Customer Satisfaction on the Use of QR Codes
For Frozen Shrimp Products at PT. Kelola Mina Laut
Based on the Theory of Stimulus Organism Response

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Abstract

Background – Customer satisfaction is very important for business continuity in a company. PT. Kelola Mina Laut (KML) is a fisheries industry that implements a defensive strategy for its marketing, namely by applying a QR code to traceability information of frozen shrimp products that provide added value for its customers.

Aim – Identify and analyze customer satisfaction on the use of QR codes for frozen shrimp products at KML based on S-O-R theory (Usefulness, Acceptability, Feasibility, Perceived flow, and Customer Satisfaction).

Design / methodology / approach – This study uses 7 (seven) people as informants, who are KML customers, and then analyzed using Miles and Huberman Analysis.

Findings – Customer satisfaction on the S-O-R theory was tested when the customer said he was very satisfied using this QR Code system, the customer's feeling when using this traceability system was easy and positive when using the QR code. Customers think this system is feasible to use and can be recommended to other customers.

Research implication – The results of this study are a means for researchers to add insight and knowledge about traceability systems using QR codes at KML shrimp processing unit in an effort to increase customer satisfaction.

Limitations – The QR code used contains information on the frozen shrimp product traceability system. The theoretical basis used is the S-O-R theory. The research location is in the KML Gresik, and test the validity of the data in this study using Source Triangulation.

Keywords: Customer satisfaction; QR Code; Frozen Shrimp; S-O-R Theory.

1. Introduction

One of the prima donna commodities of fisheries that has a high enough demand is shrimp. Shrimp is listed in the first rank of Indonesian fishery exports with a contribution of export volume of 14.13 percent and export value of 42 percent to Indonesia's fishery trade balance (KKP 2015). In general, Indonesian export shrimp consists of three types, namely fresh, frozen and processed shrimp. However, only frozen and processed shrimp have a large export value of 77.38 percent and 21.91 percent, respectively (UN Comtrade 2018).

Table 1 Data on Sales of Shrimp Products

Years	Tons	Rp(million)
2015	2.524	258.424
2016	2.863	255.779
2017	1.862	162.341
2018	1.956	194.486
2019	1.389	163.371
2020	2.135	235.505

Source: Annual Sales Data of KML Shrimp Units

Table 1 shows that there was a decline in sales in 2017-2019. To increase sales and company profits, the right strategy is needed so that customers trust again with a product, one of which is the use of information technology. We must take advantage of technological developments and must optimize them through digital media platforms. The more and better service innovations created by the company, the greater the customer satisfaction (Valentino and Surianto MA, 2022). In the business field, companies that can respond to requests from customers quickly and in accordance with technological developments will get added value compared to their competitors. This demand for speed in processing can be carried out by means of Information Technology.

One example of Information Technology tools used to help increase processing speed is to use a QR Code. Currently, KML is starting to implement QR code technology as an identification of product traceability starting from the supplier, fishing area, production date and process machine. The QR code can then be accessed quickly by scanning the QR code contained on the product carton through the website provided by the company and can be accessed via an android camera or laptop.

Quick response (QR) codes are two-dimensional, machine-readable matrix barcodes originally developed and designed in 1994 by Denso Wave Incorporated for the purpose of fast and accurate inventory checks. Conventional one-dimensional barcodes can only store information horizontally, while QR codes have the ability to store information both vertically and horizontally. So more perfect and large information can be stored in a QR code than in a conventional one-dimensional barcode. The stored information can be encoded as a URL, text, or various other types of data, which can be easily read by the mobile device's camera.

With the increasing popularity of camera-enabled smartphones, QR code users are increasing rapidly. Japanese advertisers and marketers are quickly using these codes as marketing tools in various marketing and promotional activities due to the high information storage and encoding capacity of QR codes. In the early 2000s, QR codes quickly gained an excellent reputation in Europe, and in North America soon after, with marketers and manufacturers placing QR codes on many products and services from wine labels to shampoo bottles to candy. In China, QR codes are used in many daily activities including marketing, social platforms (such as WeChat), mpayment, online shopping, and ticket management (Hossain et al., 2018).

