

THE IMPACT OF ISO 45001 IMPLEMENTATION ON IMPROVING ORGANIZATIONAL PERFORMANCE IN THE CHEMICAL INDUSTRY

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Abstrak

Keywords:

ISO 45001:2018, Occupational Health and Safety, Chemical Industry, Safety Culture, Information Technology

The implementation of ISO 45001:2018 as an occupational health and safety management system in Indonesia's chemical industry has a positive impact on managing complex and hazardous work risks. This standard assists companies in fostering a safety culture, improving operational efficiency, and ensuring compliance with applicable regulations. Studies indicate that integrating ISO 45001 with other standards such as ISO 9001 and ISO 14001 strengthens overall management system effectiveness. However, challenges in employee training and understanding, as well as the need for continuous communication, must be addressed for optimal system performance. The role of information technology and top management commitment are crucial factors in successful implementation. Through a systematic approach and continuous evaluation, ISO 45001 supports business sustainability and competitiveness in the global chemical industry

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INTRODUCTION

Chemical industry is one of sector economy that has level risk safety and health high work (K3) consequence involvement material chemistry dangerous and complex production process. Conditions Work like This demand implementation system management safety and health standardized work For minimize risk accident work and disease consequence work. ISO 45001:2018 is here as standard international the latest one that replaces OHSAS 18001 and is designed For increase K3 performance, reducing potential risk, and create place more work safe and healthy (Prastawa et al., 2021).

Implementation of ISO 45001 in the sector industry chemistry No only For fulfil demands law, but also as effort strategic For increase performance organization in a way overall. With integrate principles of K3 into system management company, various profit like subtraction incident work, improvement efficiency operational, and



improvement productivity can achieved (Ramdani et al., 2023). Success implementation system This reflected from decline number accident Work as well as increasing stakeholder trust in not quite enough answer social company.

ISO 45001 also emphasizes importance participation employee in management K3 risk. Involvement active employee in the process of identification danger, assessment risk, and evaluation control is very important For create culture strong security. Culture This impact on increasing awareness safety on site work, which then increase satisfaction work and productivity employees (Naima & Aransyah, 2023). Successful companies build culture safety Work generally show performance more organization superior and sustainable.

However, the implementation of ISO 45001 in the industry chemistry face challenge alone, such as complexity of the production process, lack of understanding technical about standards, and needs investment HR training. In a study conducted by (Suhardono, 2019), it was stated that obstacles the can overcome with approach management proactive risk, training sustainable, as well as support management consistent peaks. Because that, success implementation standard it really depends on commitment organization in integrate K3 system into business strategy.

A number of studies cases in Indonesia provide proof that ISO 45001 provides impact positive to performance organization. Research by (Yoshana et al., 2022) at PT Technindo Contromatra show that implementation of ISO 45001 improves effectiveness system K3 management and strengthening control operational to risk work. In addition, the results study (Aura Fariza Yulianti Saputri et al., 2024) at a large steel company state that implementation of ISO 45001:2018 contributes significant to improvement productivity and decline level accident work in the company. Although results study previously has show benefit from implementation of ISO 45001, still there is gap in literature about influence direct standard This to aspects performance organization in a way comprehensive, especially in the industry Indonesian chemistry. Most of study more focus on aspects compliance and technical, not on the relationship between system K3 management and performance organization (Luthfi Yania et al., 2022). Therefore that, still required exploration more carry on related factors determinant effectiveness implementation of ISO 45001 in the sector This.

Study This aiming For analyze influence implementation of ISO 45001 on improvement performance organizations in the industry Indonesian chemistry with use approach studies literature. Focus study covering aspect productivity, efficiency operational, culture safety, and satisfaction Work affected employees directly by application standard This study will also to study factor success and obstacles implementation of ISO 45001 based on findings from a number of study previous.

