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EFFECT OF SERVICE RECOVERY (SR) ON CUSTOMER RELATIONSHIP MANAGEMENT, CUSTOMER SATISFACTION AND LOYALTY.

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ABSTRACT

The main aim of this emperical study paper is to investigate the effect of the service recovery (SR) on important aspects on customer satisfaction (CS), customer relationship management (CRM) and loyalty (CL). This paper also draws its attention to service recovery concepts through the customer satisfaction and customer relationship management (CRM) influence the loyalty in manufacturing firms/users. The study is expected that SR strategy of critical equipment will improve marketing activities of organization in order to keep existing customers and growth the business. Many suppliers have lost their existing customers, which based on customer satisfaction survey shows that they are satisfied but disloyal, so they easily switch to other companies.These insights are helpful for suppliers service managers faced with system failure and academicians interested in how service providers response to product and service failures. We utilized 88 users to understand perceptions and expectations of several phenomenon by key respondents in different users of Industrial Control System (ICS) in Indonesia. The results of statistical analysis indicated that SR and CRM of supplier played a role and were found to be positively related to customer satisfaction and loyalty.

INTRODUCTION.

Many studies on service recovery but however the studies have been raised so far are about customer satisfaction and loyalty at banking, tourism, hotel and restaurant sevices, internet providers or other services under B2C categories. It is very rare to find research for B2B on customer satisfaction and loyalty especially related to critical equipment that is widely used in various industries such as generators, turbines, industrial control systems (ICS), analyzers,

reactors, and other critical equipment. For this reason, this study tried to see and analyze several factors that can support the business of local supplier. Losing existing customers is a big problem for companies because how they can ensure that their business is sustainable. Suppliers need to develop a growth strategy, keep customers and increasing the chance of business and not to competitors. For this reason, customer satisfaction and loyalty require service recovery that should be ready to be implemented according to the needs of each industry.

The other factor CRM is essential for future of manufacturing firms. CRM systems wear many hats, including channel management, customer services, communications, engagement, and more. They help improve customer experiences and boost customer retention with ever-progressing data analytics features. CRM is all of the activities, strategies and technologies that companies use to manage their interactions with their existing and potential customers and most important helps businesses build a relationship with their customers that, in turn, creates loyalty and customer retention. In term of after sales service which consists in continuing to offer personalised attention to the customer after the sale has taken place.

A good after sales service is one of the best ways to create loyalty to the company, which is why it should be taken care of and managed in an optimal way. To do this, there are ways to improve service, and one of them is through the utilize of CRM. The other side, many suppliers are trying to make improvements by offered services but only a few are successful in opening new potential markets and keep their existing customers. Too often when companies talk about a CRM, they are referring only to the software they are installing and how they plan to use the new features. Unfortunately, focusing solely on the software itself is not going to bring about fantastic business improvement. In the service industry especially manufacturing firms, customer interactions with physical and human elements may be necessary for delivery. Some authors have suggested that service with physical interaction have more impact on customer evaluation. When customers find that their production facility is in trouble, actually they expected an engineer not just come and fix the problem, but during recovery process, provide adequate explanantions, treat customer fairly, share information (Nilsson and Sandberg, 2010) are more important and essential.

In service recovery management, practitioners have devoted their efforts to discovering solutions aimed at recovering service failures and retaining customers (McGregor, 2007; Temkin, 2012; Wang et al., 2014). Previous research in service recovery has covered various issues ranging from handling complaint (Komunda and Osarenkhoe, 2012), investigating the WOM (Pradhan, 2015), repurchase intentions (Bao, 2017), loyalty (Sciarelli et al., 2017), customer retention (Diaz et al., 2017), and loyalty related to delivery (YuSheng and Ibrahim, 2019).

LITERATURE REVIEW.

Industrial Control System.

According to Knapp and Langill (2015), ICS is a system where work automatically to control and monitor various types of processes in

manufacturing and various production facilities. An ICS normally is used accordance with requirement of the production facility. Some facilities use a combination of several systems such as process control systems (PCS), distributed control systems (DCS), supervisory computer and data acquisition systems (SCADA), safety instrumented systems (SIS), programable logic control (PLC) and many others.