Basically QR codes are two-dimensional and dynamic. According to Pulliam and Landry, QR Codes are approved by the International Organization for Standardization (ISO) and are freely available. Anyone can generate QR code freely for any data or link from Internet. These codes are well designed and well planned, with better capacity than conventional one-dimensional or matrix barcodes. QR also has variability and error correction capabilities. Up to 30% of obscure or corrupted data can be recovered (Hossain et al., 2018).

Product traceability is an efficient way to improve food safety and quality and to reduce costs of recalling problematic products from the market (Regattieri et al., 2007), as well as to improve a company's production strategy (Saltini and Akkerman, 2012) and production control (Saltini et al., 2012). ., 2013). Product traceability is very important for the perishable product industry (Lavelli, 2013). European Union countries, this area is regulated by European standards for traceability and Best Available Technology (BAT), as defined in the ENISO standard 2205:2007 and the European Directive 2008/1/EC (Standardization, 2007). On the other hand, it can be seen that the modern lifestyle causes the separation between users (consumers) and producers of food products (farmers, farmers) from each other (Frewer et al., 2005). This separation has an impact on increasing consumer distrust of the quality of food products, different interpretations of the conditions in which animals must be kept to get satisfaction.

The quality of food products from certain soil properties (Bosona and Gebresenbet, 2013). A study (Zhang et al., 2012) shows that consumers are willing to pay a significant positive premium for food traceability, as such a system strongly influences consumer confidence in a particular product (Chen and Huang, 2013). (Cunha et al., 2010) demonstrated a system for identifying vineyards and the origin of the vines based on a QR code printed on the container in which the grapes were transported. By reading QR codes via mobile phones and using the internet, users can get information about the origin, weather and other conditions in the field during grape growing. The project also uses other technologies, such as RFID tags, GPS location determination, measurement of temperature, humidity and air pollution. A similar traceability concept is shown in (Ruiz-Garcia et al., 2010), where data from the field is collected through a web-based system for data processing.

Every marketer must understand their consumers, both as individuals and as members of groups (family, associates, and so on). The aspects that need to be understood are how consumers think, perceive, feel, evaluate, and choose among alternative brands, products, and marketers. We need to understand consumer behavior because it is to improve business performance, influence public policy, and educate customers. Consequently, we must also learn how to be a wise and responsible customer, in order to satisfy his needs and wants.

Customer satisfaction is one of the important factors that must be considered by the company in order to satisfy its customers. Philip Kotler (2014) defines consumer satisfaction as the result felt by buyers who experience the performance of a company in accordance with their expectations. Customers are satisfied when their expectations are met and are very happy when their expectations are exceeded.

The creation of customer satisfaction can provide benefits, including the relationship between the company and customers to come back for repeat purchases, and can also form word of mouth recommendations that are profitable for the company. The more competitors, the more companies are required to be able to see every opportunity and develop strategies to be able to provide maximum customer satisfaction.

2. Literature Review

2.1 Customer Satisfaction

Marketers need accurate, timely and reliable information about their customers and special skills to analyze and interpret this information to support the design of effective and efficient marketing strategies. This need will contribute to the development of consumer behavior as a specific study material in marketing.

According to Kotler and Keller (2008:166), consumer behavior is the study of how individuals, groups, and organizations choose, buy, use, and how goods, services, ideas, or experiences to satisfy their needs and wants. Consumer behavior refers to the behavior shown by individuals in buying and using an item or service.

Currently, it seems that the term customer satisfaction has become an integral part of every formulation of the vision, mission, goals, creeds, and mottos of organizations, both companies and non-profit institutions. Business discourse, strategic management, and marketing also always discuss the issue of the strategic role of customer satisfaction.

In a broader context, the annual awarding of awards for products, services, or companies that are successful in satisfying customers has been able to create a kind of "customer satisfaction fever". The company uses the award as a testimony of its success and as an attraction to attract more new customers. For customers, this kind of testimonial is powerful enough to be used as a reference for making decisions in making a purchase.

