-type: none"> Integrated to HSE Management System Communicated and tracked 	<ul style="list-style-type: none"> Project performance monitoring 	<ul style="list-style-type: none"> Project performance monitoring 	<ul style="list-style-type: none"> Project performance monitoring

3	Safety goals and objectives	<ul style="list-style-type: none"> Set and tracked at corporate, project and field levels 	<ul style="list-style-type: none"> Not identified 	<ul style="list-style-type: none"> Project level 	<ul style="list-style-type: none"> Not Identified
4	Involvement of stakeholders	<ul style="list-style-type: none"> Internal and external. 	<ul style="list-style-type: none"> Project Stakeholders 	<ul style="list-style-type: none"> Project Stakeholders 	<ul style="list-style-type: none"> Project Stakeholders
5	Performance Indicators measured	<ul style="list-style-type: none"> Focus on leading indicators 	<ul style="list-style-type: none"> Focus on lagging Indicators 	<ul style="list-style-type: none"> Focus on lagging Indicators 	<ul style="list-style-type: none"> Focus on lagging Indicators
6	Criteria selected for measuring performance	<ul style="list-style-type: none"> Business objectives Risk Profile Standards to comply Legal and other requirements 	<ul style="list-style-type: none"> Risk profile Legal and other requirements 	<ul style="list-style-type: none"> Risk profile Legal and other requirements 	<ul style="list-style-type: none"> Risk profile Legal and other requirements
7	Performance reporting System	<ul style="list-style-type: none"> Board level Project level Supply Chain Local Authorities 	<ul style="list-style-type: none"> Project Level Supply Chain Local Authorities 	<ul style="list-style-type: none"> Project Level Supply Chain Local Authorities 	<ul style="list-style-type: none"> Project Level Supply Chain Local Authorities
8	Continuous Improvement	<ul style="list-style-type: none"> Weekly at section level. Quarterly at project level 	NA	<ul style="list-style-type: none"> Half yearly at project level 	
9	Continual Improvement	<ul style="list-style-type: none"> Yearly at board level 	<ul style="list-style-type: none"> Yearly at project level 	<ul style="list-style-type: none"> Yearly at project level 	Yearly at project level
10	Communication and trust in measurement	<ul style="list-style-type: none"> Confident 	<ul style="list-style-type: none"> Slightly affirmative 	<ul style="list-style-type: none"> Not confident 	<ul style="list-style-type: none"> Slightly affirmative
11	Weaknesses in performance measure	<ul style="list-style-type: none"> Too much paperwork Information exposed to all stakeholders Time consumption 	<ul style="list-style-type: none"> Difficulty in reporting Lack of awareness of reporting 	<ul style="list-style-type: none"> KPIs set without consultation Monitoring by HSE department 	<ul style="list-style-type: none"> Lack of awareness of reporting No confirmation on KPIs from individuals
12	Areas for Improvement	<ul style="list-style-type: none"> On-line tracking of KPIs Self-assessment and monitoring 	<ul style="list-style-type: none"> Focus on leading indicators More awareness trainings 	<ul style="list-style-type: none"> Provision of incentives Follow up actions 	<ul style="list-style-type: none"> Engaging employees Communication and mutual trust
13	Barriers for Improvement	<ul style="list-style-type: none"> Change management Matured system 	<ul style="list-style-type: none"> Lack of performance management system 	<ul style="list-style-type: none"> Lack of performance management system 	<ul style="list-style-type: none"> Lack of performance management system

Leading and Lagging Indicators

There are seven lagging indicators and ten leading indicators as shown in Table 2. Data for organizations A, B, C and D on leading and lagging indicators is collected for firms A, B, C and D for three years from 2013-14 to 2015-16. Score on leading indicators is shown in Figure 1. Results indicate that firm A is highly committed towards leading indicators and investing much on leading indicators and enforcing HSE system in their organization. Whereas, organization B, C and D

are not enforcing HSE as a system in their organizations however, they do have fair understanding of HSE system but not implementing as a complete organized system.

