

Benefits that Attract Industry to Implement ISO 28000 to Secure Supply Chain

Wong Huei Ing¹, Shahryar Sorooshian^{1,2}, Muzamir Hasan²

¹ Faculty of Industrial Management, Universiti Malaysia Pahang, Pahang, Malaysia

² Centre for Earth Resources Research & Management, Universiti Malaysia Pahang, Pahang, Malaysia

Abstract – ISO 28000 is an international standard that requires specific qualifications in the security management system and it includes critical aspects that are related to security pledge in the supply chain. Supply chain security is one of the components of an organization's strategy to secure their supply chain from the threat. Supply chain and organization that implement supply chain security mainly protect their chain from any risk that can damage their supply chain. ISO 28000 has the reason to affect industry to use it in order to protect supply chain process. Based on a literature review, this study is adding a list of benefits to the basic supply chain security that attracts industry to implement ISO 28000. Researchers believe that this study helps the industry in supply chain performance with the related information and reference about ISO 28000.

Keywords – ISO 28000, Industry, Supply Chain Security, Risk, Benefits.

1. Introduction

International Organization for Standardization (ISO) 28000 is an international standard that requires specific qualifications in the security management system and it includes some critical aspects that are related to security pledge in the supply chain [1].

DOI: 10.18421/TEM81-17

<https://dx.doi.org/10.18421/TEM81-17>


Corresponding author: Shahryar Sorooshian,
Faculty of Industrial Management, Universiti Malaysia
Pahang, Pahang, Malaysia

Email: sorooshian@gmail.com

Received: 08 October 2018.

Accepted: 25 December 2018.

Published: 27 February 2019.

 © 2019 Wong Huei Ing, Shahryar Sorooshian, Muzamir Hasan; published by UIKTEN. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 License.

The article is published with Open Access at www.temjournal.com

Supply chain security is one of the components of an organization's strategy to secure their supply chain from threat. Supply chain security became a critical factor for both public sector and private sector [2]. It tries not to let the chain affected by the risk for two reasons which are prevention from theft and damage.

Next, they need to avoid the trespass that can allow contraband such as drugs, human trafficking, bombs, weapons and insertion of harmful elements. Discontinuity problem also can be solved by supply chain security [3]. In addition to the basic supply chain security, this study reviews other major benefits of ISO 28000 in general and regardless of the industry type.

2. ISO 28000 benefits

Organizations that have the ability to secure their entire supply chain can ensure their supply chain processes. It is found [4] that supply chain security management of an industry are essentially important for any industry in any field. It is because the level of requirement by the market toward the product and services must be fully complied with the ISO 28000 standard requirement, as well as be able to help in continuous improvement that can achieve high level standard and not only small improvement in company. The continuous improvement consists of total quality management (TQM); it can improve in quality aspects. Other than that, the improvement of quality can help organization obtain more benefits not only in supply chain. A study [5] indicates that supply chain security can lead to process improvement and at the same time, it increases efficiency in work. From their study, they found out process improvement is the benefit that can convince other organization to become ISO 28000 certificate holder.

The improvement in supply chain process includes quality of product and service. This improvement is important for an organization supply chain management. Scholars [6] claim that, implementation of ISO 28000 not only can improve the supply chain security, it also can improve total quality

management. It is able to improve quality consciousness in organization, always call attention to the quality issues to ensure the products quality can maintain a good level of customer satisfaction. At the same time, the management may improve slowly due to the improvement in quality. The management process will be smoother. The improvement of the quality leads to improved relation with customers due to supplying product of high quality and providing excellent services yet maintain reasonable prices for customer satisfaction. The customers will be more confident with the organization.

Besides that, ISO implementation also can manage other variables such as quality, work safety and customer's satisfaction [7]. Achieving customer satisfaction level means the quality of the product attained the goal. In 2017, a research team [4] found out that the expectation of the company and market will achieve a high satisfaction level due to the high improvement and directly increase the company efficiency. The customers will feel optimally satisfied due to the improvement of quality and next, organization can gain other benefits from that benefit. The improvement in this aspect helps industry having stable performance in supply chain management. Employees will contribute more efficient to their organization after company implement ISO 28000. The employees may more focus on their job when company supply chain is being secure well. In the point of view of this research team [4], the conviction that high satisfaction and increase efficiency of the company can be the key benefit that persuade other organization to implement ISO 28000 to secure their supply chain.

