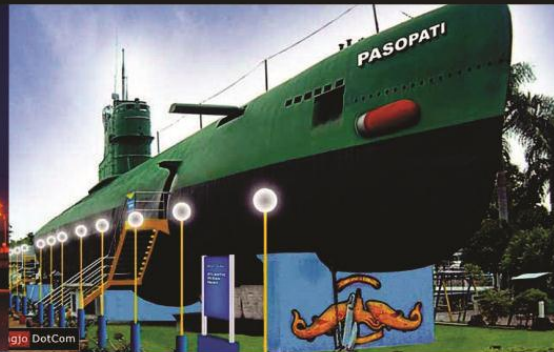# PROCEEDING

The 2nd International Conference on Industrial Engineering and Service Science

IESS 2013

Challenges and Opportunities of Service Industry in Emerging Economies

20-22 August 2013
Majapahit Hotel, Surabaya

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Invited Speakers

Amrik Sohal
Professor, Monash University, Australia

Amrik S. Sohal is a Professor in the Department of Management at Monash University, Australia. He has authored or co-authored over 150 papers published in refereed journals, as well as three books and a number of chapters contributed to books. His current research interests are in operations strategy, technology management, quality/innovation management and supply chain management. Professor Sohal is a member of the Editorial Board of a number of journals in the area of quality management, technology management and operations management. Professor Sohal has received research grants from the State and Federal Governments, the Australian Research Council, local industry and Monash University. In 2001, Professor Sohal received the Vice-Chancellor's Award for Postgraduate Supervision. In 2004, he received an award for research excellence from the International Association for Management of Technology and in 2009 the publications award from the same organisation. In 2010, Professor Sohal received the Dean's Award for Excellence in Research.

Rajesh Piplani
Associate Professor, The school of Mechanical and Aerospace Engineering, Systems and Engineering Management Nanyang Technological University, Singapore

Dr. Rajesh Piplani is the director of the Center for Supply Chain Management at NTU. He obtained his M.S. in Industrial Engineering from Arizona State University in 1990, and his Ph. D. from Purdue University in 1995. Dr. Piplani is listed in Marquis Who is Who in Science and Engineering in USA (1998-1999). He has over seven years of industry experience in India and USA in the areas of Supply-chain management and production planning of power plant equipment and semiconductor fabrication facilities. Since 1998, he has been on the faculty of NTU. He is Program Manager, Integrated Manufacturing and Service Systems (IMSS) for Singapore funding agency A*Star, managing the SGD 8 Million program. He is an associate consultant with Y3 Technologies. He also sits on the eSCM council of Singapore Manufacturers Association and council of Supply Management Institute of Germany.

PREFACE

The 2nd International Conference on Industrial Engineering and Service Science (IESS - 2013) was organized by Industrial Engineering Department of Institut Teknologi Sepuluh Nopember (ITS) in collaboration with Department of Decision and Information Sciences at the Charlton College of Business, University of Massachusetts Dartmouth (USA) and Industrial Engineering Department of Gunadarma University, Indonesia. IESS is a cross disiplinary conference that brings together leading scholars, researchers, teachers and practitioners examining the blend of Industrial engineering discipline and service science and their impact in today's business practices.

This conference was convened following the previous conference under the same title held in Solo, Central Java at 2011. This year conference theme's is **"Challenges and opportunities of service industry in Emerging Economies"**.

In this conference we have received more than 115 submissions. After thorough peer review process, we have selected seventy three papers to be presented. This process was performed in order to assure the quality of the papers in presentation sessions. We thanks to all reviewers who have spent hours reviewing all the assigned submission and ensuring the quality of the papers.

Finally we would like to express our sincere thanks to those who have paid a great deal of effort and time for preparing and organizing the IESS 2013, and to take this opportunity to express our sincere appreciation to all the presenters, delegates, reviewers, keynote speakers for their interesting and valued contributions. Our special thanks also go to our Silver Sponsor, PT Telkomsel Indonesia for providing generous support for this conference.

August 20th 2013

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CONTENTS

What Customer Want From Online Bookstore?

