CROSS SELLING PRODUCT BUNDLING BASED ON CUSTOMER SATISFACTION STUDY CASE MEAT & FOOD SUPLIER X

Putu Surya Sumartha[1)] and Febriliyan Samopa[2)]
*M*aster's Program in Management of Technology, Institut Teknologi Sepuluh Nopember
Jl. Cokroaminoto 12A, Surabaya, 60264, Indonesia
E-mail : [1)]matadew4@gmail.com, [2)]iyan@is.its.ac.id

ABSTRACT

Meat and food supplier is a competition, where the competition is more stringent day by day. Every supplier is required to show their competitiveness in a creative, innovative, effective, and efficient way to becoming the eminent in the sector. Hence, the goods and services generated are chosen by many customers, which in turn the company will obtain loyal customer. One way to do is cross selling. Cross selling basically is a marketing method that is beneficial for both seller and purchaser. This study is alternative to look and develop marketing strategy for additional product that customer need without using survey. In this study, will use the menu served by each customer (hotel, restaurant, café) as reference to look for additional products required by customers and make an recommendation product bundling based on customer satisfaction for the purchased products

KeyWords: *Marketing Strategy, Cross Selling, Customer Satisfaction, Produk Bundling*

1. INTRODUCTION

Cross-selling is an old and valuable technique used by salespeople to increase order size and to transform single-product buyers into multi-product ones (Kamakura, 2008). Cross selling is best way to improve your sales, it ranks as a top strategic priority for many industries, including financial services, telecommunications, insurance, health care, accounting, airlines, and retailing (Shibo Li et al, 2011). It is also one of the main tools for managers to strengthen the customer relationship (Kamakura et al, 1991).

Unlike the acquiring of new business, cross-selling involves an element of risk that existing relationships with the client could be disrupted (Walia, 2014). One of the biggest mistake in the implementation of cross – selling is to offer products that are random or product they do not need. Customers were most annoyed when service reps continue to sell after the customer says

he's not interested, and they try to push products that are not useful to the customer (Walia, 2014). Bombarding the customer with cross-selling offers will train the customer to ignore these efforts.

The Objectives of this study is to take up challenge to minimizes the risk of annoying the customers with uninteresting offers and make an recommendation product bundling based on customer satisfaction for the purchased products to improve the effectiveness of cross-selling campaigns.

2. LITERATURE REVIEW

Maria (2007) in her paper titled "Uncovering Opportunities For Cross-Selling & Up-Selling In The Spains Financial Industry: Who, What And When" focuses research on the financial industry generally and the Spanish insurance sector, specifically. The objective of her paper is to help companies identify the most profitable customers to retain sector. Using data available from the customer database of a large financial services organisation, this paper applies statistical and data mining techniques to identify patterns in purchasing behaviour which facilitate predictive modelling, in particular, who will buy what and when.

Meera and Eswari (2011) in their paper titled "A Study On Customer Satisfaction Towards Cross Selling of Insurance Product and Supplementary Services –with Reference to Private Sector Banks in Coimbatore District" focuses to research customer satisfaction towards cross selling of insurance product by the private sector Banks. Their research centers around the dependent variable customers usage behavior and their relationship with the related independent variables such as Age, Gender, Marital status, Education, Occupation, Family Income, Number of years of banking and Frequency of visit to bank. Statistical tools Anova and Garrett ranking were used appropriately. Their paper find there is relationship between customer satisfaction towards cross selling of insurance product and the other services rendered by private sector Banks

Minal Shah, Sanjay Guha, Urvashi Shrivastava (2016) in their paper titled "Cross Selling And It's Impact On Customer Satiffaction : A Literature Review" tries to look at studies which have assessed cross selling or customer satisfaction or on both the aspects - cross selling and customer satisfaction. Their paper state cross selling gives the opportunity to present the new state or

existing additional product in front of the existing customer and try to get into more and more relationship with the customer, but before purchasing any additional product or services the customer should be satisfied with the existing product or services the customer is using

3. PROBLEM DEFINITION

The problem of the study is 1) What is alternative to look and develop marketing strategy for additional product that customer need without using survey?, 2) How to minimizes the risk of annoying the customers with uninteresting offers?, 3) How to make an recommendation product bundling based on customer satisfaction for the purchased products to improve the effectiveness of cross-selling campaigns?