Industry can enjoy benefits in all different aspects especially in financial aspects after implementation of ISO 28000 [4]. ISO 28000 may bring the company significant economic efficiency benefits. Implementation of ISO 28000 is help to improve supply chain security effectively and at the same time it can lead to increasing of market share and upward sale trend, it can bring direct financial benefit to the organization. Previous study shows that 49% of the companies enjoy benefits from certificate due to the increase of market share. Apart from this, another study [8] compared both certified and non-certified companies and it shows that the certified company had better financial than the non-certified company. Obviously it can be seen that this international holder can gain more benefit in all aspects.

It is able to maintain the durability of the company and increased the performance of the employees. The utilization of the resources can be maximized. All of the employees will have their own job and task to be complete and there is no waste. The employees will enhance their skill to contribute to the company. In

addition, internal and external security in supply chain may increase the company's productivity. The organization will have a good bargaining chip to compete with other companies. Due to the competitive advantage in their century, the company can keep high demands in all processes and even keep high standards level in their product and services when their productivity increased. This can also help the industry pave the way for their competition and complete with the other company and improve their ability [4].

In a study [4], they identified that the implementation of ISO 28000 in organizations will reduce accident at work and prevent occupational diseases. It allows to carry out occupational health and safety. The probability of accident occurrences can be reduced after implementation of the international standard. It is due to ISO 28000 standardization of procedure (SOP), this may help to reduce the possible accident happening during work. Overseas organization may follow with interest toward the organization if they implement ISO 28000 to secure their supply chain. The organization may possibly become more popular among organizations and more stand out due to ISO 28000 certificate holder. This benefit can lead to recognition by customers and even the opponent begins to respect after implementation of ISO 28000. These companies may start to admire and hope to cooperate with this company because they hope to gain benefits from that cooperation and they believe that the cooperation will be success. Other than that, investing in supply chain security can also improve the organization security management system.

According to a researcher [9], he indicated that a strong supply chain security is able to strengthen the stakeholder confidence. The stakeholder confidence is very important for a company to get more resources and investment. A better supply chain security may help the organization to get full support from stakeholder such as customer and shareholder. Others also find out that intense supply chain security carries out a systematic supply chain [9]. Process supply chain can be arranged and run smoothly. According to the study [9], the employees may work harder after implementation of ISO 28000, this will help to robust the overall performance of the company.

ISO 28000 can help in inventory management; it can reduce the inventory in an organization due to just-in-time approach in inventory management. The production will fulfil the demand of the customer based on the quantity required. There will be no excessive inventory in warehouse, additionally, Stock-out situation may not always appear because of the just-in-time approach in managing the stock. The production meets the demand and the inventory

is enough to support the demand that is required by the customers even with large quantity. Theft can also be reduced a lot if this international standard is applied [10].

In [4] and [9] study, they both found out that supply chain security may carry forward business cooperation for the whole supply chain. The more effective supply chain security, the more cooperate opportunities. Other companies may be willing to start cooperation. ISO 28000 can boost agreement with official trade and processes. Both researchers convicted that this benefit may be the most attracted benefits to industry. In addition, customs clearance time may cut down a bit and the progress will become fast.