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ABSTRACT

Nowadays, retail must run multichannel store to increase its revenue and satisfy the customer. Besides the physical store, they also need an online store to accommodate the customer who chooses Internet as their way to shop. X Store, as the biggest bookstore in Indonesia, realized about this trend and since 2002 they built their online shop, it is named X Online. This research has an objection to give suggestions for factors that influence the customer buying interest, based on a statistical test series. It will help the X Online to do some effective ways and win the competition. We did the descriptive analysis to check the respondent demography and customer score for each variable, for satisfaction and importance factors with Likert scale from 1 to 5. To see the relationship between customer demography and the variables, we used the Crosstab analysis. Followed by Manova test to see the difference between satisfaction and importance level, then the last was Quadrant analysis, to find which factors are weak, so X Online must focus on it. The result showed that the customer felt satisfied for on time delivery. Crosstab analysis showed there was a relationship between X Store customer and X Online customer. They who have ever shopped at X Store with the minimum frequency once a month, also shopped at X Online. From Quadrant analysis, we knew that the strengths of X Online were collected, wide range delivery, guarantee, on time delivery, book condition, and data security. The weaknesses were product availability, price and discount, simplicity and order procedure.

Keywords: *customer satisfaction, buying intention, physical and online store*

1. Introduction

The internet becomes a new phenomenon in this world. The ways people connected is changing, and it is including how they have a trade-in. As a customer, they want more customization for their product or service. For product, they want the exact or a specific product that can fulfill their needs, with some requirements, like the affordable price, faster delivery, and easiness to pay. It is the same for the service. The customers want to have a good experience from the seller. They just want to sit in their house, and the product or service will come. They need more satisfaction than before.

How sellers sell their product or service also changing. Sellers must face off the tighter competition now, and it makes them must find the way to win the competition. There is no other way than fulfills what the customer want, moreover to be a pioneer in the customer expectation. Therefore, a seller with a good product has enough availability, faster delivery, process all the order anytime, and accept various kinds of payment, will be a winner.

People sell and buy through the Internet become a habit since the Internet introduced in the late of 1980. That is why an online shopping appears as the way to fulfill customer orders. However, the online shopping already becomes a trend, and the growth is good. Last year, in 2012, there was an increasing until 15% of the online shopping in Indonesia market. It means that Indonesian choose other channel to buy something, and it related to the more active and mobile person, that makes they only have a few times to buy something. Online shopping becomes a solution.

There are three types of online shopping. The first is Business-to-Business transaction, from an organization to another organization. The other is Business-to-Customer transaction, or from organization to the user. The last is Customer-to-Customer; the individual person will sell the product (new or used) to another user. That is why the physical store must consider about this new channel, to fulfill customer demand and increasing their revenue.

The acceleration of retail competition has changed the nature of retailing. Today, retailers are using customer service to provide an important competitive advantage to their firm, to differentiate their firm from others [1]. Retailers are being faced with many challenges today. Especially when the Internet penetration growth is very fast. Indonesia as the fourth largest countries in the world has an interesting market to explore. Like the other country, Indonesian also used the Internet to get interaction with other, especially in the social media. Another activity is online shopping, even though it still cannot beat the physical store revenue. Indonesian still buy in store because they treat shopping as the recreation, and they more trust the physical store rather than an online store. But with a better income, a bigger percentage of younger than the older and a consumptive lifestyle, it makes the online shopping easy to optimize the new trend. In addition, it is affected to

their shopping habit. Usually they buy something by visiting the store. Now, because of the bad traffic jam, the mobility of the young executive, it makes them have no time to explore the store to find something they need. For the younger age, buy online become a trend, and for them who lived not in the big city, it is the way to get latest fashion stuff.

But it is not the easy way to influence them to make the online shopping, because they still deal with the unpredictable delivery company, non-qualified seller, and product defect. That is why if they can choose, they will choose physical store first (if they can access it) than the online store. It is not easy to make them trust the online seller. It is the challenge that every store must face. X Store, as the biggest bookstore in Indonesia, also has a plan, to develop an online store, named X Online. X Store was built in 1980, and its follow by X Online in 2002. A serial improvement was added into the website. The last improvement was in 2010, the website becomes the fixed one, and ready to increase the customer buying interest. Even though X Online was the first online book store in Indonesia, but the growth was not very good. The management started to take it more seriously because there were some new online book store that had a fast growing. They offered cheapest price, fulfilled the customer's need about mobility and easiness.