Figure 1 shows a simple of system configuration of ICS were consisting of two controllers and a series of inputs and outputs connecting to others process. All the input and output signals from sensor will be collected to I/O interface that can bridge the analog signal and the digital signal handled by the controllers. HMI (Human machine interface) is required to see the status and activities at plant side.

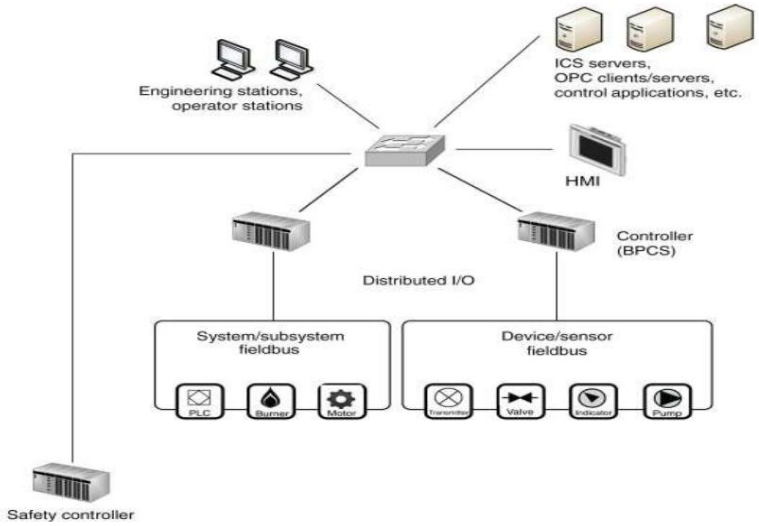

Figure 1. Simple Configuration of ICS (Knapp and Langill, 2015)

ICS were found in many industries such as electric, water and wastewater, oil and natural gas, chemical, pharmaceutical, pulp and paper, food and beverage, and discrete manufacturing (Stouffer et al., 2013). Because there were many different types of ICS with varying levels of potential risk and impact, the supplier have different methods and techniques for securing, maintain and supporting customer. Suppliers have a way of taking action against ICS in trouble.

ICS is one of the critical equipment besides other equipment such as vessels, machinery, piping, blowout preventers, turbines, generators, wellheads and related valving, flares, alarms, interlocks, fire protection equipment, and other monitoring, control, and response systems (IADC, 2007). Those equipment and other systems determined to be essential in preventing the occurrence of, or mitigating the consequences of an uncontrolled event. The manufacturing firms having an obligation in minimizing incident stoppages not only on critical equipment but other production facilities.

Collaboration and cooperation are often used and very important in business term to enhance productivity and performance (Khan, 2017). In this way the partnership with ICS suppliers play an important role in keeping performance of ICS. A good partnership quality between the customer and its supplier, based on mutual recovery concept, joint problem solving and flexibility helps in avoiding complex and lengthy contracts. The partnership between customer and supplier may influence factors important for achieving satisfaction and loyalty in long-term business relationships.

Customer Relationship Management (CRM).

Customer Relationship Management is very important factor. Customer Relationship Management is the process of building and maintaining relationships profitable long term with customers through the provision of value and satisfies them (Kotler and Armstrong, 2007), Customer Retention is concerned with customer loyalty. Organizations must focus on customer services, retention and loyalty so that they might be able to create good relationship with their customers. A Lot of strategies have been adopted by different organizations to satisfy the existing and dissatisfied customers and also to make them loyal, not only to create good relationship and make new customers but also to keep them for a longer period of time. Keeping existing customers more cost effective than acquiring new customers.

Positive words of mouth have played a very important role in this regard (Pradhan, 2015). The companies should acquire new customers and retain the existing ones. CRM is a concept for managing a company's interactions with customers (Long et al., 2013). CRM is a concept based on the philosophy of using a combination of customers and marketing to build relationships (Kotler, 2003). So the main idea of the study is to highlight the fact that customer retention, customer loyalty and customer satisfaction plays a key role for the success of any organization. This was supported by Kotler and Keller (2013) where CRM is a process for creating, maintaining and enhancing strong relationships with customers.

