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Abstract

The European Consumer Satisfaction Index (ECSI) is an economic indicator that measures customer satisfaction. It is an adaptation of the Swedish Customer Satisfaction Barometer and is compatible with the American Customer Satisfaction Index. In this paper the ECSI model is presented in details. The PLS approach used to estimate the model parameters is described. Finally, an example is discussed.

I. The ECSI model

The European Consumer Satisfaction Index (ECSI) is an economic indicator that measures customer satisfaction. It is an adaptation of the Swedish Customer Satisfaction Barometer (Fornell, 1992) and is compatible with the American Customer Satisfaction Index. A model has been derived specifically for the ECSI. In this model, seven interrelated latent variables are introduced. It is based on well-established theories and approaches in customer behaviour and it is to be applicable for a number of different industries.

The ECSI model (figure 1) contains :

1. A core model, i.e. the traditional latent variables : perceived quality, expectations, perceived value, satisfaction index and loyalty, shown in bold for the constructs and impacts in solid lines.

2. Two optional latent variables that can be added by national committees : image and complaints - shown in italic and impacts in dotted lines.

Other impacts, than the ones shown on figure 1, can be tested.

The variables on the left-hand side are to be seen as drivers for explaining the Customer Satisfaction Index (CSI) and the right hand performance indicator (loyalty/complaints). Main causal relationships are indicated.

A set of manifest (observable or measurable) variables is associated with each of the latent variables. This structure is called the ECSI model. The entire model is important for determining the main goal variable, being CSI.

The *perceived quality* concept includes two parts (“software” and “hardware”). With the “hardware” component is meant the quality of the product as such (in the eyes of the customer), while “software” relates to associated service like guarantees given, after sale service provision, conditions of product display and assortment, documentation and descriptions, etc.

