CATERINA LIBERATI

ADDRESS
University of Milano-Bicocca
Department of Economics
Management and Statistics (DEMS)
p.zza Ateneo Nuovo 1, 20126 Milano, Italy.

CONTACTS
Tel. (+39)0264483229
email: caterina.liberati@unimib.it

RESEARCH TOPICS

Credit Risk Modeling: Supervised Classification, Credit Scoring, Default Prediction.
Business Analytics: Unsupervised Classification, Customer Profiling, Businesses Segmentation.

CURRENT POSITIONS

2019- Associate Professor in Statistics for Economics
2020- University Orientation Delegate for DEMS University of Milano-Bicocca
2019-2021 Council Member of the International Society for Business and Industrial Statistics (ISBIS)

FORMER POSITIONS

2010-2019 Assistant Professor in Statistics for Economics at the University of Milano-Bicocca
2006-2010 Post Doc Fellow in Statistics at University of Bologna.
2001-2003 Consultant at Simbologica srl

EDUCATION

2002-2006 Ph.D. in Statistics at University of Bologna.
2001 Laurea (MSc eq.) in Statistics for Economics at University of Bologna

VISITING

2018 Visiting Fellow at the Business School of the University of Edinburgh (2 weeks funded by the International Exchange Program Bilateral: Accademia dei Lincei-The Royal Society of Edinburgh)

2015 Visiting Fellow at the Business School of the University of Edinburgh (3 months funded by DEMS Department University of Milano-Bicocca)

2007/2008 Visiting Fellow at the Statistical Department, College of Business Administration, University of Tennessee (6 months funded by Marco Polo grant)

2004/2005 Visiting Ph.D. at the Statistical Department, College of Business Administration, University of Tennessee (6 months funded by Marco Polo grant).

AFFILIATIONS

Member of the following Scientific Societies:
2016- Italian Statistical Society (SIS)
2016- European Network for Business and Industrial Statistics (ENBIS)
2013- International Society for Business and Industrial Statistics (ISBIS)

Member of the following Research Centers:
2020- Center for European Studies (CefES-DEMS)
2015- Bicocca Data Archive (UniData)
2012- Bicocca-Applied Statistic Center (B-ASC)

PUBLICATIONS

Scientific Journals:

Crosato L, Domènech J., Liberati C. (2021) Predicting SME's default: are their websites informative? *Economics Letters*, 204, 109888.

Depperu D., Magnani G., Crosato L., Liberati C. (2021) Growth of Firms in a Fragmented Cultural Industry: Italian Commercial Art Galleries' Competitive Strategies. *Sustainability*, 13(9) 5057.

Arrigo E., Liberati C., Mariani P. (2021) Social Media Data and Users' Preferences: a Statistical Analysis to support Marketing Communication. *Big Data Research* 24(15), 100189.

Liberati C., Longaretti R., Michelangeli A. (2021) Measuring Tolerant Behavior. *Jahrbücher für Nationalökonomie und Statistik*, 241(2), 149-171.

Decataldo A., Liberati C., Michelangeli A., Tognetti M. (2019). Millennials e religione : divergenza o continuitá rispetto alla generazione dei genitori? *Religioni e Societá*, XXXIV(93), 21-28.

Liberati C., Camillo F. (2018) Personal Values and Credit Scoring: new insights in the financial prediction. *Journal of the Operational Research Society* 69(12): 1994-2005.

Liberati C., Mariani P. (2018) Dynamic profiling through repeated surveys: a customer satisfaction study. *Electronic Journal of Applied Statistical Analysis*, 11(1): 1-20.

Liberati C., Camillo F., Saporta G. (2017) Advances in Credit Scoring: combining performance and interpretation in Kernel Discriminant. *Advances in Data Analysis and Classification*, 11(1): 121-138.

Masserini L., Liberati C., Mariani P. (2017) Quality service in banking: a longitudinal approach. *Quality & Quantity* 51(2): 509-523.

Falotico, R., Liberati, C., Zappa, P. (2015). Identifying oncological patient information needs to improve e-health communication, *Quality and Reliability Engineering International*, 31(7): 1115-1126.