There was a problem in this research : can the website fulfill the customer needs? What were the variables that become the strength and the weakness factor? Moreover, how to improve the unsatisfied variable?

This research took a Surabaya's customer as the respondent. This research found out the customer score of variables that have already done by X, for both of the stores. The information was collected with questionnaire, interview and analysis of the existing website. The data became an input to the next process, to find the solution for the problem, how to increase customer buying interest. The respondent was selected based on their experience shopping in both stores (purposive sampling), because this research guarantees its validity and reliability. After we had found out the score, then we knew which one has the strongest position and the weakest. It leaded us to give suggestions to improve or maintain those variables.

The methods were interviewing, questionnaire that is spread near X Store and sent by email. The result must pass the validity and reliability test to guarantee its consistency and the properness to the next process. We did the descriptive analysis to analyze the respondent demography. Then it was continued with Crosstab analysis, to see if there is a relationship between the demography and the result. Manova was used to find the gap between the importance and satisfaction factor. We used Likert scale from 1 to 5 to represent respondent choices. The last data processing was Quadrant analysis to see each position of the variables. Then after all the data processing series was finished, we can give suggestions for both stores that we hope will help them to improve their performance efficiencies, because they can focus only on the important factors.

2. Background

Redefining the role of customer service in retailing to go beyond the store level, into the supply chain, creates many new issues for retailers. Retailers must place an ever-increasing reliance on the performance of their supply chain partners. Retailers expect complete order fill, short and reliable order cycle time, accurate and timely information, and rapid error correction on the part of vendors and warehouses. The challenge for retailing logistics is to seize the opportunities for improved customer service. Retailing logistics must establish and maintain good supply chain relationships. Good supply chain relations include maintaining realistic expectations and recognizing opportunities for improvement in operations [2].

Customer service is an increasingly important focal point for retailers. Whereas customer satisfaction represents meeting consumer expectations at a retail level, customer service involves upstream channel relationships. More specifically, customer service can be defined here as ``a process for providing significant value-added benefits to the supply chain in a cost-effective way''. Customer service includes such factors as order completeness, cycle time, consistency of performance, and response to errors, special requests and services, and information requests.

Physical distribution service (PDS) is defined as a type of logistics service involving stocks and transportation activities and has served as the context of research investigations in the service quality and marketing literatures [Bienstock, in 1]. For example, Stewart [in 1] defines physical distribution as ''the science of business logistics whereby the proper amount of the right product is made available at the right place where the demand for it exists at the time it exists'' and identifies the significance of physical distribution in improving firm profits.

After a comprehensive review of the literature on physical distribution service, Mentzer et al. [In 1] call for the need to examine how the underlying dimensions of physical distribution service – availability, timeliness, and quality – should be integrated into the overall customer service package to best meet customer's expectations and needs. In another related study, Innis and La Londe [in 1] suggested that customer service as the output of physical distribution may be among the key drivers of a firm's competitive advantage. Innis and La Londe [in 1] find that customers rate the physical distribution service items as some of the most important attributes that a firm has to offer, and illustrate the role of customer service and physical distribution in affecting the level of customer satisfaction, attitudes, and repurchase intention. According to

Innis and La Londe [in 1], more research is needed to examine the role of customer expectations pertaining to physical distribution service and how it affects the satisfaction assessments.

Based on the customer's purchasing process, as defined primarily by shopping effort, Copeland [in 1] classifies products into three groups: convenience goods, shopping goods and specialty goods. It is now well recognized that the effectiveness with which firms are able to fulfill orders in their electronic business-to-customer (B2C) transactions is a significant determinant of customer satisfaction and retention [in 1]. A business to customer (B2C) activities must give attention to their customer desire, what they need and what they want, how to change from want the area to be the need area, and how to fulfill it. The customer wants satisfied with all the retailer actions. In the context of electronic B2C transactions, Kauffman and Walden [in 1] observe that ''since the new economics of electronic commerce depend to a great degree on the characteristics of the products transacted on the Internet, it is important to understand the nature of these products and their value to the consumer.''

3. Research Design

We collected the data by doing a market research that surveys customers on their actual shopping experience. The variables were coming from some literatures [3], [4], [5], [6]. The ratings provided information to customers about X Store and X Online across different aspects of the purchase process, as shown in Table 1. The survey used a 5-point scale to measure levels of satisfaction.

