



**"COMPARATIVE STUDY OF THE COMPUTER TOOLS FUNCTIONS AND  
APPLICABILITY FOR DEMAND FORECAST AND INVENTORY  
MANAGEMENT"**

**CONCLUSIONS SUMMARY**



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## 1. INTRODUCTION

This research study of demand forecast management optimization and inventory management tools is a collaborative effort between the Camilo José Cella University and EAE Foundation.

Camilo José Cella University (UCJC) was created in 2000 as a projection of more than a century educational experience of SEK School. Its objectives are to develop a quality college education project where they could form "global academics". That is to say, professionally prepared young people with a comprehensive view of society and the XXI century's world.

The UCJC is a free, independent and modern university with wide degree choices and adapted to society's changing needs, as the Bachelor of Science in European Transport and Logistics, or the Master in Operations and Logistics, are official degrees with its Advisory Council comprising of large national and international companies and organizations, with relevance in Logistics and Transport scope.

EAE Foundation is an organization dedicated to train in business management scope, covering both general and specific areas of business management, whose variety of programs are offered through Business Management Institute (IGEMA). IGEMA-EAE Foundation is a Camilo José Cella University's collaborating centre.

The IGEMA-EAE Foundation activity is aimed to train managers, middle managers and technicians toward excellence in its management as responsible for any area or business sector, giving them, by quality training, tools that provide optimal results in their work, attending the new excellence standards demanded by the XXIth century organizations.

EAE Foundation, in its capacity as a non-profit institution, promotes, develops and disseminates disclose activities in order to generate and transfer new knowledge to people in the organization and business administration.

With the increasing importance of logistics in both production and distribution sectors, and in order to promote awareness to the subject as a source of strategic application knowledge, the EAE Foundation conducts researches and promotes the diffusion of knowledge in this area.

In this case, the Camilo José Cella University Vice-chancellor of Research, in close collaboration with EAE Foundation, has made the present study in order to find out which has been the recent development in software tools of support for demand forecasting and inventory management, as well as trying to define future trends, identifying the users' needs.

The study direction was carried out by:

Dr. Adolfo Sánchez Burón – Research Vice-Chancellor of UCJC.

Dr. Alfonso Cebrián Díaz – Research Director of UCJC.

Dr. Oscar Coduras Martínez – Research and Consulting Director of EAE Foundation.

Javier Marín Lacasta – Operations and Logistics Professor EAE Foundation.

## 2. STUDY OBJECTIVES

The main research objective is to have a comparative study of different computer applications in the demand forecasting and inventory management scope, based on several variables identified as key attributes of applications.

For this purpose, the study presents an analysis from the perspective of the application user, identifying both the motivations for acquiring software with such features and the uses to which it is intended, an evaluation of implementation and satisfaction with the obtained results as well as the services obtained from suppliers. The results of the acquired information are presented on an overall evaluation for each of the variables and a comparison of these variables among the leading suppliers in the market.

As secondary objective, this research aims to increase the sensitivity of the business about the importance of demand forecasting and inventory management efficiency and competitiveness of enterprises. To reach the customer with the demanded product, in the exact amount and at the right time, is the factor that may cause the company to achieve or not their objectives. More than ever and for that reason a demand forecasting and a very comprehensive inventory management is needed.

Stock out, both in production and distribution, involves the manufacturing rates delay or lost sales. In both cases it is that, in such circumstances, companies maintain part of their resources as idle, which directly affects your productivity and profitability.

This study does not attempt criticism or underestimating of any of the sector agents. On the contrary it, seeks to encourage all the players, the users to perform and the providers to advance, to work with and in some applications that, at the present, are little more than necessary compared to more generic s and less specialized systems and tools in this area than those discussed in here.

## 3. METHODOLOGY

For the study development, a research methodology based on the use of primary sources and quantitative research techniques has been used. To gather information for the users' side, a questionnaire was designed to provide the evaluation of the items object of interest for the research. As techniques, for the fieldwork development, the telephone interview or email were identified as the most appropriate, given that the interviewees profiles were assumed difficult to locate and would have difficulties answering a questionnaire that required to spend some time, including that some of the information requested was likely not to be in the respondent memory and the answer should be looked causing postponing their response.