Liberati C., Marzo M., Zagaglia P., Zappa P. (2015) Drivers on demand and supply in the Euro market: the role of "key players" during the recent turmoil. *Financial Markets and Portfolio Management*, 29(3): 207-250.

Liberati C., Camillo F. (2015) Discovering hidden concepts in predictive models for texts' polarization. *International Journal of Data Warehousing and Mining*, 11(4): 29-48

Biselli M., Dall'Agata M., Gramenzi A., Gitto S., Liberati C., Ravaioli M., Gambato M., Montalti R., Pinna A.D., Burra P., Gerunda G.E., Erroi V., Cillo U., Andreone P., Bernardi M.(2015) A new progrostic model to predict drop-out from the waiting list in cirrhotic candidates for liver transplantation with MELD score $<$ 18. *Liver International*, 35(1): 184-191.

Liberati C., Mariani P. (2012). Banking Customer Satisfaction Evaluation: a Three-way Factor Perspective. *Advances in Data Analysis and Classification*, 6(4): 323-336.

Lacangellera M., Liberati C., Mariani P. (2011). Banking Services Evaluation: a Dynamic Analysis. *Journal of Applied Quantitative Methods*, 6(4): 3-13.

D'Attoma I., Liberati C. (2011). An Optimal Cluster-Based Approach for Subgroup Analysis Using Information Complexity Criterion. *International Journal of Business Intelligence and Data Mining*, 6(4): 402-425.

Liberati C., Howe A.J., Bozdogan H. (2009). Data Adaptive Simultaneous Parameter and Kernel

Selection in Kernel Discriminant Analysis (KDA) Using Information Complexity. *Journal of Pattern Recognition Research*, 4(1): 119-132.

Book Chapters:

Liberati C., Mariani P. (2018). Big Data Meet Pharmaceutical Industry: An Application on Social Media Data, in *Classification, (Big) Data Analysis and Statistical Learning*, Mola F., Conversano C., Vichi M. (Eds), Springer, 23-30.

Liberati C., Mariani P., Masserini L. (2015) A latent growth curve analysis in banking customer satisfaction, in *Advances in Latent Variables, Studies in Theoretical and Applied Statistics*, Carpita M., Brentari E., Qannari E.M. (Eds.), Springer, 151-158.

Liberati C., Mariani P. (2014) Dynamic customer satisfaction and measure of trajectories: a banking case, in *Analysis and Modeling of Complex Data in Behavioral and Social Sciences*, Studies in Classification, Data Analysis, and Knowledge Organization, Vicari D.,Okada A., Ragozini G., Weihs C. (Eds.), Springer-Verlag, 183-190

Liberati C., Camillo F. (2014) Subjective Business Polarization: Sentiment Analysis meets Predictive Modeling, in *New Trends in Database and Information Systems*, Studies in Advances in Intelligent Systems and Computing, Catania B. et al. (Eds.), Springer-Verlag, 329-338.

Liberati C., Mariani P. (2013). Evolutionary customer evaluation: a dynamic approach to a banking case, in *Statistical Models for Data Analysis*, Studies in Classification, Data Analysis, and Knowledge Organization. Giudici P., Ingrassia S., Vichi M. (Eds.), Springer-Verlag, 191-199.

Liberati C., Mariani P. (2013). Dynamic Principal Component Analysis: a banking Customer Satisfaction evaluation, in *Algorithms from & for Nature and Life*, Studies in Classification, Data Analysis, and Knowledge Organization. Lausen B., van den Poel D., Ultsch A. (Eds.), Springer-Verlag, 397-405.

Bozdogan H., Howe J. A., Katragadda S., Liberati C. (2013). Misspecification resistant model selection using Information Complexity with applications, in *Classification and Data Mining*, Studies in Classification, Data Analysis, and Knowledge Organization. Giusti, A.; Ritter, G.; Vichi, M. (Eds.), Springer-Verlag, 165-172.

Liberati C., Camillo F. (2006). Kernel Discriminant Analysis and Information Complexity: advanced models for micro-data mining and micro-marketing solutions, in *Data Mining VII: Data, Text and Web Mining and their Business Applications*, Zanasi A., Brebbia C.A., Ebecken N.F.F. (Eds.), WIT press, 115-122.