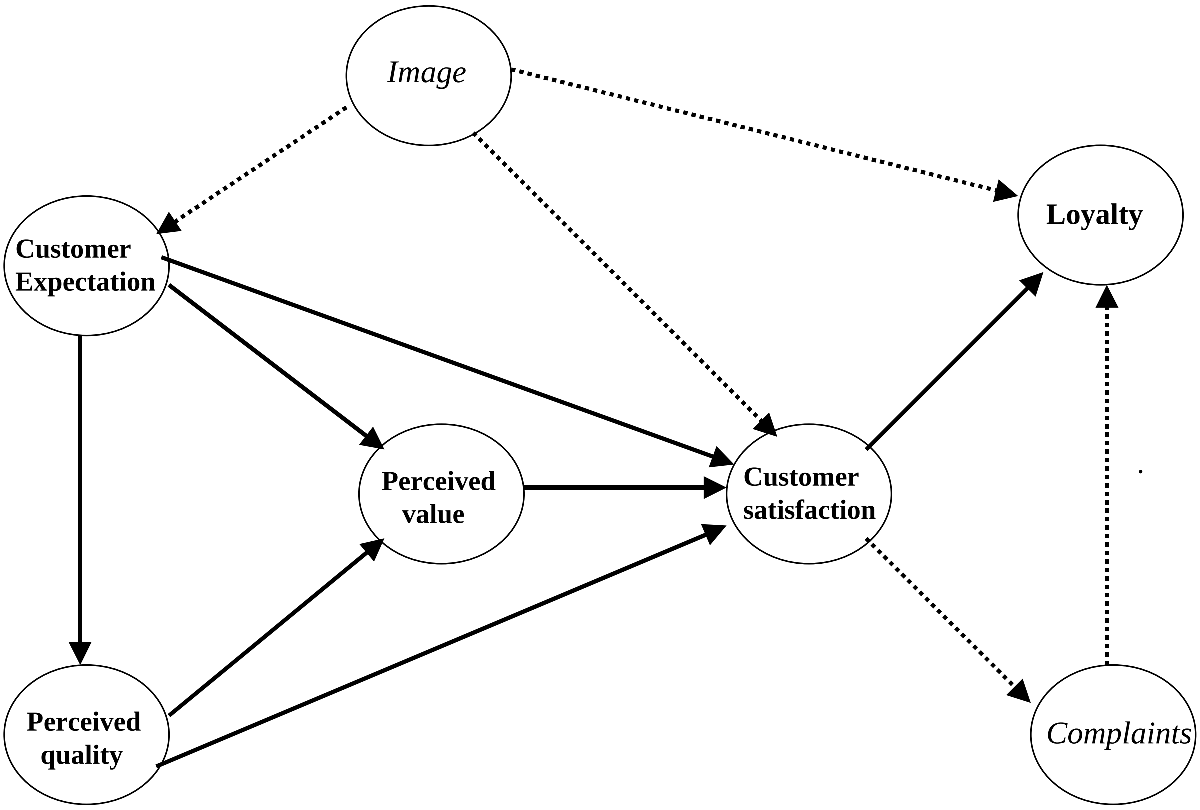

Figure 1: Causality model describing causes and consequences of Customer Satisfaction

Customer expectations relate to the prior anticipations of the said product in the eyes of the customer. Such expectations are the result of active company/product promotion as well as hearsay and prior experience from the product/provider.

Image is an optional variable that relates to the brand name and what kind of associations the customers get from the product/brand/company. The arrows between image and CSI and loyalty respectively could be in reality two-directional.

Perceived value concerns the "value-for-money" aspect as the customer experiences it. It is here seen to be affected by perceived quality as well as by expectations.

Complaints is another optional variable and relates to the intensity of complaints by the clients and the way the company handles these complaints. It is linked (probably with a bi-directional arrow) to CSI and Loyalty.

In table 1 the manifest variables V_{jh} describing the latent variables ξ_j are given for the Mobile Phone Industry.

Table 1 : Measurement Instrument for the Mobile Phone Industry

All the items are scaled from 1 to 10. Scale 1 expresses a very negative point of view on the product and scale 10 a very positive opinion.

Latent variables	Manifest variables
Image (ξ_1)	a) It can be trusted in what it says and does b) It is stable and firmly established c) It has a social contribution for the society d) It is concerned with customers e) It is innovative and forward looking
Customer Expectations of the overall quality (ξ_2)	a) Expectations for the overall quality of "your mobile phone provider" at the moment you became customer of this provider b) Expectations for "your mobile phone provider" to provide products and services to meet your personal need c) How often did you expect that things could go wrong at "your mobile phone provider"
Perceived Quality (ξ_3)	a) Overall perceived quality b) Technical quality of the network c) Customer service and personal advice offered d) Quality of the services you use e) Range of services and products offered f) Reliability and accuracy of the products and services provided g) Clarity and transparency of information provided
Perceived Value (ξ_4)	a) Given the quality of the **products and services** offered by "your mobile phone provider" how would you rate the **fees and prices** that you pay for them? b) Given the **fees and prices** that you pay for "your mobile phone provider" how would you rate the quality of the **products and services** offered by "your mobile phone provider"?
Customer Satisfaction (ξ_5)	a) Overall satisfaction b) Fulfilment of expectations c) How well do you think "your mobile phone provider" compares with your ideal mobile phone provider ?
Customer Complaints (ξ_6)	a) You complained about "your mobile phone provider" last year. How well, or poorly, was your most recent complaint handled **or** b) You did not complain about "your mobile phone provider" last year. Imagine you have to complain to "your mobile phone provider" because of a bad quality of service or product. To what extent do you think that "your mobile phone provider" will care about your complaint?
Customer Loyalty (ξ_7)	a) If you would need to choose a new mobile phone provider how likely is it that you would choose "your provider" again? b) Let us now suppose that other mobile phone providers decide to lower their fees and prices, but "your mobile phone provider" stays at the same level as today. At which level of difference (in %) would you choose another mobile phone provider? c) If a friend or colleague asks you for advice, how likely is it that you would recommend "your mobile phone provider"?

These manifest variables V_{jh} are normalised as follows:

The original items V_{jh}, scaled from 1 to 10, are transformed into new normalised variables $x_{jh} = \frac{100}{9}(V_{jh} - 1)$. The minimum possible value of x_{jh} is 0 and its maximum possible value is equal to 100. If there are missing data for variable x_{jh}, they are replaced by the mean $\bar{x}_{jh}$ of this variable.