In Indonesia, September 4, 2003, was declared as National Customer Day. This shows clearly how important customers and customer satisfaction are to any organization (business or non-profit). Indeed, customer satisfaction must be based on mutually beneficial relationships in the long term.

2.2 S-O-R Theory (Stimulus, Organism, Respon)

The S-O-R theory, which stands for Stimulus – Organism – Response, originally came from psychologists. If it then becomes a communication theory, it is not surprising because the material object and psychology and communication science are the same, namely humans whose soul includes the components of attitude, opinion, behavior, cognition, affection and conation (Effendi, 2003: 254). According to this response stimulus, the effect caused is a special reaction to a special stimulus, so that one can expect and estimate the correspondence between the message and the communicant's reaction.

S-O-R theory explains how a stimulus gets a response. The simplest level of interaction occurs when someone takes an action and is given a response by another person. According to Fisher, the term S-R is not appropriate because of the intervention of the organism between the stimulus and response, so the term S-O-R (Stimulus-Organism-Response) is used. The S-O-R theory assumes that organisms produce behavior when certain stimulus conditions are present. So the effect that occurs is a special reaction to a special stimulus to a special stimulus, so that one can expect a match between the message and the communicant's reaction. So the elements in this model are: (1) Stimulus (Stimulus); (2) Something that is felt (Organism); (3) Response (Response). The S-O-R theory can clearly be seen from the chart as follows:
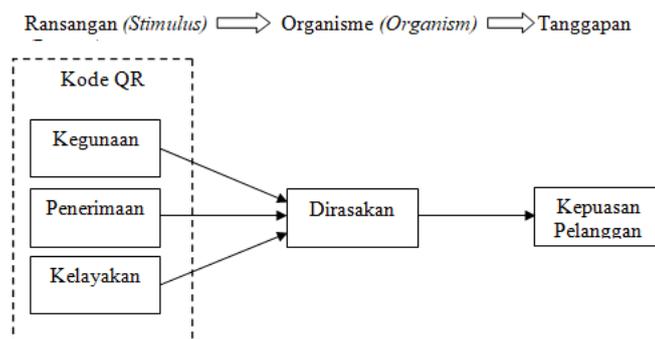

Figure 1 S-O-R theory
Source : Hossain, M. S., Zhou, X., & Rahman, M. F. (2018).

2.3 QR Code

QR code is a form of barcode evolution from one dimension to two dimensions. The use of QR codes is common in Japan. This is because of its ability to store data larger than barcodes so that it is able to encode the desired information in Japanese because it can accommodate kanji letters. The QR code has received international standardization and standardization from Japan in the form of ISO/IEC18004 and JIS-X-0510 dasasan which have been widely used through cellphones in Japan

QR code is a type of matrix code or two-dimensional barcode developed by Denso Wave, a division of Denso Corporation, a Japanese company. In contrast to barcodes, which only store information horizontally, QR codes are able to store information horizontally and vertically, therefore automatically QR codes can accommodate more information than barcodes (Soon, 2008).

3. Research Methodology

3.1 Research Approach

In this study, the researcher uses an interpretive paradigm, where social researchers do not always and indirectly have the instruments to arrive at forecasting and controlling social phenomena. Research conducted to develop understanding and help understand and interpret what is behind events, how humans put meaning in events that occur.

3.2 Research Design

Here, the researcher uses a qualitative descriptive research method because this study explores the phenomenon of the customer satisfaction process using a QR code on frozen shrimp products of Kelola Mina Laut, PT through Stimulus Organism Response theory. In addition, this research is also inductive in nature and the results emphasize more on meaning.

3.3 Research Focus

This research is focused on How to identify and analyze the Usefulness of QR Codes, Acceptance of QR Codes, Eligibility of QR Codes, and Taste on the use of QR Codes, and Customer Satisfaction with the use of QR Codes on Frozen Shrimp Products Kelola Mina Laut, PT based on S-O-R theory?

3.4 Research Data and Sources

Primary data is data obtained by researchers directly, conducted by means of interviews. The primary data of this research is the result of interviews with customers of Kelola Mina Laut, PT. While secondary data is data used to support primary data, namely through literature studies, documentation, books, written journals related to the object to be studied in this study.

