

**CUSTOMER SATISFACTION AND COMPETENCIES:
AN ECONOMETRIC STUDY OF AN ITALIAN BANK**

Paola Gritti
Dipartimento di Economia Aziendale
And
Dipartimento di Scienze Economiche H. P. Minsky
Università degli Studi di Bergamo
Italy

And

Visiting Scholar
Center for Strategic Management and Globalization
Copenhagen Business School
Porcelainshaven 24
2000 Frederiksberg, Denmark[♦]

Preliminary; August 27, 2007

ACKNOWLEDGEMENTS:

The author wishes to thank Nicolai J. Foss of the Center for Strategic Management and Globalization – Copenhagen Business School – and Riccardo Leoni of the Dipartimento di Scienze Economiche Hyman P. Minsky - Università degli Studi di Bergamo - for their invaluable supervision. She also wishes to thank Torben Pedersen, Larissa Rabbiosi, Sabina Tasheva and Enrico Fabrizi for their constructive suggestions. This paper belongs to the research project (year 2007) coordinated by Prof. Riccardo Leoni and financed by Università degli Studi di Bergamo.

KEYWORDS: customer satisfaction, loyalty, customer profitability

JEL CODE: M5

[♦] e-mails: paola.gritti@unibg.it; pg.smg@cbs.dk

CUSTOMER SATISFACTION AND COMPETENCIES: AN ECONOMETRIC STUDY OF AN ITALIAN BANK

ABSTRACT

In an empirical examination we address customer satisfaction and loyalty in the banking sector and how they affect branch profitability. This helps to identify the strategy and competencies necessary to benefit from customer relationships, which are seen as paramount for the development of dynamic capabilities and, therefore, as a potential source of improved performance. We do that by analyzing data collected on 2105 customers of 118 branches of one of the biggest banks of an Italian group. We find that customer satisfaction impacts loyalty, which in turn has a direct effect on customer profitability. Moreover, loyalty is a mediator between customer profitability and two sources of customer satisfaction: relationships with the front office and the branch, on one side, and the products offered, on the other.

INTRODUCTION

During the last few years, the organization of firms has been increasingly structured in such a way as to optimize the absorption and use of valuable knowledge (Garicano, 2000).

Knowledge and learning are even more important in banking, which is characterized by increasing competition both from within and without the sector. Specifically, the Italian banking industry – which is the focus of this paper - has featured a number of trends, such as: the increasing demand for transparency between branches and their customers; ICT growth; the growing possibility to standardize routine transactions and the development of *knowledge management* (Camuffo and Costa, 1995; Keltner and Finegold, 1996; Hunter et al., 2001; Canato and Corrocher, 2004; Munari, 2000).

Reflecting this, the literature shows that organizational factors have an important role in building the ‘dynamic capabilities’ required for competing in the knowledge economy (Bartel, 2004; Bauer, 2003; Black and Lynch, 2005; Caroli and Van Reenen, 2001; Cohen and Levinthal, 1990; Cristini et al., 2003; Foss et al., 2006; Greenan, 1996; Ichiniowski et al., 1997; Zwick, 2003). Relationships seem to be a means to build such capabilities (De Jong-Noteboom, 2000; Sako, 2000; Teece, 1992).

Relationships can be characterized by both their nature (strategic alliances, vertical relationships, lateral and horizontal relationships) and their intensity (contact frequency and quantity of the information exchanged) (De Jong-Noteboom, 2000; Sako, 2000; Teece, 1992) and can be divided into two main groups: relationships within the firm, and relationships with the external environment. In the latter, two types of supplier-customer relationships can be found (De Jong-Noteboom, 2000; Sako, 2000; Teece, 1992). They are based on arms’ length contracts and relational contracts, respectively. While the former focus on relatively equal bargaining powers, to reach an agreement that is fair to both the consumer and the bank, the latter is characterized by informal arrangements sustained by the value of future relationships (Baker et al., 2002).

In this paper we focus on relational contracts. The literature suggests that the firms that adopt this type of contracts are characterized by customer-oriented internal policies and long-term relationships (Munari, 2000).

To the extent that the services produced by the industry are experience goods, banking firms are likely to nurture these kinds of relationships. To that end, a change of employees’ mentality is an essential factor of competitiveness for this sector in the knowledge economy. Thus, new competencies have to be developed. A customer-centered (not a product-centered) approach is needed, where the focus is on the personalized management of a certain number of accounts and not of a certain number of products (Camuffo and Costa, 1995).

Customer loyalty can be seen as an output of the internal competencies of the firm, but also as a crucial means to obtain knowledge. Knowledge of the customer is an important source of leads. Structured and long-term contacts generate business opportunities and further knowledge of customer needs. Finally, attention to customer needs and the quality of the offered services give rise to customer satisfaction and retention. In order to do that, proper internal competencies and, consequently, a firm organization that fosters knowledge sharing are necessary. Thus, customer satisfaction and loyalty are both a result and a source of competency creation (Camuffo and Costa, 1995).

Therefore, long-term relationships seem to have an essential role in reducing costs and in creating long-term customer loyalty, thus improving the performance of the firm. However, particularly inside retail banking, there is considerable lack of empirical evidence given that customer satisfaction and retention indices are difficult to measure (Munari, 2000).

The purpose of this paper is to fill this void by analyzing customer relationships inside retail banking, arguing that they are an important medium of knowledge and learning and therefore a potential source of improved financial performance. To do that, we test econometrically, for a sample of 118 retail branches belonging to one of the biggest bank of an Italian banking Group, the

relationship among customer profitability for the branch (as measured by the Rating), customer satisfaction and customer loyalty. We first explore whether there is any relation among customer satisfaction, loyalty and profitability for the branch to which such customers belong, and then we examine the nature of this relationship (i.e., if it is a direct one or if there are multiple causal relationships; if there are mediator or moderator variables).

EMPIRICAL SETTING AND DATA SOURCES

The econometric case study method

This research focuses on a single organization, a large Italian bank, in which our unit of analysis is the customer.¹ In doing so we adopt the econometric case study method, a fairly recent empirical approach that has received some criticisms about its limited value since findings cannot be generalized. Therefore, its external validity might be poor. However, according to Jones et al. (2006) and Baker et al. (2002), this method has external validity. These scholars also show the benefits resulting from the adoption of such an approach. Unlike firm-level studies, econometric case studies, such as Hamilton et al. (2003), make use of field work to acquire a thorough understanding of a firm, are able to investigate particular issues, because of the lower aggregation level employed, and allow the use of interviews, which may provide important clues as to how to interpret other data. Moreover, in the econometric case studies qualitative analysis assumes a supportive, and often important, role (Jones, et al., 2006).