4. DATA SOURCE

Data source of this research divided into 2. First collected from database purchasing and debt payments Suplier X from January 2016 – December 2016, where Supplier X is a commercial enterprise engaged in the field of meat and food suppliers which supply the needs of restaurants, hotels, catering, supermarkets, industry, as well as some hospitals in Bali. Second, Menu served by customer collected from internet like zomato.com, a web servise that gather information like menu served in restaurants, hotels, cafe across 23 countries

5. RESEARCH CONTENT

The approach of the paper consists of (1) identify customer satisfaction toward each product purchased (1) identify the most potential customers, (2) identify their additional products need using menu served by each customer (hotel, resto, café), (3) make an recommendation product bundling based on customer satisfaction

5.1 Identify Customer Satisfaction Toward Each Product

Customer satisfaction represents a modern approach for quality in business life and serves the development of a truly customer-oriented culture and management (Cengzi, 2010). Customer satisfaction usually measure by using numerical scrores, typically scales of 5, 7 or 10 are used

where the lowest figure indicates extreme dissatisfaction and the highest shows extreme satisfaction toward each factors measured, but developing a customer satisfaction programme is not just about carrying out a customer service survey. Customers express their satisfaction in many ways. Customer when they are satisfied, they mostly say nothing but return again and again to buy or use more. This study using stability on purchasing product to identify their customer satisfaction. Table 1 is presents data which contain data purchased product CW by customer X start from January to December.

Table 1. Quantity Purchased Product CW

Month	Quantity Purchased	Month	Quantity Purchased
1	81	7	67
2	85	8	55
3	67	9	71
4	67	10	78
5	88	11	64
6	62	12	58

Supplier want to know customer X satisfaction toward product CW, first step is analyse stability order product CW by customer X by sorting data purchased from low to high quantity (Table 2)

Table 2. Sorted Quantity Purchased From Low to High

Product CW	55	58	62	64	67	67	67	71	78	81	85	88

After data sorted then set value Q1 and Q3 for outliyer by

If data is even number using $Q1 = \frac{n+1}{4}$ $Q3 = \frac{3(n+1)}{4}$

If data is odd number using $Q1 = \frac{n}{4}$ $Q3 = \frac{3n}{4}$

Then make a plot data graph using data unsorted like present in Figure 1.

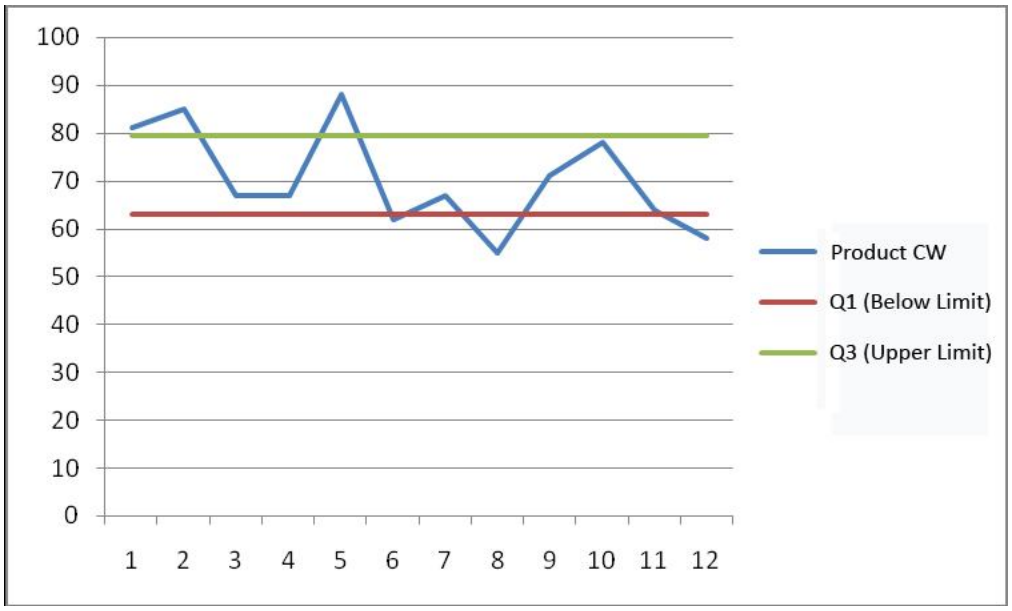

Figure 1. Plot Data Stability Order Product

Next step is identify reduction in order quantity it's by reason customer dissatisfied or it's because demand product CW in that month really low demand and vice versa. Table 3 presents data sum quantity purchased product CW from all customers from January to December