It can directly make customers more at ease because the customers can know where their product is. The exposure rate in supply chain processes is higher than with the other organizations that did not implement ISO 28000. It provides a systematic tracking for the customer to track their product or material, so they can get the information easily [11]. The organization will get a better customer satisfaction level due to this visibility in supply chain. Besides that, the customers will more trust the company due to the visibility of products. Industry can receive trust from customers easily [10]. The entire supply chain processes will become more visibility. The visibility of the containers may be checked by the customers. It allows customers to feel more rest assured about where their goods are. There will be less claims and losses cases. The theft case will decrease after implementation of ISO 28000. The theft case will decrease after implementation of ISO 28000. ISO 28000 can prevent thieves under the protection of International Organization for Standardization. It is because this international standard will let the thieves receive huge legal actions in order to protect the ISO certificate holder. Supply chain security can bring out the visibility of real time information. So, it can reduce the error that possible will happen during shipments. The efficiency in supply chain processes will improve includes the behavior of workers due to the trust from customer. The employees may work harder and show their skills in the supply chain processes.

ISO 28000 can also reduce cycle time in supply chain and reduce shipping time, directly decrease the customers waiting time. The shipping time reduction may lead to satisfaction of customers. Reducing the shipping time may save more time and the customers can get the product faster than usual. They do not need to wait for too long to get the products [12]. It is found [13] that reduction cycle time and shipping time can help in cost reduction, the transportation and logistics cost may decrease due to shipping time reduction. Scholars [13] believe that each

organization objective is to maximize the utilize of resource and minimize the operation cost, so reduction cost can motivate the organization to implement ISO 28000 in supply chain in order to reduce the costs.

On the basis of [14], implementation of ISO 28000 in the company may obtain customers and workers confidence, employees themselves seeing that the company is operating so earnestly, they will pay more effort to the company. At the same time, it can indicate supply chain security and facilitate public confidence toward the company. ISO 28000 implementation gives the company extra points and marks in impression. Other will begin to pay close attention to the company because they think the company that implements ISO 28000 should be very different from the other. Supply chain security management brings better confidence in the team work organization, especially to the third party that is involved in the team work. A recent study [14] indicate the company security management system can boost the overall improvement and achieve the consistency of performance. All aspects in the organization will be improved directly and not only in supply chain processes. This study [14] convicted that public and workers' confidence is the main key of the organization success, so this benefit may be the priority for the organization to implement ISO 28000.

An article [7] claims that this international standard may appraise the supply chain risk and prevent or measure the threats that usually happen in supply chain. The intention threat will lead to loss of larger cost. This will obstruct the company from using the funds to solve problem. If the cash flow is not working, the entire supply chain operation will collapse. From the perspective of a research [2], ISO 28000 helps organization to secure their supply chain in order to avoid threat. Although this international standard cannot avoid unintentional threat such as natural disaster, it can prevent all types of intentional threats due to the detection. It also allows a better monitoring of freight flows to combat smuggling and to counter the threat of piracy and terrorist attacks through this international standard. All actions of smuggling can be detected and combated easily and effectively, so there are no opportunities for the pirate to erroneous.

Investing in supply chain security may ease the pain, restore more fast operations of the organization and for the purpose of containing damages. If the supply chain process is cutting off, it causes resumption of operation soon if ISO 28000 implemented to secure their supply chain [15]. According to an article [16], implementation of ISO 28000 can help to manage risk. If needed, it also assists the industry to recover from any disruptive

cases. Organization can plan before the disruption happens, every type of disruption, specialize method to deal with each type of disruption. If it does happen, it can make the company less frantic and calm to deal with the disruptions. Any disruptive incident in the supply chain regardless before, during or after the event, can also facilitate a whole risk approach to managing the risk. Risk assessment, emergency preparedness, business continuity and sustainability, resilience disaster management, piracy cargo theft, fraud and other many. disruptions are the important aspects of management system in the supply chain. Risk assessment can accurately do analysis to identify which stage of the risk affects the overall supply chain.

According to a study [10], investment in ISO 28000 may reduce production lead time variance. It directly helps reduce and improve manufacturing uptime. The production time may not delay because of the reduction of the production lead time variance. The less variance means the probability of error reduces. Product delay shipping can be avoided because the product will complete early than usually. This can prevent complaint from customers. In his study, he also claims that an effective security can bring the importer better service, they can enjoy a good service and also increased mutual trust. The organization that wants to ship their product to other country can enjoy good services such as careful material handling in supply chain process.