Bozdogan H., Camillo F., Liberati C. (2006). On the Choice of the Kernel Function in Kernel Discriminant Analysis Using Information Complexity, in *Data Analysis, Classification and the Forward Search*, Studies in Classification, Data Analysis, and Knowledge Organization. Bock H.,Gaul W., Vichi M. (Eds.), Springer-Verlag, 11-21

Refereed Conference Proceedings:

Liberati, C., Longaretti, R., Michelangeli, A. (2018). Measuring the multiple facets of tolerance using survey data. In *Book of short Papers SIS 2018*, Pearson, 1348-1351.

Liberati C., Crosato L., Mariani P., Zavanella B. (2017) Dynamic profiling of banking customers: a pseudo-panel study. *SIS 2017 Statistics and Data Science: new challenges, new generations*, Firenze University Press. pp. 601-606.

Arrigo E., Liberati C., Mariani P. (2016) A Multivariate Approach to Facebook Data for Marketing Communication, *Proceedings of 1st International Conference on Advanced Research Methods and Analytics CARMA2016*, Editorial Universitat Politècnica de València, Valencia, Spain. pp. 66-74.

Liberati C., Zappa P. (2013) Dynamic patterns analysis meets Social Network Analysis in the modeling of financial market behavior, *Proceedings 59th ISI World Statistics Congress of the International Statistical Institute 2013*, International Statistical Institute, The Hague, Netherlands. pp. 2447-2452

Liberati C., Mariani P., Masserini L. (2013). A latent growth curve analysis in banking customer satisfaction, in *Advances in Latent Variables*, electronic proceedings of SIS2013, Eds. Brentari E., Carpita M., Vita e Pensiero, Milan, Italy, (ISBN 978 88 343 2556 8)

Liberati C., Mariani, P. (2012). Dynamic Customer Satisfaction and Measure of Trajectories: a Banking Case, in *Analysis and Modeling of Complex Data in Behavioural and Social Sciences*. Cleup Padova. (ISBN: 978-88-6129-916-0)

Liberati C., Camillo F., Saporta G. (2012). Kernel Discrimination and Explicative Features: an Operative Approach, *electronic proceedings of COMPSTAT 2012*, pp: 507-518. (ISBN: 978-90-73592-32-2)

Camillo F., Liberati C., Athappilly K., (2007) Profiling a customer base through a sample survey: a data mining approach for business solution, *electronic version in Proceedings of Society for the Advancement of Information System.* pp: 56-65.

Camillo F., Liberati C. (2006) The kernel approach in the future of data mining, in *electronic Proceedings of Knowledge Extraction and Modeling*, Esposito-Vinzi V., Lauro C., Braverman A., Kiers H. A., Schimek M. G. (Eds). Capri 4-6 Settembre 2006. (ISBN: 88-89744-01-4)

Camillo F., Liberati C., (2006) F. Neri, e-CRM, web semantic propensity models and micro-data mining an application of Kernel Discriminant Analysis to the Glam on web case, in *Proceeding of 8th International Conference on Textual data Statistical Analysis JADT '06*, Presses Universitaires de Franche-Comtè, Vol I, pp. 235-243.

Camillo F., Liberati C. (2006) Recent issues about textual information analysis in micro-marketing: methodological suggestions and some case studies, in *Proceedings XLIII Meeting of the Italian Statistical Society*, Universitá di Torino 14-16 giugno, Cleup, vol. Plenary sessions Invited sessions, pp. 93-103.

CONFERENCES
Organizer:
Scientific Board Member of the *International Society for Business and Industrial Statistics Satellite Meeting*, May 7, 2021

Scientific Board Member of the *3rd International Conference on Advanced Research Methods and Analytics (CARMA 2020)* Universitat Politècnica de València, Valencia July 8-9, 2020

Scientific Board Member of the *Young Business and Industrial Statisticians (y-BIS 2019) Workshop on Recent Advances in Data Science and Business Analytics*, Mimar Sinan Fine Arts University, Istanbul September 25-28 2019.

Scientific Board Member of the *2nd International Conference on Advanced Research Methods and Analytics (CARMA 2018)* Universitat Politècnica de València, Valencia

Scientific Board Member of the *International Conference on Information Complexity and Statistical Modeling in High Dimensions with Applications (IC-SMHD-2016)*, Kayseri, Turkey

Chair of the session: Transport and energy, *3rd International Conference on Advanced Research Methods and Analytics CARMA2020* Universitat Politècnica de València.