Firms A, B, C and D score on lagging indicators is represented in Figure 2. Score on near miss lagging indicator shows that firm A meticulously follow near miss reporting mechanism. Results also indicates that due to non-existence of specific HSE system in organizations B, C and D number of first aid and medical treatment cases are on higher side as compared to organization A following proper HSE system.

Table 2: Lagging and Leading Indicators

SER	LAGGING INDICATORS	LEADING INDICATORS
1	Lost Time Injuries (LTIs)	HSE Training (Excl Induction)
2	Medical Treatment Cases (MTCs)	HSE Inspection
3	First Aid Cases	HSE Audit (Internal/External)
4	Near Misses	HSE Meeting
5	Property Damages	HSE MS Review
6	Work Stoppages	HSE Management Walk through
7	Legal Notices (FR)	HSE Campaign/Promotions
8	-	Task Risk Assessment
9	-	Safety Suggestions
10	-	Health Surveillance

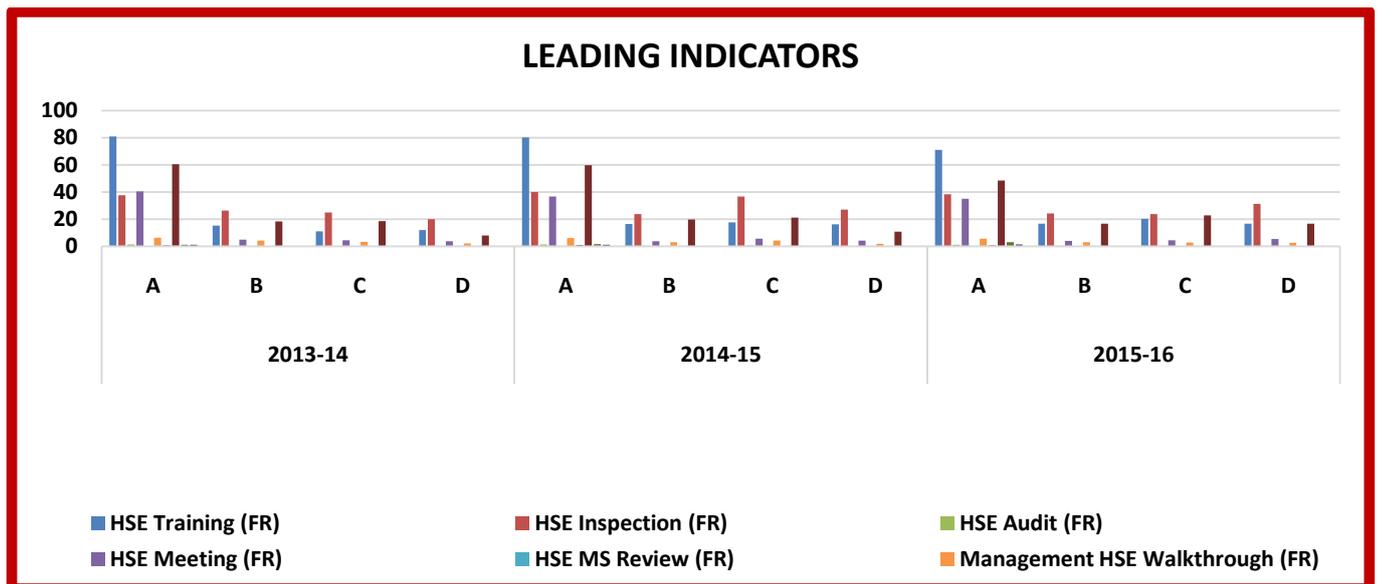


Figure 1: Organizations A, B, C, D leading indicators scores – 2013 - 2016

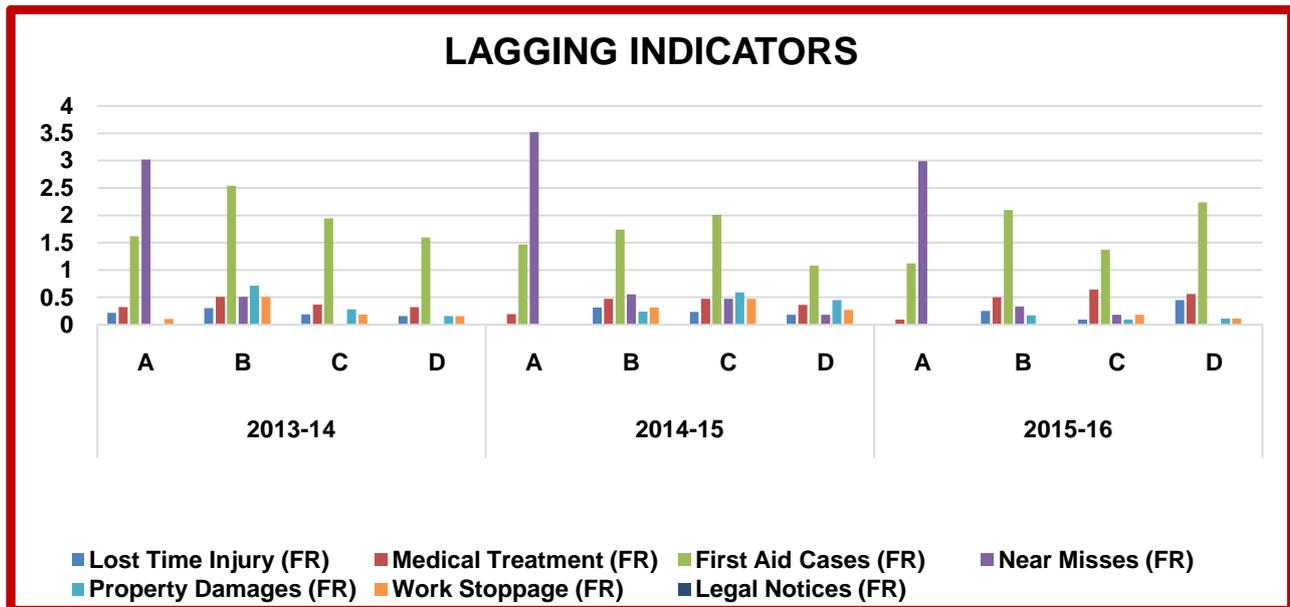


Figure 2: Organizations A, B, C, D Lagging Indicators Scores – 2013 - 2016

Correlation table between leading and lagging variables is shown in Table 4. Lagging variables are not much correlated with each other and mostly negative correlation shows that they are mostly operating independent of each other. Lagging variable legal notice has zero score so no correlation can be computed with other variables. Medical treatment case has negative association with all the leading indicators. Whereas near miss lagging indicator has positive association with most of the leading indicators. Similarly, lost time injury, property damages and work stoppages have negative correlation with leading indicators which shows that if firms are investing much on leading indicators then they are have less lost time injuries, property damages and work stoppages. Similarly, near miss also has negative correlation with lost time injuries and medical treatment cases.

All the leading variables are strongly correlated with each other. It shows that HSE meetings, trainings, audits, reviews, campaigns, management commitment, safety suggestions, health surveillance and task risk assessment are working closely as HSE system and are highly interlinked and activity on one leading indicator is strongly associated with other leading indicators.