Table 3. Sum Quantity Purchased Product CW

Month	Quantity Purchased	Month	Quantity Purchased
1	255	7	311
2	254	8	182
3	249	9	227
4	231	10	364
5	269	11	216
6	219	12	166

Calculated Q1 as limit high demand and Q3 as limit low demand with same formula above. The result will be see in Figure 2

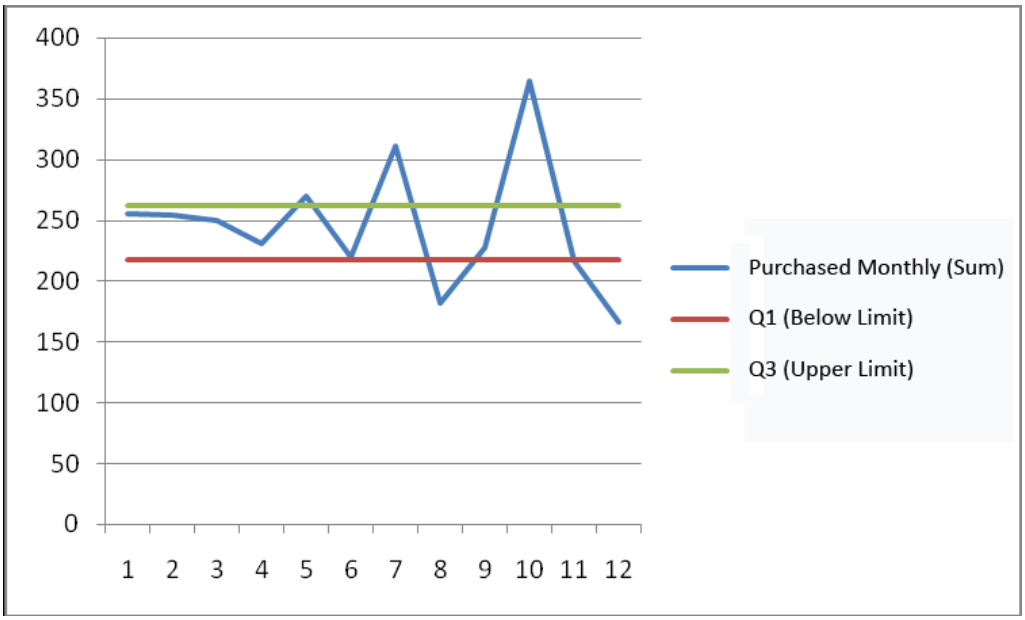

Figure 2. Plot Data Demand Product CW

We assumed customer X satisfaction toward product CW in month February is *highly satisfied,* based on Figure 1 display above average order compare Figure 2 It's display average demand product in that month. In month August we assumed customer X satisfaction toward product is *satisfied with product CW,* despite result Figure 1 display bellow average order purchased. Reduction in order quantity because in that month low demand for product CW as present in Figure 2

5.2 Identify The Most Potential Customer

Every business finds that some customers are more potential than others. This can be for a range of reasons, from the size of their purchases to the relative ease of managing their account. Zeithaml et al (2001) state in their paper, company need not serve all customers equally. Understanding who most potential customers are critical to sell more effectively. Kamakura et al (2003) state in their paper, an important aspect of the new orientation on customer relationship marketing is the use of customer transaction databases. By analyzing customer history transaction purchasing and payment, supplier can make segmentation which customer give profitable revenue and which customer pay on time without being chased for payment. Some customer maybe too

costly to do business with and have little potential to become profitable. While suplier may want to treat all customers with superior service, it's would be better off without for this cross selling campaigns