3.5 Data Collection Methods and Instruments

In research on customer satisfaction studies on the use of QR codes for frozen shrimp products, Kelola Mina Laut, PT based on S-O-R theory. The instruments used in this study were interviewed, documentation and observation guidelines.

No.	WAWANCARA
A	**Kegunaan Kode QR**
1	Q: Apakah Anda mudah untuk memeriksa informasi produk dengan Kode QR?
	A:
2	Q: Apakah Anda mudah untuk menghubungkan sistem traceability?
	A:
3	Q: Apakah Sistem Kode QR kami efektif?
	A:
4	Q: Bagaimana dengan perspektif pengguna?
	A:
B	**Penerimaan Kode QR**
1	Q: Bagaimana dengan Penerimaan Grafik Kode QR?
	A:
2	Q: Apakah Keuntungan untuk digunakan?
	A:
3	Q: Apakah sistem menyediakan informasi traceability online?
	A:
4	Q: Bagaimana dengan biaya untuk aplikasi Sistem ini?
	A:
5	Q: Apakah Sesuai untuk Pengguna/ Pelanggan?
	A:
C	**Kelayakan Kode QR**
1	Q: Bagaimana dengan akses informasinya?
	A:
2	Q: Bagaimana dengan traceability secara online?
	A:
3	Q: Apakah Sistemnya Informatif?
	A:
4	Q: Apakah Sistemnya efektif baik Online maupun Fisik ?
	A:
D	**Aliran yang dirasakan**
1	Q: Apakah Anda terkesan dengan sistem ini?
	A:
2	Q: Bagaimana perasaan Anda ketika menggunakan sistem ini?
	A:
3	Q: Pada saat penggunaan sistem ini apakah ada suatu hal yang penting?
	A:
E	**Kepuasan pelanggan**
1	Q: Apakah Anda puas menggunakan aplikasi sistem ini?
	A:
2	Q: Bagaimana perasaan anda ketika menggunakan sistem traceability?
	A:
3	Q: Apa pendapat Anda tentang sistem ini?
	A:

Figure 2 Interview Guide
Source: Hossain, M. S., Zhou, X., & Rahman, M. F. (2018).

3.6 Data Validity Method

In this study, researchers must try to get valid data, for that researchers in collecting data must use data validity so that the data collected is not defective. To determine the validity/validity of the data, an examination technique is needed. The implementation of this inspection technique is divided into several criteria, namely: Credibility, Transferability, Dependability, and Conformability.

3.7 Data Analysis Method

The author uses data analysis in the field with the Miles and Huberman model, namely data collection is carried out repeatedly until complete and the data is considered credible.

The steps in the data analysis process in this study are: Data reduction (data reduction), Data display (data presentation), and Conclusion drawing / verification

4. Results And Discussion

4.1 Triangulation of Sources of Use of QR Codes in Stimulus theory

From the results of interviews with informants, we can find out the usefulness of QR Codes in Stimulus theory as follows:

1. It is easy for customers to check product information with a QR Code. With the implementation of the QR code system which is "easy, because it is IT-based" (INF 6), information is easily obtained and accessed directly by customers. "If there is no QR code system, you have to ask the factory/manufacturer" (INF 1).
2. Customers "connect easily with the traceability system" (INF 3). Customers "just scan the QR code" (INF 1) in the product on the search site provided by the company.
3. The existing QR Code system is "effective for online product traceability" (INF 2), customers without the hassle of contacting manufacturers to "provide information about the products they buy" (INF 7).
4. The design is actual and "user-centered so that it is easier for customers to get the info" (INF 1) so that it "helps in terms of product traceability" (INF 2).

4.2 Triangulation of QR Code Acceptation Sources on Stimulus theory

From the results of interviews with informants, we can know that QR Code Acceptance in Stimulus theory is as follows:

1. "Graphics can be matched with text" (INF 6), Can be read well "Very applicable, the information entered is as needed" (INF 3).
2. Can be used well, "We can know the origin of the product with a digital system" (INF 2), Shorten Time, and Very Helpful so that "customers are not worried about the product" they buy (INF 7).
3. The system provides online information, "can be accessed via cellphones and laptops" (INF 6). "This QR code system also adds value for me" and other customers (INF 1).
4. "Minimum fee / Zero" (INF 1). For this System application, "Affordable because the application is in every cellphone" (INF 2).
5. "Very suitable" (INF 4), according to user needs and in accordance with developments in technology and information.