Table 3: Correlation between lagging and leading indicators

	Lag1	Lag2	Lag3	Lag4	Lag5	Lag6	Lag7	Ld1	Ld2	Ld3	Ld4	Ld5	Ld6	Ld7	Ld8	Ld9	Ld10
Lag1	1																
Lag2	.662 [*]	1															
Lag3	.73 ^{**}	.54	1														
Lag4	-	-	-	1													
	.583 [*]	.731 ^{**}	.403														
Lag5	.396	.372	.483	-.520	1												
Lag6	.426	.452	.422	-.474	.904 ^{**}	1											
Lag7	. ^c	. ^c	. ^c	. ^c	. ^c	. ^c	. ^c										
Ld1	-.56	-.69 [*]	-.43	.987 ^{**}	-	-	. ^c	1									
					.595 [*]	.533											
Ld2	-	-.534	-	.814 ^{**}	-.250	-	. ^c	.812 ^{**}	1								
	.322		.197			.232											
Ld3	-	-	-	.974 ^{**}	-.454	-	. ^c	.974 ^{**}	.826 ^{**}	1							
	.565	.642 [*]	.370			.377											
Ld4	-	-	-	.980 ^{**}	-	-	. ^c	.995 ^{**}	.812 ^{**}	.969 ^{**}	1						
	.549	.730 ^{**}	.416		.580 [*]	.523											
Ld5	-	-	-	.982 ^{**}	-	-	. ^c	.995 ^{**}	.793 ^{**}	.966 ^{**}	.999 ^{**}	1					
	.564	.741 ^{**}	.434		.594 [*]	.539											

Ld6	-	-.550	-	.907 ^{**}	-	-	. ^c	.884 ^{**}	.834 ^{**}	.933 ^{**}	.892 ^{**}	.883 ^{**}	1				
	.393		.072		.293	.225											
Ld7	-	-	-	.987 ^{**}	-	-	. ^c	.993 ^{**}	.815 ^{**}	.959 ^{**}	.990 ^{**}	.990 ^{**}	.885 ^{**}	1			
	.578 [*]	.730 ^{**}	.409		.577 [*]	.533											
Ld8	-	-	-	.971 ^{**}	-	-	. ^c	.979 ^{**}	.822 ^{**}	.968 ^{**}	.972 ^{**}	.969 ^{**}	.932 ^{**}	.974 ^{**}	1		
	.523	.601 [*]	.337		.558	.467											
Ld9	-	-	-	.869 ^{**}	-	-	. ^c	.851 ^{**}	.714 ^{**}	.826 ^{**}	.859 ^{**}	.864 ^{**}	.732 ^{**}	.842 ^{**}	.794 ^{**}	1	
	.663 [*]	.818 ^{**}	.512		.533	.542											
Ld10	-	-	-	.985 ^{**}	-	-	. ^c	.984 ^{**}	.813 ^{**}	.958 ^{**}	.986 ^{**}	.988 ^{**}	.868 ^{**}	.979 ^{**}	.949 ^{**}	.921 ^{**}	1
	.612 [*]	.788 ^{**}	.478		.575	.544											

Conclusion and Recommendations

Qualitative analysis confirms that through the correlation all the leading variables are strongly correlated with each other. This confirms that HSE meetings, trainings, audits, reviews, campaigns, management commitment, safety suggestions, health surveillance and task risk assessment are working closely as HSE system and are highly interlinked and activity on one leading indicator is strongly associated with other leading indicators. Furthermore through the results obtained through the leading and lagging indicators shows that firm A is highly committed towards leading indicators and investing much on leading indicators and enforcing HSE system in their organization. This in turn yields lower incidents and failure figures in the company over a period of time. Whereas, organization B, C and D are having less focus on measuring the process inputs/leading indicators in spite of having a fair understanding of HSE system. This could be argued as a reason for a continued increase in their incident/injury rates over a period of 3 years. Rather there is no consistency in improvement, as the focus has been on the failures of their system. The analysis also establishes that due to non-existence of specific performance management system in organizations 'B', 'C' and 'D' viz-a-viz 'A', the focus has been on learning lessons from incidents after they occur to improve. This also confirms the need for these organizations to have a formal performance management system integrated into their HSE management system.

It's evident from the study that the companies which are focusing more on leading indicators have a decline in their lagging indicator over a period of time. The companies that are focusing on the failures or lagging indicators do not have a clear trend of improvement in their performance. As discussed by Bird and Germain (1985), if the company focusses on the inputs and processes of the management system eighty percent of the losses can be prevented. The failure indicators might reflect just the random fluctuations in the workplace (Dial, 1992).

The interview response also suggested the need of involvement of all the stakeholders in setting the performance targets and monitoring them. This helps in a collective bargaining approach, with increased, accountability, competence and commitment towards achieving the performance measures.

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