The considered universe has been the software tools for demand forecasting and inventory management users located in Spain, having been identified as providers of software the following:

**Oracle (Demantra); Microsoft (Demand Planner); Logility, previously Demand Solutions (DS One); Infor (Demand Planning); ToolsGroup (Service Optimizer 99+, antes DPM); Slimstock (Slim4); TXT (Perform 2008); JDA, previously i2 y Manugistics (i2 / Strategic Supply & Demand Management) providers; SAP (APO); Infor, previously Finmatica (Mercialincs); Barloworld (Optimiza) y Logility (Voyager).**

The users located in Spain listed by the several providers in their web pages were, initially, taken as accessible population. They are concreted as:

**Oracle (Demantra):** 6 user references estimated.

**Microsoft (Demand Planner):** 5 user references estimated.

**Toolsgroup (Service Optimizer 99+):** 52 user references estimated.

**Slimstock (Slim4):** 43 user references estimated.

**TXT (Perform 2008):** 13 user references estimated.

**JDA (i2 / Strategic Supply & Demand Management):** 10 user references estimated.

**SAP (APO):** 11 user references estimated.

This totals 140 user references estimated.

Initially, a sample was not quantified because it was considered to try to contact all of them. So, the sample would be configured by users willing to respond the questionnaire which, once the fieldwork done, changed the initial configuration forecasts sample, by identifying new users.

Another of the circumstances that influenced the sample configuration was that some of the companies providing the software object of study were closed and others absorbed by competitors.

Finally, the sample was configured as follows:

- 19 users of Service Optimizer 99+ by Toolsgroup.
- 17 users of Slim4 by Slimstock.
- 8 users of APO by SAP.
- 11 users from other applications where we find: 2 users of Perform 2008 by TXT, 1 of i2 by JDA, 1 of Strategic Supply & Demand Management by JDA and 7 users of custom applications for several software suppliers.

This represents a total of 55 sampling units, having polled the 39.3% of the accessible population.

The sample users belong to a large variety of business sectors, both manufacturers and distributors, and in terms of size, both SMEs as large companies.

According to the final features of the sample, the comparative results are shown for ToolsGroup, Slimstock, SAP and Others providers, included in the last group all the other providers due to shortage of sample units that prevent to compare their results with minimal reliability.

The questionnaire used for the study consists of 31 questions divided into two main sections: General Variables Valuation Software (21 issues) and Efficacy, Satisfaction and Trends Variables (10 issues). For this conclusions summary, the conclusions of the 10 aspects considered the most relevant operating results and analysis set have been selected. 6 conclusions belong to the first block and 4 belong to the second one.

In addition to this synthesis, there are two other documents: the full report and an executive summary, which can be consulted and downloaded at the following link in pdf:

**[www.igema.net/docs\\_igema/igemr/estudio/informe.html](http://www.igema.net/docs_igema/igemr/estudio/informe.html)**

The conclusions obtained from the evaluations collected from the respondents are presented bellow.

## 4. CONCLUSIONS

The scenario faced by any manufacturer or distributor today is the saturated markets where the consumer has many options to choose from. The coexistence between the development of information society and the markets globalization has had a decisive impact on the growth of consumers' demand and, consequently, of all who contribute to provide it.

One of the biggest challenges that companies face today is to provide efficiency under adverse conditions: products from anywhere in the world are demanded due to the transparency that Internet has brought to all markets knowledge, the stocks are increasingly diversified, the products cycles are becoming shorter due to consumers' hunger for innovation and the huge competition forces producers and distributors to continuous promotional activities.

All attempts to capture and retain a consumer whose demands grow in inverse proportion to his patience to get the product they need or desire. In this scenario, no company can afford to under-utilize their assets at risk of losing competitiveness.

That is why information and communication technology (ICT) is an essential part of that asset. A technology that, if it is suitable to face the challenges mentioned, helps the company, notoriously, to win the efficiency battle which, in the supply chain scope translates into software tools able to manage the demand planning and inventory optimization processes.

However, ICTs have highly evolved in a short time. They have had to adapt to the reality of demands in its market resulting from the pressure of the scenario described. There is no demand for large and complex systems nowadays. Companies require simple software, with brief implantation, and little or no complex computing if possible, so it can be handled by anyone with minimal training, being able to organize and standardize the planning and provisioning processes, unifying management of all company agents involved in this process.

Nowadays, investing in software for demand forecasting and inventory management is, besides to acquire a central element to increase stock rotation and the service rate offered to the customer, to cover a traditional ERP deficiency, having been proven these specialized applications utility by an increasing demand.

Regardless of the registered differences between these applications providers, perhaps the most interesting note in this study has been the success of these tools between its users and their great contribution to optimizing the company management, a success demonstrated by the absence of noticeable dissatisfaction among most of the respondents.