Table 1. Variables in X Online Customer Survey

No	Variables	Satisfaction Mean	Importance Mean
1	Web appearance	3.938	3.688
2	Collection	4.094	4.094
3	Product availability	3.750	4.031
4	Display	3.688	3.313
5	Price	3.781	4.281
6	Discount	3.563	4.188
7	Delivery area	4.438	4.125
8	Traceability	3.281	3.938
9	Promotion media	3.000	3.469
10	Responsive	3.913	3.531
11	Friendly staff	4.043	3.094
12	Payment variability	3.067	4.000
13	Simply procedure	3.719	4.125
14	Guarantee	4.724	4.469
15	Clear procedure	3.125	4.156
16	Clear information	4.188	3.875
17	On time delivery	4.469	4.125
18	Book condition	4.781	4.563
19	Data security	4.741	4.594
20	Accurately	4.813	4.563

We used those variables as questionnaire to the X customer, to filter which one is fit with the store's condition. Then, we did pre-sampling of 30 respondents to make sure the questionnaire is fully understood by the respondents. Questionnaire consisted of two parts, the first part is about the respondent's profile and the second part consists of important and satisfaction for the variables, in Likert scale. Sampling was for 116 respondents, by email or directly was given to the customer.

Then we did reliability and validity test to guarantee the result. We did the validity test, for both pre-sampling and sampling to measure how accurate this questionnaire did the function. At SPSS 17.00, the variable is valid if Corrected Item Total Correlation > r table. For pre sampling with 32 respondents, the r table was 0.2407, for sampling with 116 respondents was 0.1188. The entire validity test shown the result was valid. With the reliability test, we knew how consistent the questionnaire as the measure equipment. Reliable results have *Alpha Cronbach* value more than 0.5, and both the pre sampling and sampling test were reliable.

4. Results

For the X Online, 62,5% customer was women, 68,75% is 20-29 years old, dominated by university students (46.88%), related to the last education is a senior high school (43.75%), the respondents' income percentage is almost the same, from

500,000 IDR until more than 2,000,000 IDR. They said that the main reason they like X Online was they didn't need to go to the store (22.64%), followed by trying a new concept of retailing. For the suggestion, they suggested to increase the promotion, and make a clearer information and procedure. Most of the customers (51.72%) answered they had regular level of interest to repurchase at X Store, while for the X Online, the percentage is 53.13%. For X Online new customer, those who have never bought online, the percentage become 41.67%. This result happened because of the less promotion and people still have entrusted to the online seller. Another reason was they still prioritize to explore the physical store.

Satisfaction level for the X Online was 3.56 in 1-5 scale. This score was average, because only a few customers felt familiar with the new store format. From the important factor, the most important things were on time delivery, book condition and guarantee. Therefore, the customers wanted the credibility from the online store, to make sure they will get the same product as if they can get from the physical store. For those who have ever known about X Online, they felt satisfied with the on time delivery; book condition and the data security. In here, we could see that actually X has fulfilled the customer need in a very good way. The problem was only a few people, they who have ever tried, felt that effort.

We did the Crosstab analysis to know if there was a relationship between respondents' group and variables. The groups were respondents who have ever bought into X Online and they who have not bought online. It was related to the customer profile, like occupation, age, and expense per month. The hypothesis was:

H_0:   There was no dependency between buying experience and respondents' profile.
H_1:   There was a dependency between buying experience and respondents' profile

We refused H_0 if the significance value is less than $\alpha = 5\%$. In other way, if expected count less than 5 more than 20% there was cell combination. If the significance value was more than 5% and expected count less than 5 more than 20%, there was no analysis about it. After we did the analysis, there was a relationship between shopping experience and shopping frequencies at X Store, but the score was low. They who purchased once a month at X Store purchased at X Online too. This result happens because X Store customers got the information more about X Online.

The Manova test has been done for knowing if there is a significant difference between respondent group, which was customer who have ever purchased to X Online and have not purchased to X Online. There was hypothesis for it:

H_0: There was no significant different in importance level between customers who purchased online and the customer who has not purchased online.
H_1: There was a significant difference between importance level for customers who purchased online and who have never purchased online.