Data Sources

The econometrical analysis presented in this work is based on two information sources: a Customer Satisfaction survey carried out by the commercial department of the bank analyzed and an external firm in 2005 on 20.000 retail customers² (stratified ex-ante sample); and a set of financial and operating branch data from 2005.

Considering the first source of data, two parts of the questionnaire are important for our research: the “Satisfaction” section and the “Loyalty” section. The first is divided into 6 areas: image, relationships (with the front-office personnel, with the manager, with the branch and communications); bank account and payment services; investment products; financing products; and insurance products. The second section is divided by product: bank account and payment services; investment products; financing products; and insurance products. Our data set includes other general information about the customers: length of the relationship with the managers in term of number of years; annual number of transactions; number of products that the customers hold; Rating;³ value of the products that the customer holds; and the AIR/BIR classification.⁴ The customers who collaborated were 2995.

The second source of data includes, for each branch: the value of its fixed assets and the investments made during 2005; interest margin and revenues from services; years in operation, number of employees, number of customers, and location.

Sample identification

¹ In addition, some relationships between the branch level and the customer level will be considered.

² The retail customers of a bank include individuals and small businesses. Besides, 20.000 was the number of customers asked to participate to arrive at a final sample of 2995 customers.

³ The rating measures the profitability of customers for the branch not only in terms of total revenue but also in terms of the number and value of the products they hold.

⁴ AIR/BIR is a classification of customers on the basis of their income and age.

Since the CS survey was conducted on a statistically representative sample of the customer population, we identified the sub-group of branches for which satisfaction data was in general informative enough.

Considering all⁵ the questionnaire variables of interest⁶ to us, we were able to build through the factor analysis a first synthetic satisfaction index for each customer. The customer satisfaction variables were categorical variables on a scale from 1 to 10 (from dissatisfied to very satisfied). For variables about products satisfaction, the average of the “logic” answers were considered, that is the answers of the customers who hold the specific product. Moreover, the loyalty variables were binary; the questions to which they are related are the following: ‘Do you use other banks?’; ‘Is [name of the bank] your main bank?’.

There were four types of product: bank account, investment, financing, and insurance. After consulting the marketing department, we excluded the insurance product because it seemed to be the one with the lowest impact on customer satisfaction. We then considered only the second question and totaled the corresponding answers. In this way we obtained a categorical variable on a scale from 0 to 3. Before running the factor analysis, we recoded all these variables on a scale from 1 to 4.

According to the international literature, we extracted the factors whose Eigen-values exceeded 1. In doing so, we obtained 2 factors. The first included customer satisfaction with the image of the bank and relationships with the managers. The second included customer satisfaction with: i. relationships with the front-office; ii; relationships with the branch; iii. the products.⁷ The loyalty variable coefficient seemed too low to be taken into consideration in any factor. A confirmation of our choice to keep two factors came from the screen test.

We then estimated a synthetic customer satisfaction index by totaling the factors, weighting them with the variance explained.

Table 1 shows the factors obtained.

Insert Table 1 here

Starting from these indices, we calculated the average satisfaction with each branch. It should be noted that we did not adopt a weighted mean in order to give each customer adequate importance. This was possible thanks to double stratification, which assigns the right proportion to the different types of customer in the sample. Since some branches show a very low samples number, in order to identify the sub-group of branches with average satisfaction data that was informative enough, we adopted the following criterion. The confidence interval was calculated at the 95% level for the mean μ_i of the synthetic satisfaction index (y), with the hypothesis that this index featured an approximately normal distribution. The confidence interval is defined by two boundaries $IC_{i,0.95} = (\mu_{i.INF}, \mu_{i.SUP})$. This means that the probability that the real mean (calculated on all the customers of the branch) lies between the two boundaries is 95%. The two boundaries are determined by the following formula: $\mu_{i.INF} = \bar{y} - 1.96\sqrt{\hat{\sigma} / n_i}$, $\mu_{i.SUP} = \bar{y} + 1.96\sqrt{\hat{\sigma} / n_i}$, where $\hat{\sigma}$ is the standard deviation of the synthetic satisfaction index for the entire population level:

⁵ Here, in order to build this first synthetic index, we also considered the variables chosen inside the loyalty section of the questionnaire and all the satisfaction variables (except the one about communication). As indicated in the paper, we will use for our models another index with only some customer satisfaction variables about relationships.

⁶ In the next paragraph – Database – a detailed description of our choices and the reasons that guided us is provided.

⁷ The third component has a very low impact compared to the others.

$\hat{\sigma} = (n-1)^{-1} \sum_{i=1}^n (y_i - \bar{y})^2$. Then, the variance of the synthetic satisfaction index was assumed to be the same for all the branches.

Since $p_{97.5}(y) - p_{2.5}(y) = 9$ (to be more precise, the interval of variation between the 97.5th and the 2.5th percentiles is 9), the mean data for the branches for which $\Delta_i = \mu_{i.SUP} - \mu_{i.INF} \leq 6$ was chosen “heuristically” as significantly informative. The 367 branches in the initial sample became 118.

MEASURES

The following section provides the exact construction of the variables used in the model.

Rating

The rating is the dependent variable. It was built by the marketing department of the bank. It is defined as a function of: cross-selling (the number of products that the customer holds); the value of the products that the customer has; and the Mint, or the total revenue⁸ generated by each customer for the respective branch. Thus, the rating expresses not only a financial value of the individual customers for their branch but a complex, total value that includes, as noted, the number and the value of the products they hold that can have an effect on the branch’s performance, too. Rating varies on a scale from 1 to 8.

Loyalty Index

Loyalty expresses the extent to which the bank under study is the main bank for the customer. The corresponding question in the questionnaire is: ‘Is [name of the bank] your main bank?’. This question is repeated for each product. Thus, Loyalty is built as the sum of three binary variables. We recoded it on a scale from 1 to 4.

Customer Satisfaction Indices

The synthetic CS Index expresses total customer satisfaction. It includes the items of the questionnaire on customer satisfaction with relationships and products. Not all the variables are of relevance for our work. Some variables, in fact, about the bank, do not show any variance among the branches. After consulting the marketing department, this is the reason why we considered only the variables that referred to aspects that are not decided at the central level.⁹

More precisely, relationships are divided into relationships with: the front office; the managers; and the branch, while products are divided into: bank account; financing; and investments. All the variables were categorical variables on a scale from 1 to 10 (from dissatisfied

⁸ This is a measure of the financial performance of the branch at the customer level (intermediation margin).