Relation between the manifest variables and the latent variables

Each latent variable ξ_j is indirectly observable by a set of manifest variables x_{jh}. Each manifest variable is related to its latent variable by simple regression:

(1) $$x_{jh} = \lambda_{jh0} + \lambda_{jh}\xi_j + \varepsilon_{jh}$$

where ξ_j has mean m_j and standard deviation 1. It's a reflexive scheme: each manifest variables x_{jh} reflects its latent variable ξ_j. The usual hypotheses on the residuals are made.

The normalisation of the latent variable chosen by Wold (1985) – ξ_j has a standard deviation equal to one – is arbitrary. Another normalisation has been proposed by Fornell (1992), but both Wold and Fornell latent variables are co-linear. In other words, the Fornell latent variable can be deduced from the Wold latent variable by a linear relation.

Relation between the latent variables

The causality model described in figure 1 leads to linear equations relating the latent variables (structural equation modelling):

(2) $$\xi_j = \beta_{j0} + \sum_i \beta_{ji}\xi_i + \zeta_j$$

Let's write the six structural equations corresponding to figure 1:

(2.1) Customer Expectation = β_{20} + β_{21}Image + ζ_2
(2.2) Perceived Quality = β_{30} + β_{32}Customer Expectation + ζ_3
(2.3) Perceived Value = β_{40} + β_{42}Customer Expectation + β_{43}Perceived Quality + ζ_4
(2.4) ECSI = β_{50} + β_{51}Image + β_{52}Customer Expectation + β_{53}Perceived Quality + β_{54}Perceived Value + ζ_5
(2.5) Customer Complaint = β_{60} + β_{65}ECSI + ζ_6
(2.6) Customer Loyalty = β_{70} + β_{71}Image + β_{75}ECSI + β_{76}Customer Complaint + ζ_7

The usual hypotheses on the residuals are made.

II. Partial Least Square (PLS) Estimation of the ECSI model

PLS Path Modelling of Herman Wold (Wold, 1985, Lohmöller, 1989, Fornell & Cha, 1994, Tenenhaus, 1999) is used to estimate the ECSI model parameters. We remind in this paper the various steps of the PLS algorithm and describe the specific options chosen for the estimation of the ECSI model. Computation is carried out using the LVPLS 1.8 software of J.B. Lohmöller (1987).

First of all, in the ECSI model, PLS is applied to the raw manifest variables x_{jh} . They are not standardised.

Estimation of the latent variables

The latent variables ξ_j are estimated according to the following procedure.

External estimation Y_j of the standardised latent variable (ξ_j – m_j)

The standardised latent variables (mean = 0 and standard deviation = 1) are estimated as linear combinations of their centred manifest variables:

(3) $$Y_j \;\alpha\; [\sum w_{jh}(x_{jh} - \bar{x}_{jh})]$$

where the symbol "α" means that the left variable represents the standardised right variable. The standardised latent variable is finally written as

(4) $$Y_j = \sum \tilde{w}_{jh}(x_{jh} - \bar{x}_{jh})$$

The mean m_j is estimated by $\hat{m}_j = \sum \tilde{w}_{jh}\bar{x}_{jh}$ and the latent variable ξ_j by $\sum \tilde{w}_{jh}x_{jh} = Y_j + \hat{m}_j$.

Internal estimation Z_j of the standardised latent variable (ξ_j – m_j)

Following Wold's (1985) original PLS algorithm, the centroid scheme is used:

(5) $$Z_j \;\alpha \sum_{i:\xi_i \text{ is connected to } \xi_j} e_{ji} Y_i$$

where e_{ji} is the sign of the correlation between Y_j and Y_i. Two latent variables are connected if there exists a link between the two variables: an arrow goes from one variable to the other in the arrow diagram describing the causality model.