According to [17], the previous research in Spain show that international standard certificate holder can improve 33% of the standardization of work procedures. Responsibilities of the worker may increase to 19% as well. Thus, the obligation of the worker leads to company confidence increase in their quality (11%). The workers will give great commitment to the company in work (11%). Besides that, it may also increase the job satisfaction (66%) especially for the employees. The employees and the management will also communicate more to achieve consensus (64%). This is the internal benefits that the organization can enjoy after holding the international standard certificate.

There are some external benefits that the organization can obtain when holding international standard certificate. The certificate holder can give a better reaction to customers' requirement (34%) as well, the organization can also enter to new markets and take the opportunity to expand the market. There will have increase in customer service (16%) due to the employees' efficiency in work process, all the customers will enjoy good services and be very satisfied with the product provided. The numbers of customer complaints may not increase because the customer is very satisfied with the quality product provided by the organization. The customers that are

satisfied with the product will repeat order (42%), customers may feel different after the company implement ISO 28000. Due to implementation of ISO 28000, the quality of product and services increases and reduces the negative impact to their business [17].

A study [11] claims that customers start to demand the industry to hold a certificate in order to see different after the organization implements the international standard. The customers hope to see the improvement in terms of quality and function. But later this expectation shows a result that is more beneficial than the expectations in product quality and services, there are many improvements in management, production and supply chain process. The increasing quality of product in supply chain leads to a better flow in terms of information flow and material flow. The purpose of the company is achieved. With ISO 28000, certificate companies gain reputation of quality image they sought, while sometimes the real improvement was not so great [18].

A research work [19] identified that implementation of ISO 28000 to secure entire supply chain is very important to achieve the organization objectives and business goals. Secure supply chain is perceived as vital area in managing business risks. Industry consider to spend even more resources to prevent tangible and intangible damage in supply chain. It is because supply chain is the important aspect in business, so they accept to pay more attention to supply chain security management [20]. Although investment in supply chain security such as implementation of ISO 28000 may increase the cost, entire supply chain will receive several advantages, including reduction of theft and decrease the possible case of tangible and intangible damage [21]. Usually, the pursuit of supply chain security due to the external force by the customer, some customers demand the company to have a better security in their supply chain to ensure their product being protected well. In order to get a relieved purchase, they hope the organization to upgrade their entire supply chain security with the international standard certificate. The industry also realized the importance of the customer demand toward the protection of supply chain, they try hard to ensure the safety of supply chain, but sometimes the threat cannot be avoided and prevented easily because it is an intention actions from theft [22].

Another work [23] found out that international standard certificate like ISO 28000 can help to increase the efficiency of harbor operational and the overall efficiency improve a lot compared to non-certificate holder. Still a lot of organizations cannot really find out and trust the benefits of ISO 28000 to their supply chain safety. Implementation of ISO

28000 surely can reduce the waiting time at borders because customer and employees can predict the good's movement until reach to end customer. Based on the result of a work [24], the scholars are convicted that the time at harbor operational reduce and increase the efficiency is a very important key factor in a supply chain, so organization should implement ISO 28000 to obtain these benefits to ensure the supply chain processes can run smooth. They identified that the harbor operational cannot be more efficiency and the durability will decrease if company not implement ISO 28000. This factor must be the main benefit in supply chain to increase customer satisfaction, the customer does not need to wait too long for the product.

Based on the existing literature, Table 1. propose a framework for the [hidden or visible] benefits of implementation of ISO 28000.