⁹ In doing so, we obtained a total of 47 variables: 2 about customer satisfaction with the image of the bank; 5 about customer satisfaction with relationships with front-office employees; 6 about customer satisfaction with relationships with the managers; 5 about customer satisfaction with relationships with the branch; 1 about customer satisfaction with communications between the branch and the customer; 1 about customer satisfaction with relationships in general; 19 about customer satisfaction with products; 1 about customer satisfaction with the bank in general; and 7 about customer loyalty. Then, we considered the two main groups of variable available: one about CS with relations; and one referring to CS with the products. Moreover, we did not consider the first variable concerning relationships with front-office employees due to correlation problems.

to very satisfied). The overall index is built as a mean of all the items. This was possible thanks to a Cronbach's alpha value larger than 0.6 (0.95).¹⁰

In addition, since the items that we consider in our analysis are divided into two main groups - that is relationships and products - we defined two more variables, namely CS with relations, which measures customer satisfaction with relations (Cronbach's alpha value = 0.95), and CS with products, which captures customer satisfaction with products (Cronbach's alpha value = 0.87). Specifically, CS with relationships – the focus of our study - is the average of the responses to the items set out in table 2.

Insert Table 2 here

However, given the subject analyzed in this paper, it is interesting to investigate the existence of relationship sub-groups and their effect on CS. In order to test the existence of these correlations, we run a factor analysis on all the items referring to CS with relationships (i.e. the items described in table 3).

Following the above mentioned criteria, we obtained only one factor. Thus, in order to identify relationship sub-groups and their effect on CS, on loyalty as well as customer profitability, we forced the Eigen-values criterion, obtaining two factors. The first factor refers to relationships with managers while the second involves relationships with the front-office and the branch. It is worthy of note that the results are similar to those of the factor analysis that we conducted in order to identify the sample. This seems to give power to the factors we found.

Table 3 shows the factor analysis output.

Insert Table 3 here

The proportion's coefficients show that most of the variance is in general explained by the relationships with the managers.¹¹ This is also confirmed by the factors' coefficients.

Comparing the two factors, if time is a key aspect for bank account transactions, for investments or other more important transactions, customers place a much higher value on the competencies of the managers.

Considering the factors' coefficients, even though they do not vary significantly from one another, it seems that for both consultants and front-office employees, actual competencies are more important than training and expected or required competencies.

It has to be noted that also the impacts of the variables on the factors seem to be confirmed compared to the factor analysis that we ran to identify the sample.

We then obtained a synthetic customer satisfaction index by totaling the factors, weighting them with the variance explained.

Controls

Some controls have been added in the model at two levels of the analysis: the customer level and the branch level.

¹⁰ Thanks to the Cronbach's alpha value we were also able to build an index with the factor analysis. We obtained the same results in our estimation. Here, we are going to describe only the analysis run with the mean due to space problems. The results obtained with the factor analysis indices are shown in the Appendix.

¹¹ This is probably a consequence of the forcing in running the factor analysis.

At the customer level there are: the duration of the relationship in terms of years; the number of transactions; and the AIR/BIR classification.¹² The length of the relationship and the number of transactions through the bank account are continuous variables. AIR/BIR is a classification of customers on the basis of their income and age. It was recoded on a scale from 1 to 2: 1 if the customer is of low value for the branch and 2 if he/she is of high value.

At the branch level there are: the number of employees; the years in operation of the branch; and the location. The number of employees is a continuous variable. For the years in operation we used the natural logarithm. To control for the location of the branch we built two dummy variables: the first controls for the location in a city or in a town; the second controls for the location in the main province in which the Group operates.

This will allow us to observe the impact that some branch level variables have on the customer level dependent variable under study. In fact, an important source of information of these data is the fact that they are at two levels: a micro level, i.e. the customer, and a macro level, i.e. the branch.

Moreover, it is possible to depict the effects of the customer level controls on the customer level dependent variable and control for them.

Table 4 shows some statistics for the variables.

Insert Table 4 here

ANALYSIS

Model

Due to the type of our dependent variable, rating, which is a categorical variable on a scale from 1 to 8, we use for our estimation the ordered probit model.

The ordered probit model is defined as follows:

$$\Pr(y_{ij} \neq 0 \mid x_{ij}) = \Phi(x_{ij}b)$$

where i is the client, j is the branch, Φ is the inverse of the normal standard cumulative distribution, and $x_{ij}b$ is called ordered probit score or ordered probit index.

Moreover, we have controlled for the clusters. This option specifies that the observations are independent across groups (clusters) but not necessarily within groups.¹³

Thus, our models are the following:

$$\Pr[\textit{Rating}] = \alpha + \textit{controls} + \beta_1 \textit{CS} + \textit{errorterms} \quad [1]$$

$$\Pr[\textit{Loyalty}] = \alpha + \textit{controls} + \beta_1 \textit{CS} + \textit{errorterms} \quad [2.1]$$

$$\Pr[\textit{Rating}] = \alpha + \textit{controls} + \beta_1 \textit{Loyalty} + \textit{errorterms} \quad [2.2]$$

¹² We should not use the number of transactions and the number of products together (their correlation is about 0.5165); and with rating as a dependent variable, we have not used the number of transactions as a control, because rating is built as a function of this last variable.

¹³ Also the multi-level analysis shows that there are no characteristics at the branch level that have a significant effect on our dependent variables.

The first model tests the existence of a direct relationship between customer satisfaction and the value of each customer for the branch he/she belongs to.

The second model includes two equations. It is used to test whether there is an indirect relationship between customer satisfaction and the value of the customer for the branch. More precisely, we are going to test the role of customer loyalty: it could be a mediator variable (between CS and performance) or there could be a causal relationship.

Loyalty, in fact, would function as a mediator if it met the following conditions: (i) variations in levels of the independent variable (*CSI*) account significantly for variations in the presumed mediator (*Loy*) (i.e., Path (i)); (ii) variations in the mediator account significantly for variations in the dependent variable (*Rating*) (i.e., Path (ii)); (iii) when Paths (i) and (ii) are controlled, a previous significant relation between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when Path (iii) is zero. When Path (iii) is reduced to zero, we have strong evidence for a single, dominant mediator. If the residual Path (iii) is not zero, this indicates the operation of multiple mediating factors. From a theoretical perspective, a large reduction of the significance of the dependent variable demonstrates that a given mediator is indeed potent, albeit not both a necessary and a sufficient condition for an effect to occur (Baron and Kenny, 1986).

Results and Discussion

We first consider the impact of overall customer satisfaction on the rating (see Model 1, Table 5).¹⁴

Insert Table 5 here

First of all, we noted that in this model the number of observations is reduced substantially. Thus, in order to test the representativeness of the sub-sample, we ran a t-test on the differences between the means and the standard deviations of the two samples. Table 6 shows the results.