Kau and Elizabeth (2006) mentioned in their article that service recovery not only increase the customer satisfaction but it also increase customer trust, word of mouth and customer loyalty. The Customer who is dissatisfied and does not complaint will have more negative words of mouth than the customer who is dissatisfied even after complaints. Original service recovery may have different impacts on customer satisfaction and customer loyalty, because observations show that customer may be satisfied but not loyal. That is why marketing activity by utilizing a CRM should be implemented.

Maintaining good relationships with customers is the cornerstone of every successful business, but in decades past, the process of managing and tracking customer relationships within a business was fragmented and time-consuming at best. A CRM platform is a piece of software companies use to manage interactions with customers, store information about them, and automate a number of processes connected with a customer’s journey through the

marketing and sales funnels. A CRM system is an incredibly important tool for every company, helping to foster customer loyalty.
At the most basic level, CRM software allows marketers and salespeople to manage and analyze relationships with the company's actual and potential customers. It enables tracking every interaction with the company and collects information about the customer. This way, when speaking to a customer, the marketer always knows who they are, what they need and sees their history with the company. This makes the interaction more personalized, increases the chances of conversion, and encourages customer trust and loyalty (Wlosik, 2021). Customer service has been a necessary preoccupation of service organizations because they have understood that customers are responsive to the quality of the service they experience (Buttle, 2015).

Service Recovery (SR).

Gronroos (1988) said that a service recovery (SR) represents all corrective action that a service provider takes in response to a service failure or poor quality service. The same thing was said by Zemke and Bell (2000) describing Service Recovery as a process carried out by an organization to return customers who feel disadvantaged after the service or equipment fails to meet expectations to their satisfaction level. The necessity of service recovery is brought about by the inevitability of service or product failures. The cause of failure comes from several factors. To effectively handle failures, organizations should develop effective service recovery strategy. Service recovery is defined as the action taken by the service provider to address a customer compliant regarding a perceived service failure (Johnston, 1994), and to pacify dissatisfied customers through appropriate actions in order to reduce potential damage to customer relationship caused by service failures (Kandampully, 1998).

Service recovery in the context of ICS is how suppliers can help ICS users quickly when there is a system failure. Expectations from users must be understood by the service provider (supplier) that failure or delay in recovering will cause customer dissatisfaction. They will lose their production potential because the performance of the ICS does not match the production process. Quick action, good explanation of problems (Nillson and Sandberg, 2010), flexibility in providing assistance, treat customer fairly and providing the best solution will get high appreciation from the customer.

The recovery concept applied to ICS equipment is very different from research in other sectors such as hotels, restaurants, banks. In general, recovery is carried out by paying attention to compensation for customers. Compensation is one of the most important elements of service. Companies often pursue a strategy of overcompensation; however, there are contradictory results in the literature whether overcompensation has a positive or negative effect on post-complaint customer behaviour (Zsofa and Zsofa, 2020).

Service failure is rectifiable by performing service recovery. A good service recovery will help to develop long term relationship. Preceding previous studies in service recovery claimed that recovery satisfaction will influence customers intention to spread positive word of mouth (Wen and Chi, 2013; Choi and La,

2013; Maxham and Netemeyer, 2002). These findings demonstrate that service recovery is imperative to transform dissatisfied customers to the state of satisfaction. As a result, satisfied customers will share positive experience with others and they may act beyond service provider‟s expectation.

Service recovery is a decision taken by the company as a reaction to service failure with the aim of turning dissatisfaction into customer satisfaction and ultimately retaining the customer (Bell, 1994; Miller et al., 2000). The same thing was said by Zemke and Bell (2000) describing Service Recovery as a process carried out by an organization to return customers who feel disadvantaged after the service or equipment fails to meet expectations to their satisfaction level. Schweikhart et al. (1993) view service recovery as part of quality management with the ultimate goal of all services is to maintain business relationships with customers.