The conclusions presented bellow involve the analysis results synthesis that were carried out on the market for this kind of software and their suppliers in Spain, viewed from the users' perspective, referred to therein the comparative between them on the various issues discussed.

## SECTION 1. SOFTWARE OVERALL EVALUATION RESULTS

### About the selection and software use

Suppliers of software tools for demand forecasting and inventory management evaluated in this study have experience in the sector given the high number of deployments, made mostly from 2003. The Slimstock group highlights for registering a sustained growth trend, being the last few years where the largest implementations of all groups have been reported.

The most commonly areas where these tools applications are used are those of "Logistics" (72.2%) and "Purchasing and supply" (70.9%). According to the respondent answers, the purpose these applications are more commonly used for, overall, are "Logistical supply forecast" (74.5%) and "Supply management" (70.9%). Slimstock registered values of 100% in "Purchasing and supply" and 100% in "Supply management" areas, so it can be inferred that this provider is a specialist in these company areas.

### About software acquisition costs

The obtained responses regarding these tools acquiring cost are not homogeneous and diverge depending on the supplier. Slimstock prices highlights and seem to be the most competitive by far, inasmuch as the highest percentage of responses from its users (87.5%) is below 100,000 euros. ToolsGroup users agglutinate the largest percentage of respondents (66.7%) in the more than 100,000 Euros range. The SAP and Other groups obtained more scattered answers, even though they both place their highest percentages above 150,000 Euros, 83.3% and 68.8% respectively.

The main cause of deviation from the initial cost by those who had indicated overspending was "Difficulties during the implementation process" (about a third of registered deviations). This cause is present in greater or lesser intensity in all user respondent groups except Slimstock provider, whose only cause identified was: "Having acquired more software, more licenses or more services."

### About the software implementation duration

In general, the application implementation and the users' training time varies from one to other group, being Slimstock the provider that registered the shortest time in every aspect. To implement, 88.2% of users from Slimstock surveyed said they needed 3 months or less. For the users' training, 100% of respondents said they needed 1 to 2 weeks, and 70.6% needed two or less days to train the administrator. In the other groups these response vary getting answers of even 24 months in SAP and ToolsGroup implementations cases, 14 weeks to train ToolsGroup users, and even reaching 30 days for administrator training in Other suppliers case. So it can be deduced that Slimstock software is the easiest application to deploy and manage and, therefore, to train new users.

### About the implementation and consulting services evaluation

In general, "Experience level" evaluation of the providers consulting team can be considered satisfactory due to an average of 7.63 out of 10. Slimstock provider is the best valued for its users group regards the "Experience level" with an average of 8.87 (+1.24 respect to global average), having been rated with 7 or more for all respondents who had it as a supplier. SAP is the second highest-rated with an average of 8.13, while providers as ToolsGroup (with 27.8%) and Other (with 30%), registered significant percentages of respondents whose valued this aspect with scores at or below 5.

Regarding to the "Consulting team involvement level", the general evaluation is high too due to the record average of 7.87 out of 10. Slimstock is also the highest rated provider in this area with an average of 8.69 (+0.82 respect to global average), due to the significant 93.7% of respondents assessed with scores equal to or greater than 7. SAP is the second group with an average of 8.50. All other providers received some scores below 5.

As for the "Consulting team availability level", the overall average shows, that this aspect evaluation is good: 7.73. SAP is the highest rated provider with an average of 8.63 (+0.9 respect to global average) and Slimstock is the second best rated with an average of 8.31 (+0,58 respect to global average). ToolsGroup and Other collectives obtained ratings below average.

### **About the maintenance service cost**

According to its users, The Slimstock collective registered the lowest percentage of annual maintenance cost (15% about the license cost). This percentage was indicated by most of its users (84.6%), reason why it can be claimed to be the provider that offers the best value cost for this service. 40% of the ToolsGroup users' respondents indicated that 20% is the maintenance percentage (note that this group registered widely dispersed answers ranging between 30% and 100% of the licenses price as maintenance service cost). Regarding to SAP and Others providers, the answers are scattered, a SAP user said it was 20%, another one said it did not apply any percentage, and respondents who had Other suppliers indicated that the percentage applied was an 8%, another said it was 15% and another it was 20%.

### **About the after-sales services valuation**

The respondents assessed with more than 7 points global average the following aspects: "*Knowledge and experience on the subject and sector level*" (7.58 on average), "*Provider effectiveness in resolving technical queries*" (7.56 on average) and "*Supplier quickness*" (7.35 on average), so it can be concluded that, overall, users are satisfied with these evaluated services. This emphasizes that the responses from Slimstock collective were not registered below 5 (dissatisfied), being the highest rated provider in all aspects and exceeding the global average in each case.