Insert Table 6 here

The sub-sample seems to be representative of the original sample. Just the number of transactions made by the customers seems to bias the sub-sample.

Considering the results in Table 5, the only controls that have significant effects are the ones at the customer level. This seems to suggest that what really matters for the value of the customers for the branch, that is for their ‘branch’s performance’, is the attention to the customer level elements. In particular, the length of the relationship and the number of bank account transactions are statistically significant. This means that the longer the relationship with the branch and the higher the probability that customers perform bank account transactions, the greater the probability that the customer becomes more profitable for the branch. It has to be noted that the length of the relationship with the branch could also be a proxy of relational competencies, so that the analysis shows that as these types of competency increase so does the profitability of the customer for the branch.

¹⁴ For all of our results we calculated the marginal effects. They confirm the directions of the impacts and give their intensity. They are available on request.

The first model also shows that there is not a direct relation between customer satisfaction and the value of the customers for the branch. The customer satisfaction index is, in fact, not significant, so that our first hypothesis is rejected.

However, the literature and the results of the first model seem to suggest that loyalty (or trust) could be another important variable for the subject of our analysis. Since there is no direct effect between CS and performance, as we have already noted, loyalty cannot be a mediator between these two variables. As described above, this is a condition for the existence of a mediation effect. What we are going to test is, thus, the existence of a causal relationship among Customer Satisfaction, Loyalty, and Rating. The test is performed by running models [2.1] and [2.2].

The results are presented in table 5, models 2 and 3. Also in this case, what really matters are the elements at the customer level. This is confirmed by the significance of a long-term relationship and the number of transactions for the Rating, while AIR/BIR classification becomes significant for the loyalty, to the detriment of the length of the relationship between the customer and the branch. Thus, if the customer is classified as an AIR, that is as the best typology of customer based on age and income, the probability that such customer will be more loyal to the bank increases. It has also to be noted that the size of the branch negatively impacts the loyalty probability. This seems to confirm that the bigger the firm, the more relationships within it are difficult, as this involves lower delegation, motivation, attention to employees and thus to customers. Moreover, we might argue that the experience of the branches and their location do not influence customer loyalty and their value to the branch. However, the general experience of the branch has not to be confused with the development of relational competencies, which seem to have a direct impact on the profitability of the customers, even though they are not of direct relevance to their loyalty.

Considering our main independent variables and their significance, we can state that the presence of customer satisfaction increases the probability of customer loyalty and, in doing so, the value of the customer for the branch. In addition, it should be noted that, due to the fact that the moderation effects¹⁵ are difficult to interpret in an ordered probit, we have considered the overall customer satisfaction index to approximate these effects, so that these results could suggest the existence of a moderation effect between the different types of customer satisfaction.

As already indicated, there are two main groups of customer satisfaction variables, i.e. one that concerns CS with relationships and the other CS with products. Considering the means of these two groups, we are going to test the same preceding models. Table 7 shows the results.

Insert Table 7 here

The control variables confirm the preceding insights: what really matters is the customer level. A difference should be noted: all three customer level controls have a significant impact on loyalty. Thus, the relationship between customer satisfaction and loyalty, on one side, and their value for the branch, on the other, seems to emerge stronger than before. A longer relationship, thus developing relational competencies, increases the number of transactions made through the bank account, due to a deeper feeling of trust by the customer, and profitability for the branch in the process. This is even more so if the customer belongs to the best typology, based on his/her age and

¹⁵ The moderation hypothesis is supported if the interaction, as measured by the product of the variables taken into consideration, is significant. There may be also significant main effects for the predictor (the independent variable) and the moderator but, conceptually, these are not directly relevant to the test of the moderator hypothesis (Baron and Kenny, 1986). The moderation effect is what Milgrom and Roberts (1990) and Holmstrom and Milgrom (1994) called complementarity, talking about workplace practices. That is, the customer loyalty increases as different types of customer satisfaction are achieved.

income. Another difference with the preceding models is the significant impact of the years in operation of the branch on the loyalty of the customer when we include in the model customer satisfaction with the products. This could be explained as follows: more experience makes the branch offer more interesting products to the customers who, thus, become more loyal. It is also confirmed the negative effect of the size on customer loyalty.

Considering the variables about customer satisfaction, all have a significant impact on loyalty. The causal effect between customer satisfaction and loyalty, on one side, and customer value, on the other, is confirmed. Customer satisfaction increases the probability that the customer chooses the bank as his/her own main bank and, in doing so, increases both his/her financial and non-financial value.

Running the same models, considering the customer satisfaction variables built with the factor analysis, we have obtained the same results. This also for the single factors that compose customer satisfaction with relationships and the products. It is not our intention to show here the results, but what seems to be of interest is that for two types of customer satisfaction variables, the loyalty variable is a mediator. Specifically, there is: a direct relationship between (i) the second factor of customer satisfaction with relationships, that is CS with the relations with the front office and the branch, and (ii) rating. In addition, this type of CS impacts also loyalty. Thus, all the conditions are satisfied for the existence of the mediation effect. The same happens for CS with the bank account and the investment products. This suggests us to test whether loyalty could be a statistically significant mediator of customer satisfaction with rating. In order to do that we run the following models:

$$\begin{aligned} Rating &= \alpha + controls + \beta factor2 + \gamma Loy + \mu + \varepsilon \\ Loy &= \alpha + controls + \beta factor2 + \mu + \varepsilon \end{aligned}$$

and

$$\begin{aligned} Rating &= \alpha + controls + \beta csproduct + \gamma Loy + \mu + \varepsilon \\ Loy &= \alpha + controls + \beta csproduct + \mu + \varepsilon \end{aligned}$$

and calculate the product of the p-values of β and γ for each pair of equations. It is less than 0.0253, so the null hypothesis that $\beta \cdot \gamma = 0$ is rejected and loyalty is a mediator (Kenny, 2006)¹⁶ (see the Appendix A for the results).

CONCLUSION

The literature shows that long-term relationships have an essential role in reducing costs and in creating long-term customer loyalty, thus improving the performance of the firm. However, especially in retail banking, there is considerable lack of empirical evidence due to the fact that customer satisfaction and retention indices are difficult to measure (Munari, 2000).

This paper provides a contribution in that it performs the empirical analysis of customer relationships inside retail banking, arguing that they are important knowledge and learning media and therefore a potential source of improved financial performance.

We have tested this by exploring first whether there is a relationship between customer satisfaction and loyalty, on one side, and profitability of the customers for the branch, on the other, and then we have examined the nature of this relationship.

The results confirm that there is not a direct relationship between customer satisfaction and customer profitability for the branch.