Service Recovery can bring big profits and as a tool to get more satisfied and loyal customers, not just a process of waste of time and money (Yeoh, 2015). Effective service recovery can lead to a higher level of customer satisfaction, intention to repurchase, positive word of mouth, improve the company's image, ending in customer loyalty (Harris et al., 2006).

Customer Satisfaction (CS).

The aim of every organization is to deliver the utmost service and product to the customers. However, in certain circumstances, it is impossible to provide service with zero defect. Even the best organizations in the word are unable to escape from service failure. In recent years, practitioners and researchers are interested to explore the best measures to recover from service failure. Numerous studies have been established to investigate the effect of service recovery on customer satisfaction (Abd Rashid and Ahmad, 2014).

The importance of customer satisfaction cannot be denied as happy customers are like free advertising for the company (Kotler, 2003; Nashwan and Hassan, 2017). Customer satisfaction is defined as the level of satisfaction where customer needs, wishes, and expectations are met during the product/service period, giving way to re-purchasing and customer loyalty (Anton, 1996; Nashwan and Hassan, 2017). In general, customer satisfaction is defined as a measurement that determines how happy customers are with a company's products, services, and capabilities. Customer satisfaction information, including surveys and ratings, can help a company determine how to best improve or changes its products and services.

From customer expectation, Customer satisfaction is defined as a situation where customer expectations for a product match the reality received by the customer. If the product falls below expectations, the customer will be disappointed. Conversely, if the product meets expectations, the customer will be satisfied. If the perceived performance meets or exceeds the expectations of the customer, the customer is satisfied (Kim et al., 2007). The expected level of service varies from marketplace to marketplace, industry to industry and, to some extent, from customer group to customer group. Though the

customer may be content, suppliers can find ways to exceed expectations, thereby providing a service that truly provides the value a customer needs.

In relation to loyalty, customer satisfaction is an introduction to repurchase, Customer Loyalty, and customer survival which ultimately benefits to the company. Satisfaction provides many advantages for the supplier, one of which is important, namely enabling the achievement of customer loyalty (Lovelock and Wright, 2018). Meanwhile, Kotler and Keller (2013) say that satisfaction is a function of expectations for perceived performance. If the performance of the equipment or service is lower than expected, customers will feel dissatisfied. But the performance of the equipment or service is as expected, the customers will be satisfied, and if the performance of the equipment or service exceeds expectations, the customers will feel very satisfied. Based on these studies, the hypotheses to be proven in this study are as follows

Customer Loyalty (CL).

Oliver (1999) defined customer loyalty as a promise of buyers to purchase particular equipment, services and brands of an organization over a consistent period of time. Loyal customers positively view the organization, endorse the organization to others, and would engage in repurchase (Dimitriades, 2006). Similarly, Lam et al. (2004) defined customer loyalty as an evidence of the repeated patronage of a service provider and the recommendations of a service provider to other customers. Gummesson (2002) state that it is essential for a supplier to continuously remind a customer to remain loyalty.

In this study, strengthening customer satisfaction will have an effect on loyalty and this was approved by several studies. According to Anderson et al. (1994), if customers are satisfied with the goods or services provided, it will increase customer loyalty. There is a strong link between satisfaction and loyalty toward a supplier or equipment (Selnes and Gonhaug, 2000). Satisfied customer can provide several benefits including the relationship between companies and customer that will be more harmonious, provided good basis for repurchasing and creating consumer loyalty to the company. This is as expressed by Dutka (2001) that the benefits of meeting customer expectations with performance will create loyalty to the customer itself with the company concerned. Loyalty is built mostly started from creating customer satisfaction (Nguyen et al., 2020; Liat et al., 2014; Wu et al., 2020; Liu et al.,2018).