Chair of the session: Contributions in econometric analysis of the business cycle, *12th International Conference on Computational and Financial Econometrics (CFE 2018)* University of Pisa.

Chair of the session: Advances in Credit Risk Modeling, *Meeting of the Classification and Data Analysis Group of the the Italian Statistical Society (CLADAG 2017)*, University of Milano-Bicocca (joint with Dr. G. Andreeva)

Local Committee Member of the Second *International Conference on Data Science and Social Research (DSSR 2019)*, University of Milano-Bicocca.

Local Committee Member of the *Innovation and Society, Statistical Methods for the Evaluation (IES 2013)*, University of Milano-Bicocca.

Speaker (not complete):
L Crosato, J. Domenech, C. Liberati: Predicting SME's default: some old facts and a new idea. *3rd International Conference on Advanced Research Methods and Analytics CARMA2020*, Universitat Politècnica de València, Valencia, July 8-9, 2020 (online).

Desamparados Blazquez, L Crosato, J. Domenech, C. Liberati: Predicting Business Survival From Their Websites. *Young Business and Industrial Statisticians (y-BIS 2019)*, Mimar Sinan Fine Arts University, Istanbul September 25-28 2019.

Liberati C., Andreeva G.: Behavioural attitudes and financial performance: New ideas for segmenting bank customers. *12th International Conference on Computational and Financial Econometrics (CFE 2018)*, University of Pisa, December 14-16, 2018. (solicited)

Liberati C., Andreeva G.: Psychographic Segmentation of Italian Bank Customers. *29th European Conference on Operational Research conference (EURO2018)*, Universitat Politècnica de València, Valencia, July 8-11, 2018. (solicited)

Liberati C., Crosato L., Mariani P., Zavanella B.: Dynamic profiling of banking customers: a pseudo-panel study. *Statistics and Data Science: new challenges, new generations (SIS 2017)*, Florence, June 28-30, 2017.

Liberati C., Camillo F.: Insolvency as opportunity: a marketing perspective on time-dependent credit risk. *The 17th Conference of the Applied Stochastic Models and Data Analysis International Society (ASMDA2017)* London, June 6-9, 2017.

Liberati C., Arrigo E., Mariani P.: A Multivariate Approach to Facebook Data for Marketing Communication, 1st *International Conference on Advanced Research Methods and Analytics (CARMA2016)*, Universitat Politècnica de València, Valencia, Spain, July 6-7 2016.

Liberati C., Mariani M.: Visualization and Measuring of Dynamic Customer Satisfaction: a Banking Case. *International Symposium on Business and Industrial Statistics (ISBIS 2014)*, Durham, NC, U.S., June, 9-11 2014 (solicited)

Liberati C., Camillo F.: Satisfaction, Human Values and other Intangible Dimensions as Drivers of New Credit Scoring Models, *6th International Conference of the ERCIM WG on Computational and Methodological Statistics (ERCIM 2013)*, London, December, 14-16 2013 (solicited)

Liberati C., Zappa P.: Dynamic Patterns Analysis meets Social Network Analysis in the Modeling of Financial Market Behavior. 59th *World Statistics Conference (ISI 2013)*, Hong Kong, August, 25 - 30 2013 (solicited)

Liberati C., Camillo F., Saporta G.: Kernel Discrimination and Explicative Features: an Operative Approach, 20th *International Conference on Computational Statistics (COMPSTAT 2012)*, Lymassol, Cyprus, August, 27-31 2012 (solicited)

Liberati C., Mariani, P.: Evolutionary Customer Evaluation: a Dynamic Approach to a Banking Case, *Meeting of the Classification and Data Analysis Group of the the Italian Statistical Society*

(CLADAG 2011), Pavia, September 7-9 2011.