¹⁶ The results can be shown on request.

Considering that, there cannot be a mediation effect between these two variables. Thus, there is a causal relationship. More precisely, customer satisfaction impacts directly customer loyalty, which has a direct effect on the profitability of customers for the branch. However, the loyalty variable becomes a mediator in the case of customer satisfaction with relationships with the front office and the branch and in the case of customer satisfaction with the products.

Thus, we could argue that, on one side, loyalty is determined in part by customer satisfaction, which impacts the profitability of the customers. On the other hand, it is important to distinguish between the different types of customer satisfaction. There are, in fact, different relations between the different types of customer satisfaction and customer profitability for the branch. Some of them could be stronger and have a much greater impact on the branch's performance. Thus, managers should care about the loyalty of their customers but also about their satisfaction, in particular certain types of customer satisfaction.

Thanks to the structure of our data, made on two levels of analysis, we were also able to examine the existence and the nature of micro-macro relationships. Not all and not always the branch level variables considered affect customer level variables, like rating or loyalty. Anyway, it can be argued that the larger the branch the smaller the probability that customers choose it as their own main bank. This seems to confirm that inside a larger branch relationships among employees and between employees and customers become more difficult. Instead, small branches make delegation and employee empowerment more feasible, so that a more customer-oriented strategy can be implemented. Long-term and trusting relations with the customers and, consequently, the development of relational competencies increase the profitability of the customers for the branch. Trust-based relations also increase the loyalty of the customers when we consider separately the two types of customer satisfaction. Consequently, in order to increase the profitability of the customers for the branch, what really matters is the way the employees of the branch relate themselves with them.

Some limits of our study could be the source of future in-depth examinations. For example, in this study we used rating as a performance variable, a function not only of the financial value of the customer but also of the number and the value of his/her own product for the branch.¹⁷ A suggestion for future researchers could be to consider the financial value of the customer *per se* as a dependent variable, that is his/her total revenue.

The moderation effects between the different types of customer satisfaction might be further explored.

¹⁷ We could test their relation running the following model: $Mint_c = \alpha + controls + \beta Rating + \mu + \varepsilon$ where $Mint_c$ is the total revenue of each customer for the branch he/she belongs to. It could be difficult for the other variables of the model to be significant, as rating is a function of total revenue. Anyway, this problem does not exist in our case because of the low correlation between the two variables (0.2259). The results showed that there is a positive and significant relation between rating and MINT. We, then, could argue that, considering that the total revenue generated by the branch is the sum of the total revenue of each customer that belongs to that branch, if there is a relation between customers' satisfaction, their loyalty, their rating and their total revenue, then all these variables have an impact on the total revenue generated by the branch. It could also be noted that, here, the only controls that have relevance are the ones at the branch level, but this fact, considered together with the positive correlation between MINT and the number of products and their value for the branch, lead us to think that good relationships with customers make them buy many more products, particularly products of high value for the branch. This has a positive impact on MINT, which is directly and positively influenced by the size and negatively by the years in operation of the branch.

References

- Andersson U., Mudambi R. e Persson M. (2006), Activity Structure and Centralization: Impacts on performance dimensions of inter-unit knowledge, 2006 The Copenhagen Conference on Strategic management (CCSM) organized by the Centre for Strategic Management and Globalization, CBS, Copenhagen, Denmark
- Ansari S. e van Neerijnen P. (2006), Capability generation in hyper-competitive environments: Leveraging strong and weak ties to integrate organizational knowledge, 2006 The Copenhagen Conference on Strategic management (CCSM) organized by the Centre for Strategic Management and Globalization, CBS, Copenhagen, Denmark
- Askenazy P. (2000), *Innovations and employment: evidence from American manufacturing*, in Vivarelli M., Pianta N. (eds), *The employment impact of innovation. Evidence and Policy*, Routledge, London
- Baker G. et al. (2002), Relational Contracts and the Theory of the Firm, *Quarterly Journal of Economics*, February, 117:1, pp. 39-84
- Baron R. M. and Kenny D. A. (1986), The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations, *Journal of Personality and Social Psychology*, vol. 51, n. 6 pp. 1173-1182
- Baron R. M. and Kenny D. A. (1986), The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations, *Journal of Personality and Social Psychology*, vol. 51, n. 6, pp. 1173-1182
- Bartel A. P. (2004), *Human Resource Management and Organizational Performance: evidence from Retail Banking*, *Industrial and Labour Review*, vol. 57, n. 2
- Bartel A. P., Ichniowski C., Shaw K. L. (2005), *How does information technology really affect productivity? plant-level comparisons of product innovation, process improvement and worker skills*, NBER, Working Paper 11773, November
- Bauer T. K. (2003), *Flexible Workplace Practices and Labor Productivity*, IZA Discussion paper, n.700, Bonn
- Black S. and Lynch L. (2005), *Measuring organizational capital in the new economy*, IZA Discussion Paper n. 1524
- Bolton R. N. et al. (2006), The effect of Service Experiences over Time on a Supplier's Retention of Business Customers, *Management Science*, vol. 52 n. 12 pp. 1811-1823
- Cabrera A., Collins W. C. e Salgano J. F. (2006), Determinants of individuals engagement in knowledge sharing, *International Journal of Human Resource Management*, 17:2, February, pp. 245-264
- Cabrera E. F. e Cabrera A. (2005), Fostering knowledge sharing through people management practices, *International Journal of Human Resource Management*, 16:5, May, pp. 720-735
- Camuffo A. and Costa G. (1995), *Banca & Organizzazione*, Edibank, Milano
- Canato A. and Corrocher N. (2004), Information and communication technology: organizational challenges for Italian banks, *Accounting, Business and Financial History*, November, pp. 355-370
- Caroli E., Van Reenen J. (2001), *Skill-Biased Organizational Change? Evidence from a Panel of British and French establishments*, *The Quarterly Journal of Economics*, CXVI, Issue 4, 1449-1492
- Cohen W. M. e Levinthal D. A. (1990), Absorptive Capacity: A New Perspective on Learning and Innovation, *Administrative Science Quarterly*, 35, pp. 128-152
- Cristini A., Gaj A., Labory S., Leoni R. (2003), *Flat hierarchical structure, bundles of new work practices and firm performance*, *Rivista Italiana degli Economisti*, n.2, agosto
- Foss N. J. (2005), *Strategy, Economic Organization, and the Knowledge Economy*, Oxford University Press, New York
- Foss N. J., Laursen K. e Pedersen T. (2006), Organizing to gain from interaction with customers: the role of organizational practices for knowledge absorption and innovation, 2006 The Copenhagen