After the services quality evaluation provided by the supplier, the following received global average evaluations above 7, in descending value order are: "*After Sales*" (7.59 respect global average), "*Reinstalls*" (7.24 respect global average) and "*Bug fixing*" (7.17 respect global average). The services that received a global average below 7 are: "*New Versions*" and "*Follow-up Visits/Audit*" service, with global average values of 6.93 and 6.90 respectively, indicating that even when evaluated as good, can be improved significantly. The Slimstock collective is the best valued by its users in most of the services compared to other suppliers surpassing the global average in every aspect except in the "Follow-up Visits / Audit" service, where SAP holds the first place in the comparative. Should be noted that the Slimstock group is valued in "*New Versions*" by its users far above the global average with significant difference (+1.33 respect global average), showing that the supplier is very active to make software improvements.

## **SECTION 2. Efficacy and Satisfaction variables Results**

### **About the software effectiveness**

By questioning the users surveyed about the extent on business objectives the software use has enabled to reach, they all achieve nearly 60% on objectives improvement regarding the management preceding the software incorporation, so it can be said it is more than acceptable. The Slimstock provider received top ratings compared with the other suppliers evaluated, exceeding the global average in each case. In SAP case, the results show similar averages to the global one. The ToolsGroup collective obtained valuations below the global average in the business goals evaluated. The Other suppliers respondent users answered different results in each case: "*Stock optimization*" (7 percentage points below the average), "*The stock availability Improvement for service*" (7 percentage points above the average). Worth noting that in the "*Increase the benefit of the company*" goal, very different responses were registered according to the supplier. Slimstock obtained more than 20 points over the average, while ToolsGroup obtained 17 points below average, SAP very similar to the average and the Other suppliers group, 15 points below average.

The global average for the following evaluated aspects surpasses the score of 7 out of 10: "Integration with ERP" (7.02), "Application functionality set" (7.56) and the "Its work efficiency application impact" (7.60), so they are considered satisfactory. The "Ease of use" aspect (6.91) obtains a lower global average. Slimstock provider is the best rated in every aspect surpassing the global average in each case, remarking the average score achieved on the impact of its application in "Labour efficiency": 8.56.

### **About users' satisfaction with the software**

The global average in overall satisfaction with the software is 7.72 out of 10, while the global average in the software quality-price relation is 6.79 out of 10, average that registers a good but improvable rating. Slimstock provider is the best valued in both overall satisfaction with the software (8.50) and quality-price relation (7.69), almost a point above the global average in both cases. SAP users are the second that best valued overall satisfaction with the software and its quality-price relation with scores slightly above of the global average, meanwhile the ToolsGroup ones valued slightly below the global average, and the Other providers users have been valued with the lowest score in general satisfaction and its quality-price relation.

### **About if users would recommend other companies the software**

When users were asked whether they would recommend other companies for their application, most of them (88.7%) answered they would. In general, the percentages are convincing enough to validate the usefulness these tools bring to the company. When analyzed by collectives, Slimstock supplier was the users' group with the highest percentage of Yes (94.1%). ToolsGroup provider obtained the second highest percentage (88.9%) followed by SAP group (87.5%). Finally, Other providers obtained the lower percentage of recommendation (80%).

### **About whether the user would give the application back to their provider if the amount of the investment would be refund**

Finally, when respondents were asked whether they would return the application to the supplier in exchange for the returns of the amount invested, only 9.6% responded that they would. As in the previous case, the refusal of almost all users to return the applications to its provider, demonstrates its indispensability in the current company. Among the groups evaluated, ToolsGroup and Slimstock users are less willing to return the application; most of them replied they would not return the application, 94.4% and 94.1%, respectively. For Other providers, 88.9% of users responded that it would NOT return the application in case of refund. SAP users are the ones who provided the highest percentage of affirmative responses, with 25%.

**As an overall conclusion of the study, according to the results and hoping to be able to encourage its use, a more than positive assessment of the usefulness of computer applications for demand forecasting and inventory management existing today in the market can be drawn.**



# “COMPARATIVE STUDY OF THE FUNCTIONS AND APPLICABILITY OF COMPUTER TOOLS FOR THE FORECAST OF DEMAND AND INVENTORY MANAGEMENT”

## Conclusions summary



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