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# INTEGRATED INFORMATION

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# Preface: Proceedings of the International Conference on Integrated Information (IC-ININFO 2011)

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#### Aims and Scope of the Conference

The International Conference on Integrated Information 2011 took place in Kos Island, Greece, between September, 29 and October, 3, 2011. IC-ININFO is an international interdisciplinary conference covering research and development in the field of information management and integration.

The conference aims at creating a forum for further discussion for an Integrated Information Field incorporating a series of issues and/or related organizations that manage information in their everyday operations. Therefore, the call for papers is addressed to scholars and/or professionals of the fields of Library and Archives Science (including digital libraries and electronic archives), Museum and Gallery Studies, Information Science, Documentation, Information Management, Records Management, Knowledge Management, Data management and Copyright experts the latter with an emphasis on Electronic Publications. Furthermore, papers focusing on issues of Cultural Heritage Management and Conservation Management are also be welcomed along with papers regarding the Management of Nonprofit Organizations such as libraries, archives and museums.

One of the primary objectives of the IC-ININFO will be the investigation of information-based managerial change in organizations. Driven by the fast-paced advances in the Information field, this change is characterized in terms of its impact on organizations that manage information in their everyday operations.

Grouping emerging technologies in the Information field together in a close examination of practices, problems and trends, IC-ININFO and its emphases on integration and management will present the state of the art in the field. Addressed jointly to the academic and practitioner, it will provide a forum for a number of perspectives based on either theoretical analyses or empirical case studies that will foster dialogue and exchange of ideas.

### **Topics of general Interest**

Library Science, Archives Science, Museum and Gallery Studies, Information Science, Documentation, Digital Libraries, Electronic Archives, Information Management, Records / Document Management, Knowledge Management, Data Management, Copyright, Electronic Publications, Cultural Heritage Management, Conservation Management, Management of Nonprofit Organizations, History of Information, History of Collections, Health Information

# Symposia

The Conference offered a number of sessions under its patronage, providing a concise overview of the most current issues and hands-on experience in information-related fields.

- Symposium on Integrated information: Theory, Policies, Tools
- 4th Symposium on Business and Management and Dynamic Simulation Models supporting management strategies

- Session on Open Access Rrepositories: Self-archiving, Metadata, Content policies, Usage
- Session on Evidence-Based Information in Clinical Practice
- Session on Business Management and Communication Strategies supporting Decision Making Process in Tourism Sector
- Session on Electronic Publishing: A Developing Landscape
- Session on Information and Knowledge Management
- Session on Information Content Preservation as Outcome of Conservation of Cultural Heritage: Ethics, Methodology and Tools
- Session on Advances Information for Strategic Management
- Session on Information History: Perspectives, Methods and Current Topics
- Session on Divergence and Convergence: Information Work in Digital Cultural Memory Institutions
- Session on Contemporary issues in Management: Organisational Behaviour, Information Technology, Education & Hospital leadership.

The wide range of aspects that the sessions covered, highlighted future trends in the Information Science.

#### **Paper Peer Review**

More than 300 papers had been submitted for consideration in IC-ININFO 2011. From them, 91 were selected for presentation, after peer review in a double blind review process. The accepted papers were presented at IC-ININFO 2011.

#### **Thanks**

We would like to thank all members that participated in any way in the IC-ININFO 2011 Conference and especially:

- The famous publishing house Emerald for its communication sponsorship.
- The co-organizing Universities and Institutes for their support and development of a high-quality Conference scientific level and profile.
- The members of the Scientific Committee that honored the Conference with their presence and provided a significant contribution to the review of papers as well as for their indications for the improvement of the Conference.
- All members of the Organizing Committee for their help, support and spirit participation before, during and after the Conference.
- The Session Organizers for their willing to organize sessions of high importance and for their editorial work, contributing in the development of valued services to the Conference.
- PhDc Marina Terzi for her excellent editorial work, contributing in the production of the Conference proceedings.

#### **CONFERENCE DETAILS**

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#### KEYNOTE SPEAKER



Professor Amanda Spink

Professor Amanda Spink has published over 340 scholarly journal articles, refereed conference papers and book chapters, and 6 books. Many of her journal articles are published in the Journal of the American Society for Information Science and Technology, Information Processing and Management, and the Journal of Documentation. She is Editor of the Emerald journal Aslib Proceedings. Amanda's research has been published at many conferences including ASIST, IEEE ITCC, CAIS, Internet Computing, ACM SIGIR, and ISIC Conferences. Her recent books include Information Behavior: An Evolutionary Instinct and Web Search: Multidisciplinary Perspectives, both published by Springer. Amanda's research focuses on theoretical and empirical studies of information behavior, including the evolutionary and developmental foundations. The National Science Foundation, the American Library Association, Andrew R. Mellon Foundation, Amazon.com, Vivisimo. Com, Infospace.com, NEC, IBM, Excite.com, AlltheWeb.com, AltaVista.com, FAST, and Lockheed Martin have sponsored her research. In 2008 Professor Spink had the second highest H-index citation score in her field from 1998 to 2008 [Norris, M. (2008)]. Ranking Fellow Scholars and their H-Index: Preliminary Survey Results. Loughborough University, Dept of Information Science Report].