5.3 Identify Customer Additional Products

The right information will build up a useful profile of customers. The more information supplier can collect about their customer, the more opportunities to sell them new products and target them with appropriate offers. List menu served by each customer (hotel, café, resto) is one of that useful information to this cross – selling campaign. It's relative easy to find in internet nowdays. Table 4 present data history products purchased by customer X

Table 4. History Products Purchased By Customer X

Name Product	Name Product
Product CW	Product CP
Product CS	Product BT
Product CE	Product BB
Product TC	Product CB
Product TS	Product TP

Products with underline is product purchased by customer X in stable frequence. Table 5 present data menu served by customer and ingredients needed from product supplier A

Table 5. Products Purchased By Customer

Menu Customer X	Product Ingredient
Menu 1	Product BT
Menu 2	Product MB
	Product BT
Menu 3	Product CS
Menu 4	Product LR
Menu 5	Product LC
Menu 6	Product LM
	Product CG
Menu 7	Product CW
Menu 8	Product CS
Menu 9	Product PD
Menu 10	Product CW
	Product CE

Table 6. Additional Product Customer X

Name Product
Product PD
Product MB
Product LM
Product LR
Product LC

By knowing list menu served by customer, supplier can identified what products customer need for each menu served and it's make easier to look for additional product needed by customer X (Table 6). These additional product needed by customer X, but customer X purchased in other supplier (competitor).

5.4 Make An Automated Recommendation Product Bundling

In this study, we used bundling product to improve the effectiveness of cross-selling. Bundling has become a prevalent promotion strategy rapidly since it is capable of transform single product buyer into multi product ones and generating profit to sellers, which perfectly matches the objective of a cross selling. From the consumer's perspective, they will be able to save 8% on average through purchasing a bundle package with a discounted price [19], which is a key driver of bundling. Modern data mining can help generated recommended bundle product based on similia satisfaction other customer. Table 7 present products which meet or exceed customer satisfaction.

Table 7. Products Which Meet Customer Satisfaction

Name Customer	Name Product	Name Customer	Name Product
Name Customer	Name Product	Name Customer	Name Product
C001	CS, CW, PD	**C007**	CW, BT, MB, CS
C002	PD, BT, MB, LR, LM	**C008**	CW, CE, LR
C003	CW, CS	**C009**	LR, LC, PD
C004	LR, LC, BT, CW	**C010**	CW, PD, CE, CS
C005	CW, CE, BT, MB	**C011**	BT, CS, CE, CW
C006	BT, MB	**C012**	CW, CS

We analyze frequent itemset with algorithms data mining FP-Growth & FP-Tree. This algorithm works as follows: first it compresses the input database creating an FP-tree instance to represent frequent items.

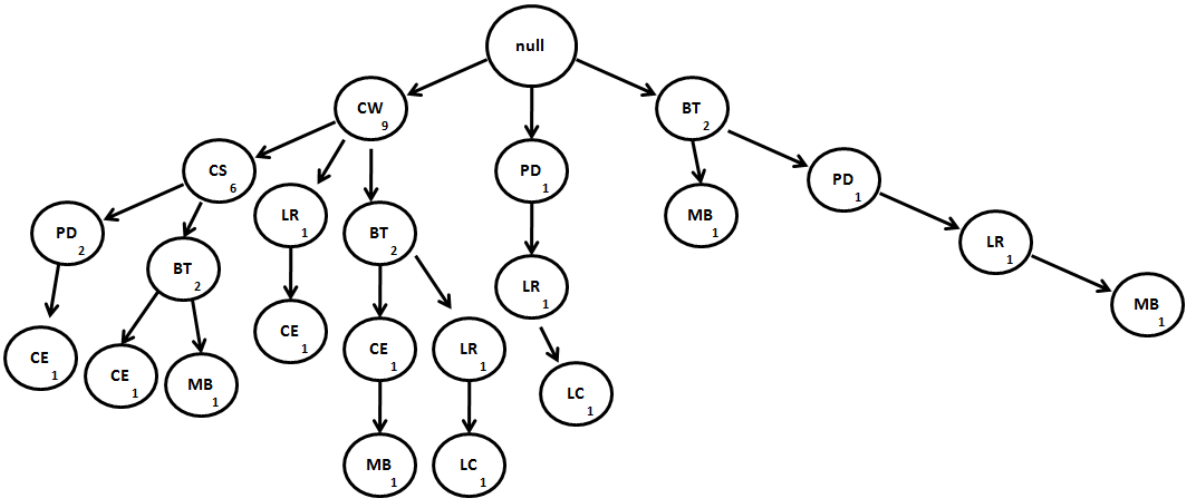

Figure 3. FP-Tree Data Customer Satisfaction

After this first step it divides the compressed database into a set of conditional databases, each one associated with one frequent pattern. Finally, each such database is mined separately.