Research Hypotheses

Service recovery can be defined as a process of restoring consumer confidence due to service failure. Service recovery is intended as a process to make up for customer disappointment in being satisfied after a failure. The fact that service recovery results in customer loyalty has been focused by many authors, Andreassen (1999) findings show Customer satisfaction resulting from complaint resolution Cause customer loyalty. The service recovery results into the positive word of mouth. Johnston and Michel (2008) have focused that successful service recovery results in the repurchase buying intentions. Shapiro and Gonders (2006), associate the firm productivity and sustainable growth with

the customer satisfaction. If the efforts of service recovery are performed in a better way this can lead to the customer satisfaction, loyalty and word of mouth (Maxham, 2001). Based on this explanation, the hypotheses built in this study as follow:

H1 : *Service recovery has significant effect on customer satisfaction.*
H2 : *Service recovery has significant effect on customer loyalty.*

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And interact with a customer service agent (Buttle, 2015) All these actions contribute to customer experience and could be comibined into CRM. CRM has fairly well-established conceptual for relationship. Based on this explanantion, the hypothesys built in this study are:

H3 : *Service Recovery has a significant effect on CRM*

CRM approach whereby different departments of supplier such as engineering, technical support, marketing and purchasing etc., sharing of information they collect from interactions with their customers. For example, technical discussion between customers and technical support in order prepare mitigation procedure for service recovery. The aim of this cooperation is to improve response time and quality, by the end increase customer satisfaction and loyalty. Based on the idea of Buttle (2015), having good CRM will improve service quality. Based on this explanation, the hypothesys built in this study as follow:

H4 : *CRM has significant effect on customer loyalty*

Since customer loyalty is key for enterprises to gain core competence, achieving a better understanding of the relationship between customer satisfaction and customer loyalty is critical.

Customers' satisfaction is among the fundamental concepts being utilized to elucidate consumers conduct. In line with theory of expectation disconfirmation, customers satisfaction is abstracted as "the psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience" (Oliver & Swan, 1989. Overall the high level of customer satisfaction will give a greater commitment to existing customers. This means that more customers will

repurchase in the future. An increase in customer satisfaction will improve the overall reputation of a company. Based on above explanantion, the hypothesys built in this study as follow:

H5: *Customer satisfaction has a significant effect on customer loyalty.*

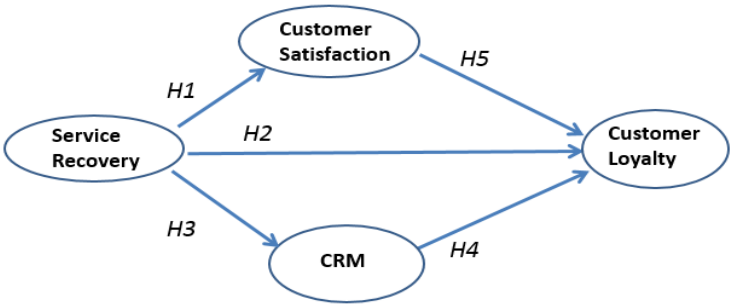

Figure 2: Structural model.

METHODOLOGY.

Research Framework.

Based on literature review, the conceptual framework (Figure 2) below was constructed as follows: independent variable is service recovery (SR) and independent variables were customer relationship management (CRM), customer satisfaction(CS) and customer loyalty (CL).

Sampling and Questionnaire Development

The sampling was used in this research is saturated sampling. The questionnaire concentrates on the 88 manufacturing firms in Indonesia. We did not focus on a specific industries. Mainly they were from oil/gas, pulp/paper, power generation, chemical, water treatment, food and beferage, cement and fertilizer. A total of 24 questionnaires have been developed and adapted to circumstances of ICS users. All questions to respondents were built and developed by involving current services so that perceptions of asset performance, response, problem solving, solutions, expectations, recommendations, and management commitments were obtained. This study uses a Likert scale which used to measure the perceptions, attitudes or opinions of a person. The number 1 represents strongly disagree and 5 represents strongly agree.

Among the respondents, 100% were male. The age group varied between 35 and 56 years and their position as maintenance manager which is considered to be a good representative sample for the this research. Most of maintenance managers had at least 10 years experiences handling the instrumentation and control systems.

Data Analysis Method.

Structural equation modeling (SEM) was adopted to test the hypotheses because the model contains latent variables. We used a WarpPLS 7.0 for the analysis. We employed a bootstrapping method to test the significant level of regression path coefficients.

Measurement.