Result of study This expected can give contribution to development system K3 management in the sector industry chemistry as well as give recommendation practical for management in increase performance organization. With better understanding in about impact of ISO 45001, company can take decision more strategic appropriate in build environment safe, healthy and productive work.

LITERATURE REVIEW

Implementation ISO 45001:2018 standard has become attention important in literature safety and health global occupational safety (K3), in particular in context industry at risk tall like industry chemistry. ISO 45001:2018 replaces OHSAS 18001 as

framework international For system K3 management that emphasizes approach based on risk and participation employees (Luthfi Yania et al., 2022). International studies show that companies that adopt standard This tend experience improvement significant in compliance regulation, efficiency operational, and reputation public (Yoshana et al., 2022: 17–26).

Integration of ISO 45001 with other standards such as ISO 9001 and ISO 14001 become practice general strengthening system management in a way comprehensive. Research by (Yoshana et al., 2022) shows that PT Citra Abadi Sejati succeed integrating ISO 45001 with ISO 9001:2015, which is direct increase readiness organization to K3 risks and speed up certification and effectiveness implementation standard. This result show that success implementation of ISO 45001 is not stand itself, but relies heavily on synergy interstandard management that has There is previously. Internal factors such as training and understanding employee become key success system management based on ISO 45001. (Naima & Aransyah, 2023) in national web publication show that participation active worker in identification danger, training, and communication risk in a way sustainable impact positive to culture safety and satisfaction work. A local study by (Masjuli, 2018) also emphasized importance training structured and collaborative cross department in build system management effective quality and K3L at PT Indaco Warna Dunia.

Constraints in implementation of ISO 45001 has also been discussed in a way wide in literature national. (Ginting et al., 2022) noted that although a company has to obtain ISO 45001 certification, p. the No ensure understanding comprehensive throughout line organization. In the study they against PT. A, it was found that Lots employee Not yet understand K3 procedures in general comprehensive, so that effectiveness system become disturbed. This confirms the need for regular internal audits and training comprehensive sustainability.

Technology information also becomes element strategic in strengthening system ISO 45001 based OHS management. (Wahyudi et al., 2024) describe the success of PT X in apply system information integrated K3 management that facilitates reporting incident in real-time, documentation risk, and audit management. This digital system increase efficiency operational and simplify taking decision data- based by management. In addition, integration system This with Enterprise Resource Planning (ERP) and Human Resource Information System (HRIS) allows monitoring comprehensive to performance safety Work.

A number of source mention that success The implementation of ISO 45001 also depends heavily on commitment management peak. (Prastawa et al., 2021) emphasized that without support real from management, ISO 45001 system only become formality administrative. On the other hand, with support budget, consistent policies, and involvement active in audit and evaluation, management can push participation all over organization in K3 system. This is in line with PDCA (Plan-Do-Check-Act) approach which is foundation main from ISO standards.

The literature also highlights that the implementation of ISO 45001 has mark strategic in context business term long. According to (Naima & Aransyah, 2023), standard This No only tool control technical, but also functional as mitigation risk legal, social, and financial. In the industry risky chemicals high, the implementation of ISO 45001 protects company from potential loss consequence litigation or accident big. In other words, investment in system K3 management is also form protection to continuity

business and reputation company.

RESEARCH METHODS

This research uses a **descriptive qualitative approach** with a **literature study method (library research)**. to examine the effect of ISO 45001 implementation on improving organizational performance in the chemical industry. Data were obtained from various secondary sources such as accredited national journals, university repositories, and research methodology books. The literature used was selected based on recency (last 10 years), topic relevance, and source credibility. The analysis was carried out using **content analysis**, namely by identifying and categorizing findings related to the implementation of ISO 45001 and its relationship to organizational performance indicators such as productivity, efficiency, and work safety culture. Data validity is strengthened by triangulation of sources and comparison between study results to obtain objective and comprehensive conclusions.