Table 1. Benefit of ISO 28000 implementation

Benefits	Source
Achieve organization objectives and business goal	[7][18]
Better reaction to customer requirement	[17]
Bring better services to importer	[10]
Carry forward business cooperation	[9]
Continuous improvement (TQM)	[14][18]
Cost reduction and avoid greater loss	[13]
Economic efficiency benefits and financial aspects	[4]
Facilitate public and worker confidence	[14]
Facilitate a whole risk approach to manage risk	[16]
Faster resumption of operation	[15]
Gain respect from competitor	[6]
Help improve business performance	[4]
Higher visibility (container, information and material flow)	[2][10][11] [13]
High satisfaction level	[4][7][9] [13]
Improve customer services	[17]
Increase efficiency of the company	[4][13]
Increase company productivity	[4]
Increase employee's performance	[4][17]
Increase the effectiveness of inventory management	[10][13]
More trust from customer	[4][17]
Prevent occupational diseases and work incident, improve SOP	[2][7][10] [21]
Prevent and measure the threat	[20][25]
Prevent tangible and intangible damage and manage risks	[4][9][14]
Recognition by customers and peers	[9]
Reduce the secondary inspection	[13]
Reduce shipping and cycle time	[17]
Reduce negative impact of breaches when they occur	[10]
Reduce lead time variance	[4]
Robust worldwide and much better known	

Strengthen stakeholder confidence	[9]
Systematic supply chain	[9][11][16]
Supplier and customer relationship get better	[10]

3. Conclusion

Considering the significance of supply chain performance [26,27], this study was able to verify the significant benefit for industries to implement ISO 28000 to protect their supply chain. It believes that this study gives benefits to the following parties such as researcher, government and industry. Results of the study will prove helpful to industries, organization and people that want to expand their business and manage their business efficiency. ISO 28000 affect industry to protect supply chain processes. There are many benefits that attract industry to implement ISO 28000 to secure supply chain. It will be a useful reference for related works if future studies who are invited to complete the characterization of not only ISO28000 (i.e. [24,28,29]), but also other ISOs (i.e. [30,31]).

Acknowledgements

This study thanks flagship grant, RDU172205, from Universiti Malaysia Pahang.

References

- [1]. Blackhurst, J., Craighead, C. W., Elkins, D., & Handfield, R. B. (2005). An empirically derived agenda of critical research issues for managing supply-chain disruptions. *International journal of production research*, 43(19), 4067-4081.
- [2]. Piersall C, Williams N., (2006). ISO INSIDER ISO / PAS 28000 applies management system approach to security of global supply chains. *Management* 18–21.
- [3]. Speier, C., Whipple, J. M., Closs, D. J., & Voss, M. D. (2011). Global supply chain design considerations: Mitigating product safety and security risks. *Journal of Operations Management*, 29(7-8), 721-736.
- [4]. Marrugo, E. A. B., Sierra, C. A. S., Calderon, D. D. S., & Ferreira, C. S. (2017). Integrated Management System Based on the OHSAS 18001: 2007 and ISO 28000: 2006 Standards for a Logistic Services Company. *International Journal of Engineering and Applied Sciences*, 4, 85-89.
- [5]. Lo, L. K., & Chang, D. S. (2007). The difference in the perceived benefits between firms that maintain ISO certification and those that do not. *International Journal of Production Research*, 45(8), 1881-1897.
- [6]. Gansler JS, Lucyshyn W, Harrington LH. (2012). Defense Supply Chain Security: Current State and Opportunities for Improvement, 97.