4.3 Triangulation of Sources of Feasibility QR Code on Stimulus theory

From the results of interviews with informants, we can know that the feasibility of the QR code on the Stimulus theory is as follows:

1. Customers can easily access information by opening a browser and typing in the address provided by the company. The existing QR code "makes it easier for product traceability information with codes that have been translated in 2-dimensional form" (INF 1).
2. With the online system, customers are "simple and easy to operate" (INF 2). This QR code system is "Very practical, it can be searched via online" (INF 3).
3. This QR Code system is "very complete and informative" (INF 3), containing adequate information, "Informative about the expiration date" (INF 4), the main raw material catch area, and the name of the raw material supplier.
4. This QR Code system is feasible to use because it is "effective and works well" (INF 3) Online and Physical.

4.4 Triangulation of QR Code Perceived flow in Organism theory

From the results of interviews with informants, we can know that the perceived flow of Organism theory is as follows:

1. Customers are impressed with this system, can "check directly without having to contact the seller" (INF 1), and the QR Code System is very helpful. "The system is up to date but information on nutritional status needs to be added" (INF 7).
2. The feeling of customers when using this system is easy, "simple, fast, practical" (INF 3), and using a QR code can speed up work. Customers are "very happy and don't hesitate to buy the product" (INF 7).
3. "Concentration becomes critical" (INF 5) and more importantly, by using a QR Code, customers can be helped and the QR code can be read by a scan tool.

4.5 Triangulation of Sources of Customer Satisfaction on Response theory

From the results of interviews with informants, we can know that customer satisfaction in response theory is as follows:

1. Customers are very satisfied using this QR Code system, because the "application is easy to use" (INF 5). "I am satisfied, because the system is new" (INF 7)

2. Customer feeling when using this traceability system is "Easy and positive when using QR code" (INF 1). Customers "feel something new and are satisfied at the time of purchase" (INF 6).

3. Customers think that this system is "suitable for use & can be recommended to other customers" (INF 5). "This system is very interesting, I hope all products have this QR code system" (INF 7).

5. Conclusion

Based on the results of S-O-R theory testing, interviews with informants, and discussion of analysis, it can be concluded that:

1. In Use of QR Codes in Stimulus Theory It is easy for informants to check product information with QR Codes. With the implementation of the QR code, information is easily obtained and accessed directly by customers. The existing QR Code system is effective for online product traceability, customers without the hassle of contacting manufacturers for product information they buy.

2. QR code on Stimulus theory can be accepted by customers, Graphics can be matched with text Yes, read well Very Applicative, Information entered as needed. Minimum / Zero cost for this system application, affordable because the application is available on every Android phone or laptop. Thus this QR code system adds value for customers.

3. Customers can easily access information by opening a browser and typing in the address provided by the company. The existing QR code makes it easier to trace product information with codes that have been translated in 2-dimensional form. This QR Code System is very informative, contains sufficient information. Informative about the expiration date, the main raw material catch area, and the name of the raw material supplier. This QR Code system is worth using because it is effective and works both Online and Physical. Thus the QR Code can be said to be feasible on the Stimulus theory.

4. On the perceived flow in the Organism theory, the customer feels impressed with this system. Concentration becomes critical, can be checked directly, and can be read by a scan tool without having to contact the seller. The feeling of customers when using this system is easy, simple, fast, and practical and by using a QR code can speed up work

5. Customer Satisfaction on the theory Response tested when the customer said he was very satisfied using this QR code system, the customer's feeling when using this traceability system was easy and positive when using the QR code. Customers think this system is worth using and can be recommended to other customers

6. Recommendation

This study suggests for further researchers that researchers should do the following:

1. Future researchers, with similar topics, are expected to be able to use theory testing other than S-O-R. Performance analysis theory that can be used is the Balanced Scorecard, where in this theory there are four perspectives that represent all aspects of the company, namely: (1) Financial perspective (financial), (2) consumer perspective, (3) Internal business perspective, and (4) Learning and Growing perspective.