Because the significance Wilks' Lambda $< \alpha$ while $\alpha = 5\%$, we refused H_0 or there was a significant difference between these two groups. Because of that reason, we continued with the analysis, to predict which variable was different between the two. The significant pairwise comparison showed the result if the book information, collection, availability, interesting display, area of delivery, easily to find the book by web, promotion, friendly service, and order easiness. Which one was better than another? This question can be answered by comparing the mean between these groups. For all the variables, which were different, the groups who have never purchased at X Online have a higher meaning. It had meaning that they expect more to this retail format, because they still felt entrusted or afraid with the new way to buy the books. For customer who have purchased, they understood they do not need to worry about these variables.

The Quadrant analysis for X Online was started with grand mean measure for the satisfaction and important level at the border among the quadrant. The grand mean was (3.956; 4.011).
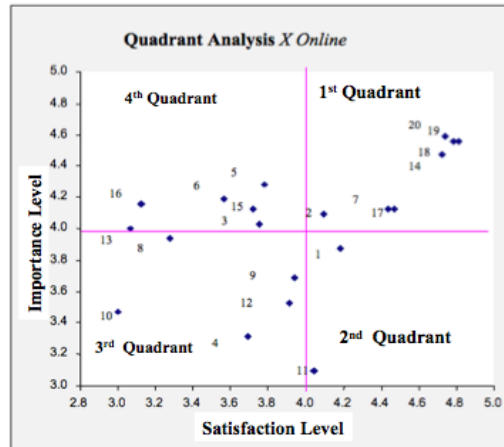
Figure 1. Quadrant Analysis

There were seven variables included in the first quadrant, two variables in the second quadrant, six variables in the third quadrant and five variables in the fourth quadrant. In the first quadrant means this variable had a high importance and satisfaction level, so we concluded the performance was good. The variables were the collection, delivery area, guarantee, on time delivery, book condition, accurately and the data security. Related with the descriptive analysis, these variables were included in the very important category. It had meaning the X Online performance was good, and they need to hold out. For variables in the second quadrant, there were web appearance and friendly customer service. This had meaning both of the variables have a low important level, but the satisfaction level was high. So there was over performance, and it would be better if the X focus on the weak variables. In the third quadrant the variables had the low important and satisfaction level. Including in this quadrant, there were interesting display, traceability, web appearance, the promotional media, quick response, and various payment. For book display, better to show it larger so customers can see it clearly. In the search category, it needed to add a category like author, published a year, and theme. For a quick response, it needed 24 hours operator or longer operating hours, because sometimes it was difficult to contact the operator. For various payments, X Online should consider other payment method like cash on delivery for the same city, cash, credit or debit.

Other variables are included in the fourth quadrant. There were about availability, price, discount, simplicity, procedure and clearer information. Those variables must become priority for X Online because the importance level was high, but the satisfaction level was low. For the availability, the web must be completed by the stock information, besided improving their inventory management, because they could fulfill the customer needs, and made the operational cost more efficient. The book in X Online had the same price with the X Store, and was added by the delivery cost. The price became uncompetitive. It's better if X Online tried to reduce the profit margin, and sent them from the nearest X Store, to get the cheapest delivery cost. X Online given a 10 % discount, but this value had not satisfied the customer yet. X Online could give bigger discount in a special occasion, slow moving book, or for loyal customers. The order simplicity was in the fourth quadrant because the procedure to order the book was quite long. X Online should consider making the procedure simpler and finding the easiest way to make the customer satisfy. This must be completed with the clear instruction so customers will easily follow the way. For example made points for the instruction, because based on the dual coding theory [7]. the human cognitive consist of two systems, verbal and visual. X Online could use both of them, to make the customer more remember the procedure.

5. Conclusion

Crosstab analysis shown there was an effect between customers purchased frequency at X Store, with the purchased in X online. They who purchased once a month at X Store would purchase from X Online too. From the quadrant analysis, we knew the strengths and weakness of X Online. The strengths were collected, delivery area, guarantee, on time delivery, book condition, selection and data security. The weaknesses were book availability, price and discount, simple and clear procedure, and clearer information. Our suggestion was X Online should improve their inventory management and build the more accurate databases, integrated for a whole store. The new procedure would simplify the 4 steps, and the instruction must be in points, combine between visual and verbal.

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