- [7]. Pleszko, J. (2009). Selected aspects of ensuring supply chain safety in seaports. *Zeszyty Naukowe/Akademia Morska w Szczecinie*, 87-91.
- [8]. Sampaio, P., Saraiva, P., & Guimarães Rodrigues, A. (2011). The economic impact of quality management systems in Portuguese certified companies: empirical evidence. *International Journal of Quality & Reliability Management*, 28(9), 929-950.
- [9]. Mourougan S., (2015). Enhancing Organisation Performance for Customer Satisfaction and Cost Effectiveness through Integrated Management System. *IOSR J Bus Manag I 17*, 2319–7668. doi: 10.9790/487X-17915065.
- [10]. Nishat Faisal, M., Banwet, D. K., & Shankar, R. (2006). Supply chain risk mitigation: modeling the enablers. *Business Process Management Journal*, 12(4), 535-552.
- [11]. Jones, R., Arndt, G., & Kustin, R. (1997). ISO 9000 among Australian companies: impact of time and reasons for seeking certification on perceptions of benefits received. *International Journal of Quality & Reliability Management*, 14(7), 650-660.
- [12]. Ghadge, A., Dani, S., & Kalawsky, R. (2012). Supply chain risk management: present and future scope. *The international journal of logistics management*, 23(3), 313-339.
- [13]. Peleg-Gillai, B., Bhat, G., & Sept, L. (2006). *Innovators in supply chain security: better security drives business value*(pp. 1-33). Washington, DC: Manufacturing Institute.
- [14]. Teck LG., Zaly Shah M., (2008). *Supply Chain Security for Port Facility*. International Symposium on Sustainable Transportation. Universiti Teknologi Malaysia, Malaysia.
- [15]. Lu, G., Koufteros, X., & Lucianetti, L. (2017). Supply Chain Security: A Classification of Practices and an Empirical Study of Differential Effects and Complementarity. *IEEE Trans. Engineering Management*, 64(2), 234-248.
- [16]. Yasin Y. (2013). *Risk modeling in agile logistics: a case study*. Iranian National conference on business and commerce, Islamic Azad University, Iran.
- [17]. Casadesus, M., Giménez, G., & Heras, I. (2001). Benefits of ISO 9000 implementation in Spanish industry. *European business review*, 13(6), 327-336.
- [18]. Funken SJ. (2018). *Barriers of ISO28000 Supply-Chain Security-Standard*. BSc project, University Malaysia Pahang, Malaysia
- [19]. Lam, J. S. L., & Dai, J. (2015). Developing supply chain security design of logistics service providers: An analytical network process-quality function deployment approach. *International Journal of Physical Distribution & Logistics Management*, 45(7), 674-690.
- [20]. Christopher, M., & Lee, H. (2004). Mitigating supply chain risk through improved confidence. *International journal of physical distribution & logistics management*, 34(5), 388-396.
- [21]. Hints, J., Gutierrez, X., Wieser, P., & Hameri, A. P. (2009). Supply chain security management: an overview. *International Journal of Logistics Systems and Management*, 5(3-4), 344-355.
- [22]. Martens, B. J., Crum, M. R., & Poist, R. F. (2011). Examining antecedents to supply chain security effectiveness: an exploratory study. *Journal of business logistics*, 32(2), 153-166.
- [23]. Gould, J. E., Macharis, C., & Haasis, H. D. (2010). Emergence of security in supply chain management literature. *Journal of Transportation Security*, 3(4), 287-302.
- [24]. Gehling C, Sorooshian S., (2018). Attractions of ISO28000 for security of supply chains, *International journal of mechanical engineering and technology*, 9(9), 421–427.
- [25]. Gutierrez, X., & Hints, J. (2006, May). Voluntary supply chain security programs: a systematic comparison. In: *The International Conference on Information Systems, Logistics and Supply Chain, Lyon, France*.
- [26]. Borhan, R. I., Fhang, O. W., & Sorooshian, S. (2013). Operations Analysis: Practice on Performance Measurement in Supply Chain. In *Advanced Materials Research* (Vol. 739, pp. 737-741). Trans Tech Publications.
- [27]. Nakaie, M., Hau, G. Z., & Sorooshian, S. (2013). Operations Analysis: A Case for Supply Chain Performance. In *Advanced Materials Research* (Vol. 739, pp. 742-747). Trans Tech Publications.
- [28]. Simon Julius Funken, Sorooshian S., (2018). Barriers of ISO28000 supply- chain security-standard, *International journal of mechanical engineering and technology*, 9(9), 428–433.
- [29]. Chong Yee Chin, Sorooshian S., (2019). Possible Barriers Affecting Implementation of ISO28000 for the Supply Chain, *International journal of supply chain management*, 8.
- [30]. Sorooshian, S., Qi, L. C., & Li Fei, L. (2018). Characterization of ISO 14001 implementation. *Environmental Quality Management*, 27(3), 97-105.
- [31]. Sorooshian, S., & Ting, K. C. (2018). Reasons for implementing ISO 14001 in Malaysia. *Environmental Quality Management*, 27(4), 125-133.