2. Further researchers are expected to be able to develop this research by using other sectors as research subjects, such as the Transportation Industry, Computer Industry, Electronic Industry, Construction Industry that uses QR Code as a traceability code and QR Code as a means of payment.

3. For companies, the implementation of a defensive strategy is quite effective in measuring the level of customer satisfaction with a product. By applying this QR code to other products, it will add a value for customers, so that it will increase sales and automatically increase profits.

7. References

Bosona, T., & Gebresenbet, G. (2013). Food traceability as an integral part of logistics management in food and agricultural supply chain. *Food control*, *33*(1), 32-48.

Chen, M. F., & Huang, C. H. (2013). The impacts of the food traceability system and consumer involvement on consumers' purchase intentions toward fast foods. *Food Control*, *33*(2), 313-319.

Cunha, C. R., Peres, E., Morais, R., Oliveira, A. A., Matos, S. G., Fernandes, M. A., ... & Reis, M. J. C. S. (2010). The use of mobile devices with multi-tag technologies for an overall contextualized vineyard management. *Computers and Electronics in Agriculture*, *73*(2), 154-164.

Effendy. (2003). Ilmu Teori dan Filsafat Komunikasi, Bandung: PT. Citra Aditya Bakti.

Frewer, L. J., Kole, A., Van De Kroon, S. M. A., & De Lauwere, C. (2005). Consumer attitudes towards the development of animal-friendly husbandry systems. *Journal of Agricultural and Environmental Ethics*, *18*(4), 345-367.

Hossain, M. S., Zhou, X., & Rahman, M. F. (2018). Examining the impact of QR codes on purchase intention and customer satisfaction on the basis of perceived flow. *International Journal of Engineering Business Management*, *10*, 1847979018812323.

[KKP] Kementerian Kelautan dan Perikanan. (2015). Kelautan dan Perikanan Dalam Angka 2015. Diunduh 2019 Februari 22. Tersedia pada:http://www.statistik.kkp.go.id

Kotler, Philip & Keller. (2008). Manajemen Pemasaran. Edisi Ketigabelas. Jilid 1. Jakarta: Erlangga.

Kotler, Philip. (2014) . ManajemenPemasaran,.Edisi 13. Jilid 2. Prenhalindo. Jakarta.

Lavelli, V. (2013). High-warranty traceability system in the poultry meat supply chain: A medium-sized enterprise case study. *Food control*, *33*(1), 148-156.

Regattieri, A., Gamberi, M., & Manzini, R. (2007). Traceability of food products: General framework and experimental evidence. *Journal of food engineering*, *81*(2), 347-356.

Ruiz-Garcia, L., Steinberger, G., & Rothmund, M. (2010). A model and prototype implementation for tracking and tracing agricultural batch products along the food chain. *Food control*, *21*(2), 112-121.

Saltini, R., & Akkerman, R. (2012). Testing improvements in the chocolate traceability system: Impact on product recalls and production efficiency. *Food Control*, *23*(1), 221-226.

Soon TJ. QR code. Syn J 2008; 20: 59–78.

Standardization, I.O.F., (2007). New ISO standard to facilitate traceability in food supply chains. ISO 22005:2007

UN COMTRADE. (2018). United Nations Comodity Trade Statistics Database. Diunduh tanggal 22 Februari 2019 dari www.wits.worldbank.org.

Valentino, O., & Surianto, M. A. (2022). Pengaruh Kualitas Layanan Inovasi Layanan Dan Nilai Pelanggan Terhadap Kepuasan Pelanggan Pada Travel Dulin Diluk. *Jurnal AKMAMI (Akuntansi Manajemen Ekonomi)*, *3*(1), 87-96.

Zhang, C., Bai, J., & Wahl, T. I. (2012). Consumers' willingness to pay for traceable pork, milk, and cooking oil in Nanjing, China. *Food Control*, *27*(1), 21-28.