Validity of Measurement Model

- Convergen validity

All items in a measurement model are statistical significant. Other than that, the value of AVE for all construct is greater than 0.50 (Tabel 1). This is considered sufficient as a criterion for the convergent validity condition, it means the validity was achieved the required level.

Table 1: Summary for all constructs

Construct	Code		FL	CA	CR	AVE
CRM	CRM1	Services are met our expectation	0.752			
	CRM2	There is flexibility in services	0.682			
	CRM3	After recovery followed by discussion	0.818	0.782	0.853	0.540
	CRM4	There is a recommendation	0.808			
	CRM5	There is management commitment	0.588			
Service Recovery	SR1	Joint field visit for risk identification	0.847			
	SR2	Joint field visit for risk assesment	0.822			
	SR3	Monitoring the ICS system	0.808			
	SR4	Conduct risk review	0.793	0.860	0.897	0.594
	SR5	ICS supplier prepare mitigation procedure	0.605			
	SR6	Involve supplier top management	0.722			
Customer Satisfaction	CS1	Easy to contact supplier	0.710			
	CS2	Supplier's working quickly	0.667			
	CS3	Technical team is supported by management	0.881	0.828	0.875	0.540
	CS4	Polite enough to deal with complaints	0.741			
	CS5	Engineer(s) have good skill	0.728			
	CS6	Manager is involved on problem solving	0.743			
Customer Loyalty	CL1	We haven't thought to switch to others.	0.754			
	CL2	Supplier know our expectation	0.583			
	CL3	We are quite happy & safe use current ICS	0.758			
	CL4	We are satisfied use current ICS	0.822	0.846	0.884	0.524
	CL5	Feedback fro other about current supplier is +	0.666			
	CL6	We recommended the supplier for next project	0.710			
	CL7	We recommended the supplier to others.	0.749			

Note: FL= Factor Loading; CA=Cronbach's Alpha; CR= Composite Reliability ; AVE=Average variances Extracted.

- ***Discriminant validity*.**

The discriminant validity is achieved when the diagonal values in bold are higher than the values in its row and column. Table 2 shows the diagonal values, therefore the discriminant validity was achieved.

Table 2: Discriminant Validity

Construct	CS	CRM	CL	SR
CS	**0.735**	0.694	0.689	0.433
CRM	0.694	**0.735**	0.675	0.654
CL	0.689	0.675	**0.724**	0.436
SR	0.433	0.654	0.436	**0.771**

Note: SR= Service Recovery; CS= Customer Satisfaction; CL= Customer Loyalty
CRM= Customer Relationship Management.

Reliability Assesment of Measurement Model.

- Composite reliability (CR).
Good composite reliability if the value is ≥ 0.70. Each dimension of CR was between 0.853
And 0.897 (Table 1).

- Cronbach's alpha (CA).
From Table 1, the values range between 0.782 and 0.860 and all of this were higher than the relibility standard 0.7 (Table 1).

RESULT.
On Table 3 showed some data such as path coefficients, p-values an conclusions of each hypothesis. Result after run the SEM software showed that 4 of the 5 hyphoteses were accepted (Table 3).

Table 3. Result of Structural Model.

Hypothesis	Relationship	Path Coeff	p-value	Remarks
H1	SR→CS	0.461	<0.001	Accepted
H2	SR→CL	0.070	0.251	Rejected
H3	SR→CRM	0.677	<0.001	Accepted
H4	CRM→CL	0.285	0.002	Accepted
H5	CS→CL	0.485	<0.001	Accepted

Note: SR= Service Recovery; CS= Customer Satisfaction; CL= Customer Loyalty

CRM= Customer Relationship Management.

Figure 3 showed that R-squared = 0.58 means all the variables SR, CS and CRM predicted the dependent variable CL by 58%. The dependence of variable CL is 58% on 3 dependent variables, while the remaining 42% depends on other variables which was not mentioned in this research.