Estimation of the weight w_{jh}

Weights w_{jh} are estimated using the *Mode A* (or Outward Mode) way of calculation. The weight w_{jh} is the covariance between the manifest variable x_{jh} and the internal estimation Z_j:

(6) $$w_{jh} = \text{cov}(x_{jh}, Z_j)$$

The PLS algorithm consists in beginning with an arbitrary choice of weights w_{jh}, for example w_{j1} is fixed to 1 and all the other w_{jh} to 0. Then steps 3, 5 and 6 are iterated until convergence (not guaranteed, but practically always encountered in practice).

Specific calculation of the latent variables for the ECSI model

In the ECSI model, following Fornell (1992), each latent variable is obtained as a weighted average of its manifest variables:

(7) $$\hat{\xi}_j = \frac{\sum_h \tilde{w}_{jh} x_{jh}}{\sum_h \tilde{w}_{jh}}$$

In this operation it is supposed that all the normalised weights $(\tilde{w}_{jh} / \sum_h \tilde{w}_{jh})$ are positive. If some of these normalised weights are negative, the corresponding variable x_{jh} should be removed from the model as this variable does no correctly describe its latent variable.

These constructs have more practical meaning than the standardised latent variables as they are in the same units than the manifest variables scaled from 0 to 100. The linear relationship between the Wold's latent variable Y_j and the Fornell's latent variable $\hat{\xi}_j$ is clear from equations (4) and (7):

(8) $$\hat{\xi}_j = \frac{1}{\sum_h \tilde{w}_{jh}} (Y_j + \hat{m}_j)$$

Estimation of the structural equation

The structural equations (2) are estimated by individual multiple regressions where the latent variables ξ_j are replaced by their estimations Y_j. These regressions are standard outputs of the Lohmöller's program. The significance levels of the regression coefficients are calculated using the usual Student's t statistic. We prefer this solution to the Jackknife solution for two reasons: (1) The Jackknife solution is not available in the Lohmöller's program when the number of subjects is too high (more than 400), and (2) When the Jackknife solution is available in the Lohmöller's program (less than 400 subjects) the Student's t and the Jackknife solutions are quite comparable.

III. Construction of the Consumer Satisfaction Index for a mobile phone provider

We will study in this section how to use the Lohmöller's program to compute the Customer Satisfaction Index. The data represent the answers of 250 consumers of a mobile phone provider in a specific European country. The program code for the Lohmöller's program LVPLS 1.8 is given in annex 1. The results are given in annex 2.

Estimation of the latent variables

The Lohmöller's program gives the standardised latent variables $Y_j = \sum \tilde{w}_{jh} (x_{jh} - \bar{x}_{jh})$. The weights $\tilde{w}_{jh}$ appear in the program output in column *Weight* of table *Outer model* and the estimated mean $\hat{m}_j = \sum \tilde{w}_{jh} \bar{x}_{jh}$ in the column *Mean* of table *Inner mode*. For example the standardised latent variable CSI_std is calculated according to the following formula:

$$CSI\_std = 0.0158 \times C\_sat1 + 0.0231 \times C\_sat2 + 0.0264 \times C\_sat3 - 4.6523$$

For the ECSI model the latent variables are calculated as

$$\hat{\xi}_j = \frac{\sum_h \tilde{w}_{jh} x_{jh}}{\sum_h \tilde{w}_{jh}}$$

For example the latent variable “Customer Satisfaction” is calculated as

$$CSI = \frac{0.0158 \times C\_sat1 + 0.0231 \times C\_sat2 + 0.0264 \times C\_sat3}{0.0158 + 0.0231 + 0.0264}$$

This is a weighted average of the manifest variables C_sat1 to C_sat3 scaled from 0 to 100.

The means and standard deviations of the various latent variables are given in table 2:

Table 2 : Mean and standard deviation of the latent variables

	N	Minimum	Maximum	Mean	Std. Deviation
IMAGE	250	26.49	100.00	72.6878	13.7660
CUSTOMER EXPECTATION	250	25.85	100.00	72.3198	14.1259
PERCEIVED QUALITY	250	23.95	100.00	74.5765	14.2573
PERCEIVED VALUE	250	.00	100.00	61.5887	20.5987
CUSTOMER SATISFACTION	250	23.68	100.00	71.2876	15.3417
COMPLAINT	250	.00	100.00	67.4704	25.2684
LOYALTY	250	1.29	100.00	69.1757	21.2668

In table 3, we check that each manifest variable is more correlated to its own latent variable than to the other latent variables. To make this table easier to read, correlations below 0.5 are not shown. You may notice that the manifest variable Loyalty2 does not correctly describe its latent variable (in fact cor(Loyalty2, Loyalty) = 0.272). This variable should be removed from the model. In fact it is difficult to give a meaningful answer to this item.