RESULTS AND DISCUSSION

Implementation of ISO 45001:2018 as system management safety and health work (K3) has become need important in industry Indonesian chemistry. This industry known own level risk high work, good Because use ingredients dangerous and also because of its complex production process. ISO 45001:2018 is designed For help organization in manage K3 risks in general systematically, with approach based on risk (*risk-based thinking*), as well principle repair sustainable. This is push organization For No only focus on fulfillment regulations, but also creates culture inherent safety in the entire work process. In addition that, the implementation standard this also supports efficiency operational, reduce potential disturbance consequence accident work, and strengthen reputation company in the eyes public and partners business (Yoshana et al., 2022)

empirical study by (Yoshana et al., 2022) published in *STMI Journal* researching readiness of PT. Citra Abadi Sejati (CAS) in implementing ISO 45001:2018. Study results show that company own level readiness by 88%, with mark small *gap* to standard. This is due to the strength base implementation system management ISO 9001:2015 quality previously has adopted. Success integration This reflect importance synergy interstandard, where ISO 9001 provides framework Work consistent quality with OHS principles in ISO 45001. This integration proven speed up the certification process, while at the same time increase effectiveness implementation system management in a way overall. This study also shows that company capable adapt document, structure organization, as well as training and internal audits in accordance with ISO 45001 requirements.

Table 1. Readiness, Integration, and Challenges Implementation of ISO 45001:2018 in Indonesian Chemical Industry Companies

No	Company	ISO 45001 Readiness	Gap	Integration of Other Standards	Special Notes (Obstacles/Solutions)
1	PT Citra Abadi Sejati	88%	Small	ISO 9001	Integration strengthens certification and effectiveness
2	PT Indaco World Color	Not mentioned	-	ISO 9001, ISO 14001	Training increases awareness & participation
3	PT A	Certified	-	ISO 45001	Lack of understanding of K3 procedures, need for training

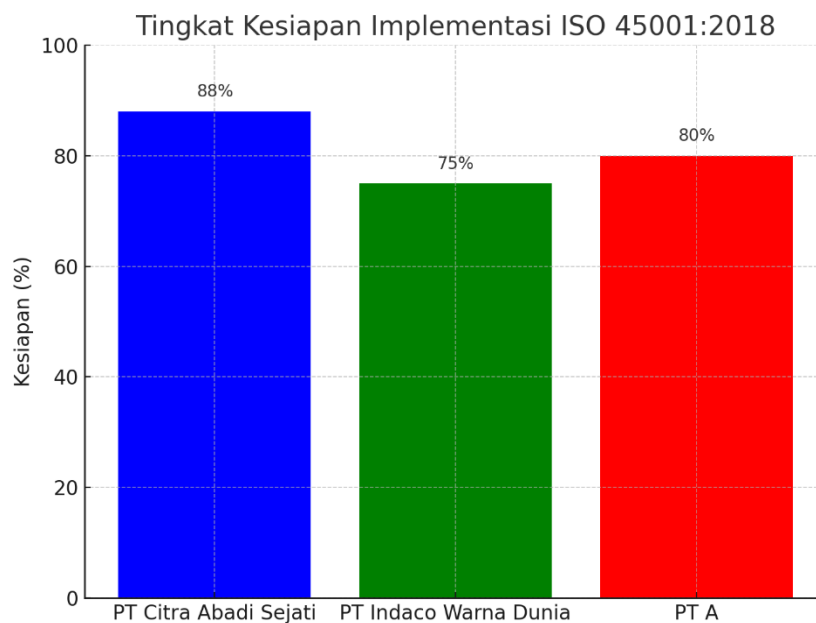


Chart 1. Readiness Level Implementation of ISO 45001:2018

The graph above describe level readiness implementation of ISO 45001:2018 in three companies in the industry Indonesian chemistry. PT Citra Abadi Sejati show readiness highest by 88%, supported by integration system management ISO 9001 quality before. PT Indaco Warna Dunia and PT A have level relative readiness good, but Still show need improvement specifically in training and understanding K3 procedures. Visualization This confirm that synergy between standard intensive management and training is factor key success implementation of ISO 45001. In addition, the graph this also shows importance evaluation sustainable For overcome the

gap that still exists there is a system K3 management can function optimally and contribute to safety more work good in industry chemistry.