#### Merging activity and employee performance: the Greek Banking System

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**Abstract:** The purpose of this paper is to examine the impact of mergers and acquisitions on employee performance in Greek banking sector over the period 1996-2004. By measuring four financial ratios, we find controversial results about the performance of employees following merging activity in Greek banking industry.

Results are expected, since mergers and acquisitions represent a disorienting dilemma for employees which can have both positive and negative impact on their performance. Disorienting dilemmas lead to stress and anxiety because employees are confronted with an experience such as a merger and an acquisition that leads them to review their views, thereby altering their perspectives. Such a dilemma may serve as an impetus for transformative learning. Transformative learning assists employees in merged banks to acquire productive thinking styles and practices. The paper presents an explanation why merging activity in the Greek banking system has ambiguous effects on employee performance and suggests the implementation of Transformative Learning.

**Keywords:** Banks, M&As, Operating Performance, Adult Education, Transformative Learning.

#### I. INTRODUCTION

The process of globalization changed the Greek banking landscape and spurred the largest wave of mergers and acquisitions (M & As) so far. In the period 1996-2004 a large number of mergers and acquisitions were completed. The growing and more complex competition increased in the Greek banking sector as a result of a more liberalized regulatory framework, the emergence of new financial intermediaries and new information technologies.

The empirical literature is mainly concentrated on the effects of mergers and acquisitions on the performance of merged banks.

Athanasoglou and Brissimis (2004), employed operating performance methodology on revenue, cost, profit and productivity ratios in the pre-merger and acquisition period 1994-1997 and post-merger and acquisition period 2000-2002. They showed that merger and acquisitions positively affect merged banks' profitability as well as cost efficiency.

Mylonidis and Kelnikola (2005), by using operating performance methodology did not much evidence of performance gains resulting from bank mergers.

Mylonakis (2006), examined the impact of merger and acquisitions on staff employment of Greek bank market during 1998-2003 period. He found negative effects on employment, since 3,627 jobs had been cancelled. These jobs belonged to banks that were either merged or acquired.

Based on Organization analysis, mergers and acquisitions represent a transformation for the organization and employees. Transformations can be disturbing to people for whom the status quo is the desired condition. Mergers can change the nature, orientation and character of one or both of the merger partners. Problems arise from employees' fears over the loss of situational control or the possible loss of their job and the financial obligations concomitant with the loss of job (Appelbaum et al., 2000). When experiencing mergers as a "loss", the grieving process has proven to be quite successful in helping employees' cope with the feeling of stress and uncertainty. When grieving, people go through a series of four stages according to the framework of the Kubler-Ross model of bereavement (1969): the first stage is disbelief and denial, next comes anger, emotional bargaining is the third stage and finally there is acceptance (Appelbaum et al., 2000).

One of the key characteristics of an organization experiencing significant change is that worker productivity falls significantly (Austin and Currie, 2003). The majority of employees after a merger or acquisition deal may be pressed into education and lifelong education in the workplaces. But there may be an unlimited number of individuals (employee) and situational reasons for not learning or insufficient learning or distorted learning.

A modern and useful theory to boost employees' productivity after merging activity is Transformative Learning. Transformative Learning is more than just an interesting theory and can significantly contribute to human resource development (Brooks, 2004). The concept of transformative learning was introduced in the field of adult education by Mezirow (1978), in an article that was entitled "Perspective transformation", published in the American Journal, *Adult Education Quarterly*.

#### II. METHODS

In our research, we use operating performance methodology by following Pilloff (1996). The merger-related change in performance variable has been calculated as the difference between pre-merger adjusted performance for the consolidated bank

involved in merger and post-merger performance for the same bank.

We apply the operating performance model to an unbalanced panel of Greek banks studied over the period, 1996-2004, including a total sample of 26 Greek commercial banks (11 banks were involved in mergers and acquisitions activities and 15 banks as non-mergerd). Greek co-operative banks and branches of foreign banks are excluded. We investigate whether merged banks are following a different pattern of efficiency change than non-merged banks. For this reason, a merged institution is treated as a different bank from the institution that existed before the merging process.