Using this strategy, the FP-Growth reduces the search costs looking for short patterns recursively and then concatenating them in the long frequent patterns, offering good selectivity. The result frequent pattern which can be bundle product present in Table 8

Table 8. Products Which Meet Customer Satisfaction

Frequent Itemset
{CW, BT, LR, LC}, { PD, LR, LC}
{CW, CS, BT, MB}, {CW, BT, CE, MB}, {BT, MB}, {BT, PD, LR, MB}
{CW, CS, PD, CE}, {CW, CS, BT, CE}, {CW, LR, CE}, {CW, BT, CE}
{CW, LR}, {CW, BT, LR}, {PD, LR}, {BT, PD, LR}
{CW, CS, PD}, {PD}, {BT, PD}
{BT}, {CW, BT}, {CW, CS, BT}
{CW, CS}
{CW}

6. CONCLUSIONS

In this study finding it's alternative look and develop marketing strategy for cross selling without using survey. Identify customer additional products by analyze menu customer will help supplier to minimizes the risk of annoying the customer with uninteresting offers, because products will be likely needed by customer in their menu. Technology can help automate some of these processes, rather than relying on a sales or services representative to decide whether product to bundleing together, modern data mining utilizes analytical tools to study the customer's past behavior, correlate this information with similar customers, and then make a recommended bundle product based on that information.

7. REFERENCES

Cengzi, Emrah (2010). Measuring Customer Satisfaction : Must Or Not?. Journal of Naval Science and Engineering : 2010, Vol. 6 , No.2, pp. 76-88

Kamakura, Wagner.A. (2008). Cross-Selling : Offering the Right Product to the Right Customer at the Right Time. Journal of Relationship Marketing : Volume 6, 2008 - Issue 3-4.

Kamakura, Wagner.A., Ramaswami, S., and Srivastava R. (1991). Applying latent trait analysis in the evaluation of prospects for cross-selling of financial services. International Journal of Research in Marketing, 8, 329- 349

Kamakura, Wagner.A., Wedel Michael, Rosa Fernando De, Mazzon Jose Afonso (2003). Cross-selling Through Database Marketing : A Mixed Data Factor Analyzer For Data Augmentation And Prediction. International Jurnal of Research in Marketing 20, pp 45 - 65

Maria T. Salazar (2007) Uncovering Opportunities For Cross-Selling & Up-Selling In The Spains Financial Industry: Who, What And When. Proceedings of the 2007 Academy of Marketing Science (AMS) Annual Conference, The University of Edinburgh

Meera. C, Eswari. M (2011) A Study On Customer Satisfaction Towards Cross Selling of Insurance Product and Supplementary Services –with Reference to Private Sector Banks in Coimbatore District. International Journal Of Research In Commerce, Economics & Management : Volume No. 1 (November 2011)

Shah Minal, Guha Sanjay, Shrivastava Urvashi (2016) Cross Selling And It's Impact On Customer Satiffaction : A Literature Review. Abhinav International Monthly Refereed Journal of Research in Management & Technology : August 2016,Volume 5, Issue 8

Shibo Li, Baohong Sun, Alan L. Montgomery (2011) Cross-Selling the Right Product to the Right Customer at the Right Time. Journal of Marketing Research: August 2011, Vol. 48, No. 4, pp. 683-700.

Walia Tajinder Singh (2014) Conceptual Framework Of Cross Selling. Shiv Shakti International Journal of in Multidisciplinary and Academic Research : October 2014, Vol 3, No 5

Zeithaml, Valarie A. Rust, Roland T. Lemon, Katherine N. (2001) The Customer Pyramid Creating and Serving Profitable Customers. California Management Review : Summer 2001, Vol. 43 Issue 4, p118