- Conference on Strategic management (CCSM) organized by the Centre for Strategic Management and Globalization, CBS, Copenhagen, Denmark
- Garbarino E. e Johnson M. S. (1999), The different roles of satisfaction, trust, and commitment in customer relationships, *Journal of marketing*, Vol. 63 (Aprile 1999), 70-87
- Garicano L. (2000), Hierarchies and the Organization of Knowledge in Production, *Journal of Political Economics*, Vol. 108(5), pp. 874-904, October
- Greenan N. (1996), *Innovation technologique, changements organisationnels et evolution des competences: une étude empirique sur l'industrie manufacturière*, Economie et Stetistique, vol. 8, n. 298, pp. 15-33
- Griffith R. et al. (2006), Why is productivity so dispersed?, *Oxford Review of Economic Policy*, vol. 22 n. 4 pp. 526-538
- Hamilton B. H., et al. (2003), Team Incentives and Worker Heterogeneity: An Empirical Analysis of the Impact of Teams on Productivity and Participation, *Journal of Political Economy*, III(3), pp. 465-497
- Hill N., Brierley J., Macdougall R. (2003), *How to measure Customer Satisfaction*, Gower, Hampshire, England
- Hox J. (2002), *Multilevel Analysis – Techniques and Applications*, Lawrence Erlbaum Associates, Publishers, Mahwah, New Jersey, USA
- Hunter L. W. et al. (2001), It's not just ATMs: Technology, Firm Strategies, Jobs, and Earnings in Retail Banking, *Industrial and Labour Relations Review*, Vol. 54, n. 2A, extra issue, March, pp.402-424
- Ichniowski C., Shaw K., Prennushi G. (1997), *The Effects of HRM Systems on Productivity: A Study of Steel Finishing Lines*, American Economic Review, 87, 291-313
- Jones D. C. et al. (2006), Human Resource Management Polices and Productivity: New Evidence from an Econometric Case Study, *Oxford Review of Economic Policy*, vol. 22 n. 4 pp. 526-538
- Jong G. de, Nootboom B.(2000), *The causal structure of long-term suppli relationships*, Kluwer, Dordrecht
- Keltner B. and Finegold D. (1996), Adding Value in Banking: Human Resouce Innovations for Service Firms, *Sloan Management Review*, Fall, pp. 57-68
- Lundvall B.A. (1988), *Innovation a san interactive process: fron user-producer interaction to the national system of innovation*, in Dosi G. et al. (eds), *Technical Change and Economic Theory*, Pinter Publishers, London
- Munari L. (2000), Customer satisfaction e Redditività nelle Banche, *Banche e Banchieri*, n.3, pp. 195-224
- Nahapiet J. and Ghoshal S. (1998), Social Capital, Intellectual Capital and the Organizational Advantage, *Academy of Management Review*, Vol. 23, N. 2, pp. 242-266
- Nootboom B. (2002), *Trust – Forms, Foundations, Functions, Failures and Figures*, Edward Elgar, Cheltenham, UK – Northampton, MA, USA
- Nootboom B., Six F. (2003), *The trust Process in Organizations – Empirical Studies of the Determinants and the Process of Trust Development*, Edward Elgar, Cheltenham, UK – Northampton, MA, USA
- Raudenbush S. et al. (2004), *HLM6 – Hierarchical Linear & Non-linear Modeling* , SSI Scientific Software international, USA
- Raudenbush S. W. E Bryk A. S. (2002), *Hierarchical Linear Models – Applications and Data Analysis Methods – Second Editino*, Sage Publications – International Educational and Professional Publisher, USA
- Raudenbush S. W. Et al. (2006), Strategies for Improving Precision in Group-Randomized Experiments, <http://sitemaker.umich.edu/group-based/home>
- Sacco, Zamagni (a cura di) (2002), *Complessità relazionale e comportamento economico- materiali per un nuovo paradigma di razionalità*, Il Mulino, Bologna

- Sako M. (2000), *Does trust improve business performance?*, in Lane C.-Bachmann R. (eds), *Trust within and between organizations*, Oxford University Press, Oxford
- Spybrook J. Et al. (2006), Optimal Design for Longitudinal and Multilevel Research: Documentation for the “Optimal Design” Software, <http://sitemaker.umich.edu/group-based/home>
- Teece D.J., (1992), *Competition, Cooperation, and Innovation: Organizational Arrangements for Regimes of Rapid Technological Progress*, J. Econ. Behav. Organ., 18(1), pp. 1-25
- Zwick T. 2003. *The productivity impact of lean management*, Discussion paper, Centre for European Economic Research (ZEW), Mannheim

TABLES

Table 1 Identification of the sample branches: factor analysis.

Variable	1	2
cs_imm1	0.47	0.24
cs_imm2	0.42	0.25
cs_reempl1	0.04	-0.03
cs_reempl2	0.24	0.52
cs_reempl3	0.28	0.45
cs_reempl4	0.03	0.67
cs_reempl5	0.26	0.43
cs_relman1	0.81	0.02
cs_relman2	0.91	-0.04
cs_relman3	0.91	-0.04
cs_relman4	0.78	0.08
cs_relman5	0.86	-0.01
cs_relman6	0.84	-0.01
cs_relbranch1	0.06	0.60
cs_relbranch2	-0.04	0.69
cs_relbranch3	0.03	0.63
cs_relbranch4	-0.11	0.78
cs_relbranch5	0.14	0.61
avcs_prodr	0.38	0.38
Loy	0.01	0.05
Eigen value	8.87	1.01
proportion	0.89	0.10
cumulative	0.89	1.00

Factors obtained with factor analysis and varimax rotation.

Table 2 CS with relationships' components.

	Front office employees
cs_remployee2	Qualifications
cs_remployee3	willingness to give information and explanations
cs_remployee4	speed in attending to customers' business
cs_remployee5	recognition
	Managers
cs_relmanager1	capability to make interesting proposals
cs_relmanager2	capability to meet customer's needs
cs_relmanager3	capability to solve customer's problems
cs_relmanager4	capability to make the customer feel special
cs_relmanager5	flexibility in the management of the customer's requests
cs_relmanager6	Credibility
	Branch
cs_relbranch1	simplicity of orientation
cs_relbranch2	waiting areas' look
cs_relbranch3	privacy guaranteed by the dedicated consultant spaces
cs_relbranch4	waiting time at the front office
cs_relbranch5	waiting time to terminate a contract

Table 3 Deepening Customer Satisfaction with relationships: factor analysis.

