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dynelytics UPDATE

PREDICTIVE ANALYTICS – DATA MINING

Data Mining and "Big Data" – interesting prospects in the fields of quality management and efficiency optimization

SOFTWARE & SOLUTIONS

IBM SPSS Collaboration and Deployment Services (C&DS) represent the backbone for co-operation between all analytical applications

CUSTOMER CASES

Helsana Health Management;
Patient Care Analytics Platform;
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We look forward to receiving your questions!
Call us on: 044 266 90 30, or write to us at:
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Your Dynelytics Team

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PREDICTIVE ANALYTICS – DATA MINING

Data Mining and „Big Data“

With the technical possibilities of storing and processing very large quantities of data within an attractive time-frame, new applications for data analysis and data mining are available, thus presenting interesting prospects in the fields of quality management and efficiency optimization.

For some time, we have been hearing and reading more and more about „Big Data“, „Hadoop“, „Map Reduce“ and others. There are a growing number of conferences on these subjects and companies are increasingly asking themselves if “Big Data” is important for them too.
But what is it all about? As the name suggests, “Big Data” is characterised by a large quantity of data, which has traditionally existed in companies. But that’s not all. Big Data often comes from outside of the usual corporate applications, for example through data that accrues during industrialised processes, for example through sensors. In industrial production especially, due to the increased focus on reducing downtime and on minimising maintenance and warranty claims, the analysis and utilization of this machine-generated data is practically essential.
Big Data also often consists of data which was rarely analysed until now, such as unstructured or half-structured information, for example from text, audio or video files.
Big Data came about with the growth and increasing importance of the Internet. Companies like Google, Facebook and eBay are faced with vast amounts of data which they need to store and process quickly. This requires new technical methods, and these have taken shape in the form of Hadoop (framework for scalable, distributed software) and the MapReduce algorithm from Google. HBase is a scalable database for very large quantities of data within a Hadoop cluster, and Hive extends Hadoop to data warehouse functionalities.
The data stored within this framework needs to be available for analysis too, in order to be able to make good use of it. For this, there are also different methods, such as accessing HDFS and Hive data, ODBC and massive parallel processing.

> “‚Traditional’ data mining methods have already largely anticipated what is now sold under the “Big Data” label.”

Big Data is not used to refer to millions of data sets

However, one should avoid thinking of Hadoop et al. if queries from the warehouse take too long – also, Big Data is generally not mentioned even for millions of data sets. Performance problems can be solved with relatively little effort compared to implementing a complex Hadoop, for example with in-memory technologies or simply a better warehouse design.
In the future, Big Data will also play an important role in secure data analysis. Text mining, which has long been established, is also part of the Big Data theme. Distributed processing is a technology we will undoubtedly be hearing a lot about.
“Traditional” data mining methods have already largely anticipated what is now sold under the “Big Data” label. For some time now, it has been a matter of course for the different data sources in a data mining project to be collated (for example sensor data from production appliances), for free text to be processed and included in analyses or for picture and audio data to be integrated. In this respect, “Big Data” represents an almost logical continuation of developments that have been taking place for years in the field of analysis and considerably expands this technology. ●

MORE INFOS

Are you interested in a data mining solution?

Speak to Josef Schmid:
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How many 10-unit bags of chewing gum from different manufacturers were sold in all retail outlets last week?

Using the Fuzzy Matching technique, customized solutions generate homogenous sales data from large and disparate data files for BI analysis and dashboards in the consumer goods industry. With this method, you can stay on the pulse of the market with continuous consolidated and updated data.

Retail chains and retailers provide manufacturers and importers of fast-moving consumer goods, like food, drinks and washing powder, with detailed sales figures. Often, such data includes sales of competitor products and thus provides a detailed overview of the entire market. This data contains important information such as development of market share within trade channels and regional differences in sales.

...but it's not all that simple

So far, so good – such exciting insights into market developments are, however, not so easy to achieve, even when a firm has access to the corresponding figures. The data comes from tens of thousands of points of sale, including kiosks, public swimming pools, etc., and is delivered in numerous files from different sources and in diverse formats. There is a vast quantity of new sales data weekly or daily, which must be useable – that is the only way to be able to react to new developments at once. Retail data thus has to be collated and consolidated from different sources to be used, for example, to compare consumer goods manufacturers. The key to success is to process the data uniformly so that it can be continually downloaded for analysis in a management information system or in a BI tool and therefore be available for Predictive Analytics (for example data mining) to anticipate future trends.

New data integration methods based on data mining know-how

With a method based on long-standing project experience and on the most modern data and text mining software, it is possible to prepare data from different sources, in different formats and of different quality, in a uniform manner. With the help of a data master, it is simple to adapt a process like this to new requirements and changes in the data situation. New product variations and pack sizes are often proposed or withdrawn from the market. There are also seasonal product offers and price promotions. The data master developed for this is a template in which all processes are detailed and logically ordered.
The data integration process alone consists of several steps which can differ depending on the quality of the delivered source files.