The ECSI model for a Mobile Phone Provider

The causality model of figure 2 summarises the various structural regressions of the ECSI model. The path coefficients are the standardised regression coefficients. The R^2 are also shown. These coefficients appear in Annex 2 in tables *Path coefficients* and *Inner model*. As the weights for variables Perceived value and Customer Loyalty are negative, we have to take the opposite of the path coefficients related to these two variables. The significance levels shown next to the path coefficients have been calculated using simple or multiple regressions. The significant arrows are in bold.

Variables Image, Perceived value and quality have a significant impact on Customer Satisfaction. However the most important impact on Customer Satisfaction is Perceived quality (.544). Image and Perceived value have less impact (.200 and .153). It is not surprising that actual qualities of the mobile phone provider are much more important for the customer than some abstract marketing characteristics. Customer Expectation has no direct impact on Customer Satisfaction. Loyalty is a very important factor in the mobile phone industry. It mainly depends upon Customer Satisfaction (.466) and to a less extent Image (.212). It is interesting to note that Complaints depends on Customer Satisfaction, but has no direct impact on Loyalty. Of course we have to be careful for the interpretation of non significant path coefficients as it can come from a multicolinearity problem. This suggests to use PLS regression (Martens & Næs, 1989, Tenenhaus, 1998) instead of multiple regression.