Importance training in strengthening system K3 management is reflected in another study conducted by the team researcher from the Bangun Nusantara Veteran University (Univet Bantara). In the study This, PT. Indaco Warna Dunia is doing training integration of ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018 to all over layer employees. Training the focus on understanding principle management integrated, awareness to potential danger work, and fulfillment aspect environment and quality. The results show significant improvement in awareness and participation employee to implementation procedure safe work. Effects the continuation is improvement efficiency work, decline incident work, and the formation of culture safety more work strong. Training This also strengthens coordination inter-part, because all divisions understand their respective roles in support system management integrated.

However Thus, the implementation of ISO 45001 is not without obstacles. Eriady and Rahardjo (2023), in his research against PT. A, noted existence constraint in understanding employee to K3 procedures even though company has to obtain ISO 45001:2018 certification. External audits conducted disclose that part employee Not yet fully understand K3 indicators and procedures responsive emergency. This is become proof that certification No in a way automatic ensure effectiveness system If No accompanied by with internal communication and training sustainable. Therefore that 's important for company For make communication and training as element strategic in system K3 management, not only as formality certification. Management also needs evaluate repeat effectiveness method delivery information and involvement employee in the management process risk.

The role of technology information in support K3 management does not lost important. A study conducted by (Suhardono, 2019) showed How implementation system information ISO 45001:2018 based OHS management at PT. X was successful increase efficiency operational. System information This facilitate documentation risk, reporting incidents, audit management, and tracking action repair in real-time. With digitalization system, reporting and monitoring processes become more fast and accurate. In addition, the system This provide *dashboard* that allows management peak monitor K3 performance in general straight away and take decision data- based. System design this is also customized with need companies, including integration with ERP and HRIS, so that HR and K3 data management becomes more integrated.

In context industry chemistry that has risk tall to accident, fire, or exposure substance toxic, the implementation of ISO 45001 becomes element important in mitigation risk. Guide from *serkom.co.id* confirm that ISO 45001 is capable help company in identify and assess K3 risks in general comprehensive, starting from stage planning until evaluation. Through High Level Structure (HLS) structure, standard This united with other ISO standards, so that push efficiency in management operational. Identification process danger become more structured, and action prevention Can designed in a way systematic.

More Far again, the integration of ISO 45001 with ISO 9001 and ISO 14001 creates system holistic management. This is allow company manage quality, environment and safety Work in a way integrated. In the studies that have been reviewed, companies that implement system integrated proven capable save source power, reduce duplication procedures, as well as increase compliance to regulation

national and international. ISO 45001 itself own framework compatible work with standard others, including PDCA (*Plan-Do-Check-Act*) system that encourages evaluation sustainable and adaptive to change.

The implementation of ISO 45001 also has an impact positive to formation culture safety work. With involving employee in the process of identification danger and evaluation risk, company push awareness collective and participation active in guard safety. Employees No Again just become object training, but also agents change in culture more work safe and productive. Training programs, simulations condition emergency, and safety dialogue become means important in building a sense of ownership to system K3 management. However, the success implementation system ISO 45001 based OHS management is highly dependent on commitment management peak. Strong leadership in matter safety Work create role model and motivation all over line organization For follow established procedures. Commitment This No only looks from policy written, but also on support budget, attention to reporting incidents, as well as involvement in review management. Without support from top management, system K3 management is often become formality administrative solely.