The performance is examined with the use of four (4) financial-accounting ratios, such as:

#### **Productivity Ratios**

- 1. Total assets/Total employees
- 2. Net Income before taxes/Total employees

#### **Operating Ratios**

- 1. Total revenues/Personnel and management expenses
- 2. Total expenses/ Personnel and management expenses

Our study includes information on six cases of mergers and acquisitions (5 banks were involved as acquirers and 6 banks as targets) that meet the following criteria, as stated by Pilloff (1996): a) merger was the primary transaction in which both the bidder and target were involved during the period from at least one year before the merger year to at least one year after it, with maximum two years before and after; b) during this period, no other merger was announced by either party; c) the regulator did not encourage or assist the acquisition.

We limit the empirical analysis to the unconsolidated statements of commercial banks in order to reduce the possibility of introducing aggregation bias in the results.

All currency variables are expressed in millions of Euros, in 1995 real terms and corrected for inflation (deflated by the Wholesale Price Index published by the National Statistical Service of Greece).

The hypothesis tested is:

$$H_1$$
:  $\Delta WR_x \neq 0$  and  $H_0$ :  $\Delta WR_x = 0$ 

Where  $\Delta WR_x$  is the weighted relative difference in variable x. The relative size according to total assets of bidders and targets, by using t-test or t-student is:

$$t(\Delta WR_x) = \frac{\Delta WR_t}{\frac{S(\Delta WR_x)}{\sqrt{N}}}$$

Where  $S(\Delta WR_x)$  is standard deviation of weighted relative difference in variable x and N is number of mergers and acquisitions.

As regards productivity ratio, "Total Assets/Total Employees" is improving after a merger deal, statistically significant at 5% and 10% confidence levels. Ratio "Net Income before taxes/Total employees", indicate negative difference, which means that it is deteriorating after merger deal but the decrease is not statistically significant.

Operating ratios indicate possible reductions in operating efficiency and operating expenses. Findings show that ratio "Total revenues/Personnel and management expenses" improve after merger deal, statistically significant at 5% and 10% confidence levels, but ratio "Total expenses/ Personnel and management expenses" deteriorates (the ratio increases) after merger deal, statistically significant at 5% and 10% confidence levels.

#### III. CONCLUSIONS

The purpose of this paper was to examine the impact of mergers and acquisitions on employee performance in Greek banking sector over the period 1996-2004.

By measuring four financial ratios, we found controversial results about performance of employees, following merging activity in Greek banking industry. There is no much evidence to support that employees' performance is improving following mergers and acquisitions while it is lower when comparing merged banks with the group of non-merging banks.

These results are expected, since mergers and acquisitions represent a disorienting dilemma for employees which can have both positive and negative impacts on their performance. Such a dilemma may serve as an impetus for transformative learning.

Transformative Learning may not always be a goal of employees' education after a merger and acquisition but its importance should not be overlooked and all bank managers and human resource departments should strive to understand it, even if they do not choose to foster it. Transformational development occurs when employees are confronted with an experience, such as a merger and an acquisition that leads them to review their views thereby altering their perspectives.

Human resource development professionals of banks need to become familiar with this theory and its implications for employee training and development in order to improve employees' performance after a merger or an acquisition.

#### **REFERENCES**

Appelbaum, S., Gandell, J., Yortis, H., Proper S., Jobin, F., "Anatomy of a merger: behavior of organizational factors and processes throughout the pre-during post-stages (part 1)," *Manag. Decis.*, **38/9**, 649-661(2000)

Athanasoglou, P., and Brissimis, S., "The impact of mergers and acquisitions on the efficiency of

- banks in Greece," *Bank of Greece Economic Bulletin* (in Greek), **22**, 7-34 (2004).
- Austin, J., and Currie, B., "Changing organisations for a knowledge economy: The theory and practice of change management," *J. of Facil. Manag.*, **2**, 229-243 (2003)
- Brooks, A., "Transformational Learning theory and implications for Human Resource Development," *Advan. in Devel. Hum. Res.*, **6**, 211-225 (2004)
- <u>Kubler-Ross, On Death and Dying, Macmillan, New York (1969).</u>
- Mezirow, J., "Perspective Transformation," *Adult Educ*. *Quart.*, **28**, 100-110 (1978), doi:
- Mylonakis, J., "The impact of banks' mergers and acquisitions on their staff employment and effectiveness," *Intern. Res. J. of Fin. and Econ.*, 3, 121-137 (2006)
- Mylonidis, N., and Kelnikola, I., "Merging activity in the Greek Banking system: A financial accounting perspective," South East. Europe J. of Econ., 1, 121-144 (2005)
- Pilloff, S., "Performance changes and shareholder wealth creation associated with mergers of publicly traded banking institutions," J. of Mon. Cr. and Banking, 28, 294-310 (1996)