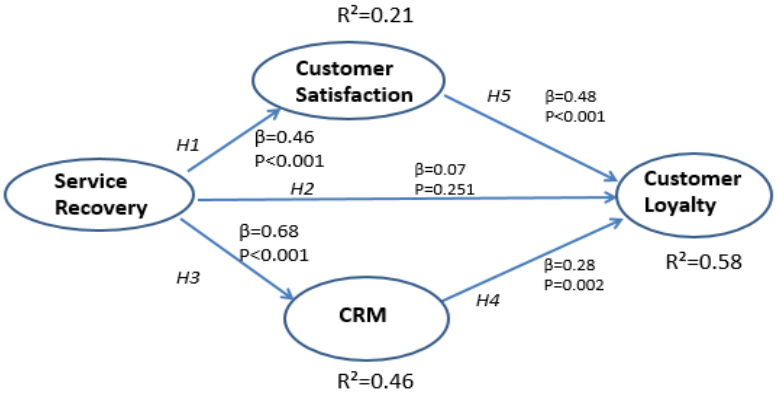

Figure 3. Research Results (WarpPLS).

Based on data for H1 (Figure 3), it can be seen that the influence of Service Recovery(SR) on the Customer Satisfaction (CS) with path coefficient was 0.46 and p<0.001. By considering that p was less that 0.05, it was considered highly significant. Thus H1was accepted. The effect of SR on Customer Loyalty(CL) with path coeeficient was at 0.07 and p=0.251. By considering that p was higher than 0.05, it was considered not significant. Thus H2 was rejected. The effect of SR on Customer Relationship Management (CRM) with path coefficient was at 0.68 and p<0.001. By considering that p was less than 0.001, it was said to have a highly significant level, so H3 was accepted. The effect of CRM on CL with pat coefficient was at 0.28 dan p=0.002. By considering that p was less than 0.05, it was said to have a significant level, so H4 was accepted. The effect of CS on CL with path coefficient was at 0.48 and p<0.001. By considering that p was less than 0.001, it was said to have a highly significant level. So H5 was accepted.

DISCUSSION AND MANAGERIAL IMPLICATION

In the ICS business, suppliers are not expected to compensate when a system failure occurs. What is expectation by the customer is how quickly ICS can be operated back so that it can continue the process of production facilities. Customer expectations arise regardless of whether the systems are still covered by the warranty agreement, has passed the warranty period, has a service contract or not. Their main concern is that the systems can work normally and do not interfere with the productivity and quality of product.

The product failure such as Industrial Control System (ICS) will definitely influence the recoverability of the failure. The failure of a system such as ICS will cause panic for stakeholders such as production managers, maintenance managers even to the highest level of an organization. They just hope that their engineering team will soon solve the problem. Whether they do it with their

capacity or with the help of other parties, does not have to be an obstacle. In general, cooperation with other parties such as suppliers or vendors can be taken even if they do not have a service contract. This requires the role and commitment of supplier or vendor management. Flexibility in the supplier or vendor organization to immediately provide assistance is a recovery action that is more concerned with long-term relationships. Prompt action by the supplier will at least provide a sense of satisfaction dan confortable for the customers or the person involved.

The aim of this study was to gain an understanding of how service recovery can drive sustainable business activities by prioritizing long-term working relationships. First, all organizations such as suppliers or vendors must understand that ICS systems that have been installed in existing customers have a very important role and one of the keys to success in manufacturing firms to produce products. ICS performance is directly related to productivity and quality of products. In general, ICS has good reliability and availability so that fatal damage is rare. However, how sophisticated the product is used, there will be failures for which the source of the cause is unknown, meaning it can be from internal or external sources.

Initially, ICS had little resemblance to traditional information technology (IT) systems in that ICS were isolated systems running proprietary control protocols using specialized hardware and software. Widely available, low-cost Internet Protocol (IP) devices are now replacing proprietary solutions, which increases the possibility of cyber security vulnerabilities and incidents. As ICS are adopting IT solutions to promote corporate business systems connectivity and remote access capabilities, and are being designed and implemented using industry standard computers, operating systems (OS) and network protocols, they are starting to resemble IT systems (Stouffer et al., 2013). Today, as an enabler of business innovation and efficiency, more ICS systems are connected to the Internet, either directly or through the corporate networks, and are remotely accessible to allow remote process monitoring, system maintenance, process control and production data analysis. Accordingly, the threat of exposure has risen and so have the corresponding business and compliance risks (Deloitte, 2015).