Variable	1	2
cs_relemp12	0.47	0.65
cs_relemp13	0.48	0.65
cs_relemp14	0.32	0.76
cs_relemp15	0.48	0.57
cs_relman1	0.82	0.33
cs_relman2	0.87	0.34
cs_relman3	0.86	0.32
cs_relman4	0.81	0.37
cs_relman5	0.84	0.36
cs_relman6	0.82	0.37
cs_relbranch1	0.33	0.70
cs_relbranch2	0.22	0.74
cs_relbranch3	0.32	0.67
cs_relbranch4	0.22	0.79
cs_relbranch5	0.41	0.69
Eigen value	9.23	1.32
proportion	0.62	0.09
cumulative	0.62	0.70

Factors obtained with factor analysis and varimax rotation.

Table 4 Mean, Standard Deviation, Minimum and Maximum Value and Correlations.

Variables	Mean	St. Dev.	Min.	Max.
- Rating	5.27	2.65	1	8
- Number of employees	17.13	15.07	3	72
- Years in operation (ln)	3.71	0.88	1.79	4.91
- City/town	0.64	0.48	0	1
- Bg	0.45	0.50	0	1
- Years of relationship	10.12	7.75	0	33
- Number of transactions made by the customer	71.87	52.47	0	596
- AIR/BIR	1.61	0.49	1	2
- Total Customer Satisfaction (mean)	7.76	0.94	3.43	9.93
- CS with relations	7.88	1.24	1	10
- CS with products	7.62	0.74	2.67	9.87
- Loyalty	2.75	0.58	0	3

	a	b	c	d	e	f	g	h	i	j	k	l
a Rating	1											
b Number of employees	0.00	1										
c Years in operation (ln)	0.02	0.38	1									
d City/town	0.02	-0.37	0.18	1								
e bg	-0.01	-0.06	0.46	0.05	1							
f Years of relationship Number of transactions	0.20	0.00	0.05	0.02	0.04	1						
g through the bank account	0.10	0.03	0.05	0.00	0.07	0.11	1					
h AIR/BIR	0.04	0.02	0.01	0.00	0.00	0.03	0.23	1				
i Cstot (mean)	0.05	0.01	-0.06	-0.01	-0.07	-0.01	0.02	0.00	1			
j Csrel (mean)	0.01	0.01	-0.03	0.00	-0.03	-0.01	0.02	0.00	0.96	1		
k Csprod (mean)	0.00	-0.02	-0.05	0.00	-0.05	-0.03	0.02	-0.01	0.91	0.76	1	
l Loyalty	0.12	-0.06	-0.02	0.00	0.02	0.09	0.19	0.15	0.21	0.18	0.21	1

Table 5 Rating, Loyalty and Overall Customer Satisfaction relationship.

Independent Variables	Model 1 ¹⁸			Model 2			Model 3		
	Dep. Var.: Rating			Dep. Var.: Loyalty			Dep. Var.: Rating		
	Coeff.	P>z	S.	Coeff.	P>z	S.	Coeff.	P>z	S.
<u>Branch level control variables:</u>									
- Number of employees (size)	-0.005	0.172		-0.012	0.000	***	-0.001	0.741	
- Years in operation (ln)	0.086	0.169		0.135	0.120		0.020	0.633	
- City/town	0.049	0.601		-0.174	0.113		0.031	0.649	
- BG	-0.044	0.625		-0.016	0.899		-0.058	0.384	
<u>Customer level control variables:</u>									
- Years of relationship with the branch	0.032	0.000	***	0.005	0.486		0.027	0.000	***
- Number of operations	0.001	0.063	*	0.004	0.000	***	0.001	0.003	**
- AIR/BIR	-0.017	0.852		0.260	0.024	**	0.015	0.799	
Customer Satisfaction ¹⁹	0.059	0.103		0.322	0.000	***			
Loyalty							0.169	0.001	***
Obs.	874			816			1920		
Wald Chi2	57.10			77.96			120.67		
Prob Wald Chi2	0.000			0.000			0.000		
Pseudo R2	0.0195			0.0778			0.0167		

Ordered probit estimation controlled for clusters.

*** are for p-value< 0.01; ** are for p-value< 0.05; and * is for p-value< 0.1.

Table 6 The t-test

Variable	Sample 1: 2105		Sample 2: 874		Min	Max	t-test on mean differences
	Mean	Std. Dev.	Mean	Std. Dev.			p-value
Number of employees (size)	17.12732	15.06854	17.27231	15.37814	3	72	0.812
Years in operation (ln)	3.70726	0.8801	3.710258	0.887366	1.791759	4.912655	0.933
City/town	0.634679	0.481634	0.632723	0.482339	0	1	0.920
BG	0.453682	0.497968	0.464531	0.499026	0	1	0.589
Years of relationship with the branch	10.12257	7.753031	9.947368	7.723722	0	33	0.574
Number of transactions	71.86556	52.46878	80.17506	56.96043	0	596	0.000 ***
AIR/BIR	1.609501	0.487978	1.643021	0.479383	1	2	0.086

¹⁸ As explained, the sub-sample in models 1 and 2 seems to be not biased and representative of the 2105 customers belonging to the original sample.

¹⁹ This Customer Satisfaction index is the mean of all the items about customer satisfaction with relations and products.

Table 7 Rating, Loyalty and Customer Satisfaction with relations and products: relationships.

Independent Variables	Model 4			Model 5			Model 6			Model 7		
	Dep. Var.: Rating			Dep. Var.: Loyalty			Dep. Var.: Rating			Dep. Var.: Loyalty		
	Coeff.	P>z	S.	Coeff.	P>z	S.	Coeff.	P>z	S.	Coeff.	P>z	S.
<u>Branch level control variables:</u>												
- Number of employees (size)	-0.004	0.220		-0.009	0.001	***	-0.002	0.494		-0.009	0.003	**
- Years in operation (ln)	0.076	0.150		0.012	0.850		0.036	0.495		0.135	0.079	*
- City/town	-0.027	0.737		-0.102	0.321		0.082	0.320		-0.130	0.213	
- BG	-0.092	0.192		-0.005	0.954		-0.052	0.510		0.057	0.613	
<u>Customer level control variables:</u>												
- Years of relationship with the branch	0.032	0.000	***	0.012	0.033	**	0.028	0.000	***	0.011	0.077	*
- Number of operations	0.002	0.001	***	0.005	0.000	***	0.001	0.012	***	0.004	0.000	***
- AIR/BIR	0.045	0.477		0.296	0.000	***	-0.060	0.520		0.245	0.021	**
<u>Customer Satisfaction with relations</u> ²⁰	0.013	0.570		0.188	0.000	***						
<u>Customer Satisfaction with products</u> ²¹							0.011	0.795		0.379	0.000	***
Obs.	1546			1427			1079			1000		
Wald Chi2	108.72			108.18			53.42			79.94		
Prob Wald Chi2	0.000			0.000			0.000			0.000		
Pseudo R2	0.018			0.069			0.014			0.073		

Ordered probit estimation controlled for clusters.