Liberati C., Mariani P.: Dynamic Principal Component Analysis: a banking Customer Satisfaction evaluation, *Joint Conference of the German Classification Society and the German Association for Pattern Recognition (GFKL 2011)*, Frankfurt, August 31-September 2 2011

Liberati C., Masotti M., Bozdogan H.: Probabilistic Discriminant Analysis in the Feature Space using Information Complexity. *International Conference on Multivariate Statistical Modelling & High Dimensional Data Mining (HDM 2008)*, Kayseri, Turkey, June 19-23 2008 (solicited)

Camillo F., Liberati C.: A micro-data mining approach for qualitative-emotional marketing using neuro-information, *Meeting of the Classification and Data Analysis Group of the the Italian Statistical Society (CLADAG 2007)*, Macerata, Italy, September, 12-14 2007 (solicited).

Camillo F., Liberati C.: Profiling a customer base through a sample survey: a data mining approach for business solution, *Annual Midwest Business Administration Association International Conference (MBAA 2007)*, Chicago, March 28-30 2007.

Camillo F., Liberati C.: The kernel approach in the future of data mining: many subjective choices in a complex landscape, *IACS-INTERFACE-IFCS workshop Knowledge Extraction and Modeling (KNEMO)*, Capri, Italy, September 4-6 2006 (solicited).

Liberati C., Camillo F.: Kernel Discriminant Analysis and Information Complexity: advanced models for micro data-mining and marketing solutions, 7th *International Conference on Data, Text and Web Mining and their Business Applications and Management Information Engineering Data mining and Information Engineering*, Prague, July 11-13 2006.

Camillo F., Liberati C.: Recent issues about textual information analysis in micro-marketing: methodological suggestions and some case studies, *XLIII meeting della Societá Italiana di Statistica*, Turin, June 14-16 2006 (solicited).

Camillo F., Liberati C.: e-CRM, web semantic propensity models and micro-data-mining: an application of Kernel Discriminant Analysis to the Glam on Web case, 8th *International Conference on the Statistical Analysis of Textual Data (JADT 2006)*, Besançon, France, April 19- 21 2006.

Liberati C.: e-CRM, web propensity models and micro-data-mining: the Glam on Web case and new statistical methodologies, *Meeting of the Classification and Data Analysis Group of the the Italian Statistical Society (CLADAG 2005)*, Parma, Italy, June 6-8 2005. (solicited)

FUNDS

2019-2022 Member: Digital footprint, competitiveness and business demography. Funded by: Spanish National Research Agency (AEI). (PID2019-107765RB-I00)

2017 Principal Investigator. National project of "Fondo per il finanziamento per le attivitá base di ricerca" (FABBR) funded by Italian Ministry of Education and Reserach.

2011-2015 Principal Investigator of Milano-Bicocca Unit. Joint collaboration with IRCCS foundation Istituto Tumori Milano. National project of "Ricerca Finalizzata 2009" funded by Italian Health Ministry (RF-2009-1551083)

ACADEMIC SERVICES

Refereeing activity (not complete):

Quality & Quantity, Statistica Applicata, Mathematics, Applied Science, Information, Review of Behavioral Finance.

Supervision:

2020-2022 *Black-box supervised learning and empirical assessment: new perspectives in credit risk modeling.* (Ph.D. thesis Marco Repetto).

2014-2015 *Fabbisogni informativi dei pazienti e dei modelli di comunicazione integrata medici-associazioni-pazienti: valutazione di un prototipo nell'ambito dei tumori rari.* (Post-doc Rosa Falotico)

TEACHING

Postgraduate Courses (PC)

2021- Quantitative Market Analysis, PC in Economic Statistics, School of Economics and Statistics, University of Milano-Bicocca

2012–2020 Quantitative Market Analysis, PC in Marketing and Global Markets, School of Economics and Statistics, University of Milano-Bicocca

2019–2021 Statistics for Tourism, PC in Economics for Tourism, School of Economics and Statistics, University of Milano-Bicocca

2016–2018 Quantitative Market Analysis, PC in Economic Statistics, School of Economics and Statistics, University of Milano-Bicocca

Undergraduate Courses (UC)

2017–2020 Statistics for Economics, UC in Science of Legal Services, School of Law, University of Milano-Bicocca

2016–2017 Market Analysis, UC in Economic Statistics, School of Economics and Statistics, University of Milano-Bicocca

2013–2015 Statistics for Economics, UC in Economics and Business, School of Economics and Statistics, University of Milano-Bicocca

April, 29 2021