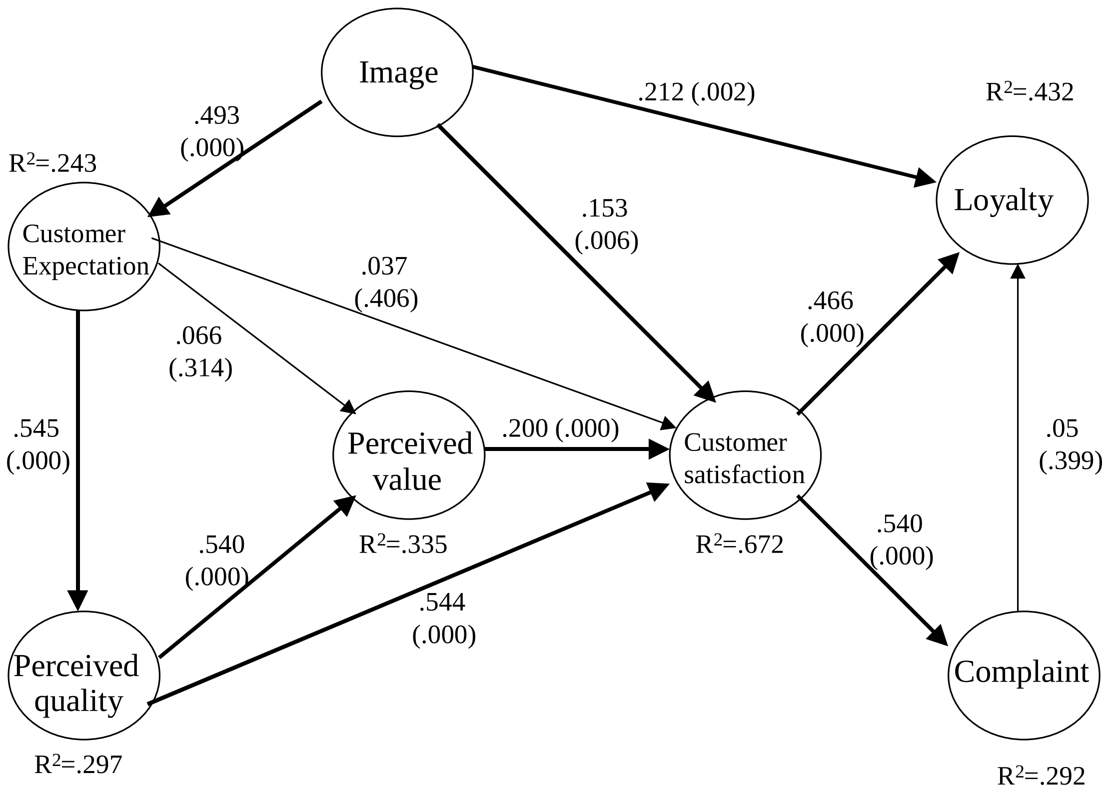

Figure 2 : ECSI Causality model for a mobile telephone provider

Table 3 : Correlations between manifest variables and latent variables

	Image	Customer expectation	Perceived quality	Perceived value	Customer satisfaction	Complaint	Loyalty
Image1	*.717*		.571		.539		
Image2	*.565*						
Image3	*.657*						
Image4	*.791*		.571		.543		
Image5	*.698*		.544		.500		
C_exp1		*.689*					
C_exp2		*.644*					
C_exp3		*.724*					
P_qual1	.622	.537	*.778*		.661		
P_qual2	.		*.651*				
P_qual3	.621		*.801*		.651		
P_qual4	.		*.760*		.587		
P_qual5	.599		*.732*		.516		
P_qual6	.551		*.766*		.539		
P_qual7	.596		*.803*	.547	.707		
P_val1				*.933*			
P_val2	.541		.594	*.911*	.631		.524
C_sat1	.558		.638		*.711*		
C_sat2	.524		.672		*.872*		
C_sat3	.613		.684	.588	*.884*	.547	.610
Complaint			.537		.540	*1*	
Loyalty1							*.854*
Loyalty2							
Loyalty3	.528		.537		.659		*.869*

CONCLUSION

In his 92 paper, Fornell described in great details the marketing foundations of the Swedish Customer Satisfaction Barometer, but he only touched the statistical aspects of the problem. The objective of this paper was to describe very precisely all the Fornell's statistical methodology. We have shown how to use the Lohmöller's program LVPLS 1.8 to estimate the ECSI model. It has been checked on a pilot study that the Fornell's program (the program is not available, but we had access to the results of the pilot study) and the Lohmöller's program give exactly the same results.

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ANNEX 1

The program code for the Lohmöller LVPLS 1.8 program

```
LVPX
Etude Téléphonie mobile
   7 250   13256   2 100   5   4   0
   5   3   7   2   3   1   3
   0   0   0   0   0   0   0
   0   0   0   0   0   0   0
IMAG1   IMAG2   IMAG3   IMAG4   IMAG5   CUEX1   CUEX2   CUEX3   PERQ1
PERQ2   PERQ3   PERQ4   PERQ5   PERQ6   PERQ7   PERV1   PERV2   CUSA1
CUSA2   CUSA3   CUSCO   CUSL1   CUSL2   CUSL3
 0 111      (2A4,7F2.0)
IMAGE    0 0 0 0 0 0 0
CUS_EXP  1 0 0 0 0 0 0
PER_QUAL 0 1 0 0 0 0 0
PER_VAL  0 1 1 0 0 0 0
ECSI     1 1 1 1 0 0 0
CUS_COMP 0 0 0 0 1 0 0
CUS_LOY  1 0 0 0 1 1 0
 0 0    (2A4,23F7.0,F6.0)
 100293  66.67  44.44  44.44  44.44  33.33  66.67  66.67  55.56  66.67
55.56  33.33  66.67  55.56  44.44  44.44  11.11  22.22  55.56  33.33  66.67
66.67  55.56  44.44  55.56
 100382 100.00  88.89 100.00 100.00  88.89 100.00 100.00  88.89 100.00
88.89 100.00 100.00  88.89 100.00 100.00 100.00 100.00 100.00 100.00  77.78
100.00 100.00  11.11 100.0
 100386  77.78  66.67  55.56  33.33  66.67  66.67  66.67  66.67  66.67
77.78  44.44  66.67  77.78  66.67  66.67  66.67  66.67  77.78  66.67  66.67
55.56  55.56  11.11  66.67
.
.
.
 302284  66.67  77.78  44.44  77.78  77.78  77.78  77.78  66.67  77.78
66.67  55.56  77.78  88.89  66.67  88.89  77.78  77.78  77.78  66.67  77.78
77.78  66.67 100.00  77.78
 302291  77.78  77.78  55.56  77.78  66.67  66.67  55.56  66.67  66.67
55.56  55.56  77.78  66.67  55.56  66.67  44.44  44.44  77.78  44.44  66.67
11.11  66.67  66.67  66.67
 300589  77.78 100.00  77.78  88.89  88.89 100.00  77.78  44.44  88.89
100.00 100.00  77.78  77.78  77.78  88.89  44.44  88.89  66.67  77.78
77.78  88.89 100.00  22.22 100.00
STOP
```