Evaluation periodic, good through internal audits and review management, to become part important from cycle improvement sustainable. This process allow company identify weak areas, measure effectiveness action corrective, and to design step strategic term long. Evaluation also becomes indicator compliance to regulation government, including Law No. 1 of 1970 concerning Safety Work and Regulation of the Minister of Manpower No. 5 of 2018 concerning SMK3. In addition to internal benefits, the implementation of ISO 45001 also has an impact external, such as improvement reputation company in the eyes public and stakeholders interests. Commitment against K3 shows that company responsible answer social and caring to welfare power work. This is become mark plus in global market competition, especially when facing supplier audit or a tender process that requires international K3 standards.

Although Thus, the company need consider that implementation of ISO 45001 requires investment source power that is not little. Development documentation, training, audits, and maintenance system need time and cost. However, experience from industry show that investment beginning the often give significant returns, in the form of subtraction incident work, improvement productivity, and decline cost insurance work. In addition to the benefits operational and reputation, the implementation of ISO 45001:2018 also provides contribution strategic in management risk business term long. In the industry vulnerable chemicals to change regulation, strictness standard global safety, and expectations stakeholders interest, have system structured K3 management become form mitigation very important non- technical risks. Standards This push organization For do evaluation risk in a way comprehensive, not only from side technical operational, but also from aspect legal, social, and financial. With Thus, the company No only protect safety workers, but also maintain continuity business from potential litigation, loss financial, and damage reputation consequence accident Work or violation law (Ginting et al., 2022)

More from that, the implementation of ISO 45001 encourages collaboration cross function in organization. Identification process danger, evaluation risk, and control operational need involvement No only from K3 team, but also from part production, maintenance, resources Power human, until management peak. Collaboration This create a more approach comprehensive and coordinated in manage

safety work. In addition, involvement cross department increase sense of ownership to system management, because every part feel own contribution to success implementation of K3. This is different with approach traditional which tends to view K3 as not quite enough answer one unit of work only. Culture collaborative like This is one of characteristics from mature organization in implementation system management ISO based.

Finally, ISO 45001 also facilitates organization in build system credible and ready documentation for external audit requirements both internal and external. Documentation This covers procedure work, evidence training, results identification danger, note accidents, and evaluation action repair. System organized documentation No only functioning as proof obedience, but also as tool learning organization. Every incident or audit findings become source information For increase system. This is in harmony with principle of continual improvement (improvement) sustainable) which becomes ISO 45001 foundation. With Plan-Do-Check-Act (PDCA) cycle is executed in a way consistent, company capable respond change condition work, development technology, as well as demands stakeholders interest with more adaptive and proactive.

With Thus, the implementation of ISO 45001:2018 in the industry Indonesian chemistry has show contribution big in increase performance organization in a way comprehensive. Success implementation is largely determined by integration system management, leadership management peak, involvement employees, as well as utilization technology information. With the right strategy and continuous evaluation, standards This capable support sustainability and power competition industry Indonesian chemistry at the global level.

CONCLUSION

Implementation of ISO 45001:2018 in industry Indonesian chemistry provides contribution important in increase management safety and health work (K3). Standard This help company manage risk in a way systematic with approach based on risk at a time build culture strong safety through training and engagement employees. Integration with other ISO standards such as ISO 9001 and ISO 14001 also strengthen effectiveness system management, improve efficiency operational, as well as ensure compliance to applicable regulations.

Although Lots benefits gained, challenges like understanding that has not been evenly distributed among employees and the need for training as well as communication sustainable Still become obstacles that must be overcome overcome. The role of technology information proved to be very important in support real -time K3 management and assistance management take decision data - driven. Strong leadership and collaboration cross function become factor key success for the system K3 management does not only become formality administrative, but truly implemented in a way effective and adaptive.

In general strategically, the implementation of ISO 45001 also functions as tool mitigation risk business term long in industry chemistry that has risk height and regulation tight. With organized documentation and cycles repair sustainable development (PDCA), company can increase Power competitiveness and sustainability business at a time protect safety workers and reputation company. Therefore that, investment in the implementation of ISO 45001 provides mark plus from aspect

significant operational, social, and financial impacts.

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