*** are for p-value< 0.01; ** are for p-value< 0.05; and * is for p-value< 0.1.

²⁰ This Customer Satisfaction index is a mean of all the items about CS with relations.

²¹ This Customer Satisfaction index is a mean of all the items about CS with products.

APPENDIX 1

Table 1A Customer satisfaction with products: factor analysis result

Variable	1	2
cs_ba1	0.24	-0.31
cs_ba2	0.23	-0.25
cs_ba3	0.22	-0.30
cs_inv1	0.05	-0.75
cs_inv2	0.19	-0.79
cs_inv3	0.17	-0.84
cs_inv4	0.10	-0.83
cs_inv5	0.15	-0.82
cs_fin1	0.33	0.04
cs_fin2	0.43	-0.18
cs_fin3	0.80	-0.10
cs_fin4	0.87	-0.15
cs_fin5	0.81	-0.18
cs_fin6	0.83	-0.18
cs_fin7	0.72	-0.08
Eigen value	5.80	2.38
proportion	0.68	0.28
cumulative	0.68	0.96

Rotated factors: varimax rotation.

Table 2A

Independent Variables	Model 1 ²²			Model 2		
	Dep. Var.:	Rating		Dep. Var.:	Loyalty	
	Coeff.	P>z	S.	Coeff.	P>z	S.
<u>Branch level control variables:</u>						
- Number of employees (size)	-0.005	0.179		-0.011	0.001	***
- Years in operation (ln)	0.085	0.176		0.127	0.150	
- City/town	0.051	0.590		-0.164	0.137	
- BG	-0.043	0.627		-0.010	0.937	
<u>Customer level control variables:</u>						
- Years of relationship with the branch	0.032	0.000	***	0.005	0.495	
- Number of transactions	0.001	0.063	*	0.004	0.000	***
- AIR/BIR	-0.017	0.852		0.265	0.020	**
<u>Customer Satisfaction</u> ²³	0.006	0.131		0.032	0.000	***
Obs.						
	874			816		
Wald Chi2	56.92			74.18		
Prob Wald Chi2	0.000			0.000		
Pseudo R2	0.0194			0.0757		

Ordered probit estimation controlled for clusters.

*** are for p-value< 0.01; ** are for p-value< 0.05; and * is for p-value< 0.1.

²² As explained, the sub-sample in models 1 and 2 seems to be not biased and representative of the 2105 customers belonging to the original sample.

²³ This Customer Satisfaction index is built with the factor analysis.

Table 3A

Independent Variables	Model 3			Model 4			Model 5			Model 6		
	Dep. Var.: Rating			Dep. Var.: Rating			Dep. Var.: Loyalty			Dep. Var.: Loyalty		
	Coeff.	P>z	S.	Coeff.	P>z	S.	Coeff.	P>z	S.	Coeff.	P>z	S.
<u>Branch level control variables:</u>												
- Number of employees (size)	-0.004	0.207		-0.004	0.225		-0.009	0.002	**	-0.009	0.002	**
- Years in operation (ln)	0.076	0.150		0.074	0.161		0.013	0.843		0.012	0.858	
- City/town	-0.039	0.633		-0.028	0.729		-0.097	0.346		-0.087	0.398	
- BG	-0.090	0.198		-0.092	0.190		-0.006	0.948		-0.009	0.927	
<u>Customer level control variables:</u>												
- Years of relationship with the branch	0.031	0.000	***	0.031	0.000	***	0.013	0.024	**	0.013	0.017	**
- Number of transactions	0.002	0.001	***	0.002	0.001	***	0.005	0.000	***	0.005	0.000	***
- AIR/BIR	0.046	0.466		0.044	0.477		0.297	0.000	***	0.299	0.000	***
<u>Customer Satisfaction with relations²⁴</u>												
Factor1 (rel. with managers)	-0.043	0.135					0.206	0.000	***			
Factor2 (rel. with front office employees and branch)	0.065	0.019	**				0.123	0.004	**			
Synthetic index				-0.052	0.262					0.347	0.000	***
Obs.	1546			1546			1427			1427		
Wald Chi2	115.87			112.25			144.50			143.48		
Prob Wald Chi2	0.000			0.000			0.000			0.000		
Pseudo R2	0.020			0.019			0.071			0.067		

Ordered probit estimation controlled for clusters.

*** are for p-value < 0.01; ** are for p-value < 0.05; and * is for p-value < 0.1.

²⁴ This Customer Satisfaction index is built with the factor analysis.

Table 4A

Independent Variables	Model 7			Model 8			Model 9			Model 10		
	Dep. Var.: Coeff.	Rating P>z	S.	Dep. Var.: Coeff.	Rating P>z	S.	Dep. Var.: Coeff.	Rating P>z	S.	Dep. Var.: Coeff.	Loyalty P>z	S.
<u>Branch level control variables:</u>												
- Number of employees (size)	-0.002	0.585		-0.002	0.589		-0.007	0.004	**	-0.007	0.007	**
- Years in operation (ln)	0.053	0.224		0.052	0.237		0.037	0.559		0.030	0.634	
- City/town	0.009	0.896		0.009	0.892		-0.064	0.477		-0.061	0.513	
- BG	-0.073	0.238		-0.074	0.235		-0.000	0.997		-0.006	0.944	
<u>Customer level control variables:</u>												
- Years of relationship with the branch	0.029	0.000	***	0.028	0.000	***	0.017	0.000	***	0.016	0.001	***
- Number of transactions												
- AIR/BIR	0.002	0.000	***	0.002	0.000	***	0.005	0.000	***	0.005	0.000	***
	0.031	0.600		0.030	0.611		0.275	0.000	***	0.277	0.000	***
<u>Customer Satisfaction about products²⁵</u>												
Factor1 (fin)	-0.003	0.725					0.044	0.000	***			
Factor2 (cc and inv)	-0.010	0.045	**				-0.025	0.001	***			
Synthetic index				-0.010	0.368					0.045	0.002	**
Obs.	1992			1992			1822			1822		
Wald Chi2	144.31			142.70			148.92			107.04		
Prob Wald Chi2	0.000			0.000			0.000			0.000		
Pseudo R2	0.0153			0.015			0.0618			0.047		

Ordered probit estimation controlled for clusters.

*** are for p-value < 0.01; ** are for p-value < 0.05; and * is for p-value < 0.1.

²⁵ This Customer Satisfaction index is built with the factor analysis.