The second thing is that when an unplanned trouble occurs, the supplier or vendor proactively asks what is really going on and whether they need physical or remote assistance. Communication at this time is not an obstacle so that investigations can be carried out without having to physically come to customers. This kind of communication can be built with existing systems through CRM so that suppliers or vendors can access data as long as it is permitted by customers. By providing increased access to industrial process data, these innovations allow manufacturers to make better business decisions. In addition, manufacturers have extended their manufacturing and supply chain processes and systems beyond their own organization to include supplier and customer processes and systems. The collaboration like this should be discussed regularly, even on this opportunity, suppliers can update existing or developing technology. This level of discussion can take place between the field engineers of both parties and even the management level so that business continuity and opportunity can be observed from the beginning including watch the level of

customer satisfaction. Resolving problems quickly will provide emotions of satisfaction for customers. It has been noted that acting quickly will reduce the double suffering of the customers problem. Satisfcation is created when the promptness in service customer after experiencing service failure.

The third thing need to be highlighted in this study is how suppliers and vendors are developing logistic flexibility in problem solving. Logistical (manpower and sparepart) support for recovery actions is entirely in the hands of the supplier or vendor. Administrative procedure issues should not be a priority in the recovery process. By prioritizing responsiveness, in general, customers will give appreciation to service providers. ICS supplier can achieve customer satisfaction by logistics flexibility, which enable quick replenishment of incoming materials and rapid recovery process of customers problem. The success of supporting customers will increase the both company's image and reputation and will improve the satisfaction. However, we found the inconsistency with respect to customer satisfaction–loyalty relationships across studies has attracted our attention.

CONCLUSION

When the service or product failures accurs, the emotional and trust are easily broken or reduced, if customers feel the recovery processes not so good. That is why, when recovery process is finished, customers still having questions whether product/ICS already recovered 100% and works accordance with expected performance or customer need time for further review. A good service recovery must be approved before customer believe and loyal. In this case the satisfaction of post-recovery is more important and necessary. When performance meets expectation, customers will be satisfied. When post-recovery performance exceeds expectation, customers will be highly satisfied. There are some researches that explain customers' satisfaction affects customers' loyalty, such as: Mohsan et al. (2011); Karunanithy et al. (2013); and Khadka and Maharjan (2017).

Theoretical implications in this study are building and developing concept of satisfaction and loyalty through service recovery and CRM on ICS customers. Service recovery strategy wheel proposed by Nillsson and Sandberg (2010) should add with 2 factors which flexible and confortable. Service recovery must be carried out with good timing and response to resolving problem properly. Longterm business and growth should be seen from both SR and CRM such as increase market share and keep existing customers. Finally, the result of this study cannot be generalized due to this study were focused on ICS customers only. It is suggested to study and investigate other critical equipment.

Customer relationship management (CRM) strategies have been extensively used in servicing sectors, to enhance the customer satisfaction and loyalty for the long-term (Herman et al., 2020), because in a marketing sector, the customer satisfaction and retain it for long-term is a very difficult job. In order to increase market and keep existing customers, it is suggested that an organization can build a good customer relationship strategy, which directly involve such as management of users, production department, maintenance and engineering departments and purchasing department affects to create the customer loyalty.

Based on results and discussion, the following conclusions can be explained. Service recovery and CRM are most effective approach in maintaining and establishing relationships with existing customers especially manufacturing customers. Suppliers need to understand that implementation of service recovery and CRM are an important service and tool to develop strategies for maintaining customers and creating loyal customers. Companies such as local suppliers must not only see a service recovery as an after sales service and CRM as a technological tool, but both of them as change in the structure, moral obligation and business culture in general. All the efforts and promises of the supplier to increase customer satisfaction and loyalty. By having that pleasure plays a dominant role in keeping customers, marketers must continually offer services that satisfy customers and influence their loyalty.

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