Comments

Lines 3 to 6 of this program describe the specific selected options. They are explained in the program output (annex 2).
Lines 7 to 9 give the names of the manifest variables and their order in the data file.
Line 10 gives the reading format for the structural equations.
Lines 11 to 17 give the structural equations model. When the model is recursive (no loop) the matrix is lower diagonal. This is the case here.
Line 18 gives the reading format for the data.
Next lines contain the data (customer identification and manifest variables x_{jh} (scaled between 0 and 100)).

ANNEX 2

The results

```
JBL                                1.8
====================================
--      P    L    S    X          --

-- LATENT VARIABLES PATH ANALYSIS --
- PARTIAL LEAST-SQUARES ESTIMATION -

Etude Téléphonie mobile

====================================  COMMENTS

Number of Blocks       NBLOCS =    7
Number of Cases        NCASES =  250
Number of Dimensions     NDIM =    1
Output Quantity           OUT = 3256
Inner Weighting Scheme  IWGHT =    2   Centroid Scheme
Number of Iterations    NITER =  100
Estimation Accuracy       EPS =    5
Analysed Data Metric   METRIC =    4   Manifest variables are not
                                       standardised

====================================
Block    N-MV Deflate LV-Mode   Model
------------------------------------
IMAGE      5   no     outward  Exogen   Mode A (LV-Mode = outward), 0 on
CUS_EXP    3   no     outward Endogen   program line 5,
PER_QUAL   7   no     outward Endogen   1 latent variable per block (Deflate
PER_VAL    2   no     outward Endogen   = no), 0 on program line 6
ECSI       3   no     outward Endogen
CUS_COMP   1   no     outward Endogen
CUS_LOY    3   no     outward Endogen
------------------------------------
          24
====================================
```

Etude Téléphonie mobile

Dimension No. 1

Partial Least-Squares Parameter Estimation

Change of Stop Criteria during Iteration

Cycle No.	CR1	CR2	CR3	CR4	CR5
1	.1026E+01	.3231E+00	.5287E+00	.5147E+00	.1773E-01
2	.5873E-02	.1176E-02	.5439E-02	.4155E-02	-.3903E-03
3	.9046E-04	.5615E-04	.1597E-04	.2670E-04	.2143E-04
4	.2483E-05	-.4172E-06	-.1550E-05	-.1371E-05	.3166E-07

Convergence at Iteration Cycle No. 4

Path coefficients

	IMAGE	CUS_EXP	PER_QUAL	PER_VAL	ECSI	CUS_COMP	CUS_LOY
IMAGE	.000	.000	.000	.000	.000	.000	.000
CUS_EXP	.493	.000	.000	.000	.000	.000	.000
PER_QUAL	.000	.545	.000	.000	.000	.000	.000
PER_VAL	.000	-.066	-.540	.000	.000	.000	.000
ECSI	.153	.037	.544	-.200	.000	.000	.000
CUS_COMP	.000	.000	.000	.000	.540	.000	.000
CUS_LOY	-.212	.000	.000	.000	-.466	-.050	.000

Correlations of latent variables

	IMAGE	CUS_EXP	PER_QUAL	PER_VAL	ECSI	CUS_COMP	CUS_LOY
IMAGE	1.000						
CUS_EXP	.493	1.000					
PER_QUAL	.731	.545	1.000				
PER_VAL	-.508	-.360	-.576	1.000			
ECSI	.671	.481	.791	-.604	1.000		
CUS_COMP	.469	.250	.537	-.348	.540	1.000	
CUS_LOY	-.548	-.366	-.524	.517	-.635	-.401	1.000

Inner Model

Block	Mean	Location	Mult.RSq	AvResVar	AvCommun	AvRedund
IMAGE	5.2903	5.2903	.0000	207.3363	.4760	.0000
CUS_EXP	5.1199	2.5116	.2431	219.8322	.4711	.1145
PER_QUAL	5.2422	2.4514	.2971	149.0872	.5737	.1705
PER_VAL	-2.9955	.1743	.3351	73.8087	.8495	.2846
ECSI	4.6523	.2026	.6717	88.7433	.6825	.4585
CUS_COMP	2.6735	.1611	.2916	.0000	1.0000	.2916
CUS_LOY	-3.2648	.1574	.4318	433.2169	.5200	.2246
Average			.3244	185.5536	.5881	.1853

Outer Model

Variable	Weight	Loading	Location	ResidVar	Communal	Redundan
IMAGE	outward					
IMAG1	.0145	13.5115	2.2992	172.8140	.5137	.0000
IMAG2	.0126	10.5838	19.3434	238.0597	.3200	.0000
IMAG3	.0136	15.5489	-18.4351	317.1061	.4326	.0000
IMAG4	.0176	16.1672	-12.3277	155.7097	.6267	.0000
IMAG5	.0144	12.0500	13.2760	152.9918	.4869	.0000
CUS_EXP	outward					
CUEX1	.0231	12.3473	9.8955	170.9680	.4714	.1146
CUEX2	.0224	12.8096	6.9954	231.1035	.4152	.1009
CUEX3	.0253	16.9216	-15.2583	257.4248	.5266	.1280
PER_QUAL	outward					
PERQ1	.0098	12.2630	12.8720	98.1148	.6052	.1798
PERQ2	.0085	13.6473	-2.7407	253.6826	.4234	.1258
PERQ3	.0118	16.1807	-10.3771	146.3491	.6414	.1906
PERQ4	.0094	13.9255	3.8455	141.5140	.5781	.1718
PERQ5	.0084	11.8000	14.4994	120.4663	.5361	.1593
PERQ6	.0095	13.8490	2.6912	134.8588	.5871	.1745
PERQ7	.0129	16.4124	-12.7914	148.6248	.6444	.1915
PER_VAL	outward					
PERV1	-.0239	-22.5804	-10.3504	76.3317	.8698	.2914
PERV2	-.0247	-18.6053	10.0025	71.2857	.8292	.2779
ECSI	outward					
CUSA1	.0158	9.7212	32.4203	92.6286	.5050	.3392
CUSA2	.0231	17.0633	-11.2935	92.0410	.7598	.5104
CUSA3	.0264	17.1403	-9.5627	81.5605	.7827	.5258
CUS_COMP	outward					
CUSCO	.0397	25.2193	.0000	.0000	1.0000	.2916
CUS_LOY	outward					
CUSL1	-.0185	-25.2005	-10.5839	234.0672	.7307	.3155
CUSL2	-.0061	-8.6089	16.2050	917.0478	.0748	.0323
CUSL3	-.0225	-21.3694	4.3239	148.5356	.7546	.3258

Latent variables *(Standardised)*

	IMAGE	CUS_EXP	PER_QUAL	PER_VAL	ECSI	CUS_COMP	CUS_LOY
100293	-1.893	-.681	-1.633	2.180	-1.245	-.030	.715
100382	1.688	1.678	1.598	-1.869	1.292	1.292	-.905
100386	-1.016	-.400	-.630	-.247	-.123	-.470	.668
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302284	-.245	.105	-.001	-.788	.170	.411	-.330
302291	-.092	-.650	-.782	.834	-.637	-2.233	.124
300589	1.008	.057	.927	-.266	.251	.851	-.973