First of all, basic data is quality controlled and optimization avenues are looked for. Questions arise such as: Are the values plausible and reliable? Are there too many missing values, and if so, how can this be estimated? Where are new indicators required? Which categories and products are superfluous and can be filtered out?

After data cleansing, a fuzzy matching procedure takes place in the data master. This uniformly collates identical articles, even when identical products have slightly different names in the data files of individual retailers.

Another step consists of standardising the retail figures supplied. Different data sources often contain figures in different units (for example, quantities of individual pack sizes sold or the total value of units sold in Swiss Francs). It is essential to standardize these values in order to get a correct overview.

In addition to standardization, quality controls verify whether the uniform sales figures generated differ from historical trends. In this way, all possible mistakes or plausibility issues in the raw data or problems in further processing can be revealed. These data checks are carried out with the use of data mining algorithms, such as time series, cluster analyses, decision trees, association rules and sequence analyses.

The last element in the work process is reporting: The project developer is informed throughout the entire process of each periodic data integration and any warnings are brought to his attention if data is missing or non-plausible values exist.

Optimal data quality thanks to automatic processes

Today, being able to quickly and correctly process sales information on fast moving consumer goods is a match decider. The standardization and automation of the above-described processes offer a guarantee for the best possible data quality on a constant basis. Each necessary process step is defined in detail in the data master for every single data source. Clerical errors through manual work are thus avoided and the routine delivery of precise end figures is guaranteed. Following the implementation of all conversion steps and the complex plausibility and completeness checks, homogeneous data is delivered to the project developer, who can then (at last) use it for his own purposes. For example, the data may be uploaded into a dashboard or corporate cockpit or integrated into the company's own BI tool or be used to anticipate future developments with data mining.

Similar issues in the health sector

A similar procedure has proven its worth in the uniform structuring of medical case data and invoicing data. This raw data must also be standardized and "purified" so that it can be made ready for assessments in hospital Business Intelligence systems. The implementation of quick ad-hoc analyses in complex data structures is useful, in order to be able to answer new questions quickly and easily. Today, Business Intelligence (BI) solutions are standard in both companies and the health sector and belong to the basic infrastructure. But more and more frequently, analytical requirements arise which were not taken into account when the BI solution was designed and can only be satisfied at great cost.
It is then necessary to collate different data (for example BI basic data from a central database) with other sources in a very short time-frame. Central questions can be answered quickly and reliably despite complex data structures and without the need to invest in additional programs.

> "Today, being able to quickly and correctly process sales information on fast moving consumer goods is a match decider."

Reporting and predicting

Processing vast and complex data structures, as discussed here, is also a suitable approach for data mining projects in order to manage supply and demand. If the data is first collated in a uniform manner, then the majority of the work has already been done. It does not cost any more nowadays to go further than traditional reporting. Retail data is segmented in order to recognise standard models for products sold or for promotions. Based on this, it is possible to anticipate sales trends or to predict that a promotion concerning 12 units instead of the usual 10 units of chewing gum will be particularly successful. ●

MORE INFOS

Are you interested in this solution?
Talk to Simon Birnstiel:
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SOFTWARE

Practical help with IBM SPSS Statistics

Often demanded – now available: Automatic comparison of two data files. Quality control just got easier.

In the field of data analysis, the question always arises as to whether data sets are congruent, in other words do they contain the same information with the same metadata, or are there differences? In the latter, it is naturally interesting to know what these differences are. For example, in the field of medical research, it is usual to duplicate data entries to be sure of the accuracy of the information. With SPSS Statistics it was already possible to compare two data sets, but this was no easy task and put considerable demand on the user. As this problem was recurrent and demand for a solution was increasingly expressed, it was decided to make a comparison tool for data files in SPSS Statistics 21.

With SPSS Statistics 21 Base, two active data sets or two data files can be compared with each other and differences between them can be determined. This occurs on two levels: on the one hand, the meta data is checked for compatibility (do the same variables exist); on the other hand the cases are analysed together and the individual variables are analysed separately for compatibility in terms of existing values.

In the comparison tool, it is possible to define whether the compatibility check is carried out by means of one or several keys, or whether the sequence in the file should simply be analysed. The fields to be compared can be defined.

The result of the check is recorded in detail in the output. By default, a detailed list of the first 100 inconsistent cases is given. This number can be increased if desired.
In addition, a new field is written in the active working file, which states whether the case in question corresponds with its equivalent in the comparison file or not.
The corresponding or, optionally, the non-corresponding cases, can be copied into a new file at the push of a button.

This new procedure, called COMPARE DATASETS, is a small, but fine extension of the possibilities of SPSS Statistics Base, which aims to make solutions to complex tasks as simple as possible for users. ●

www.dynelytics.com/de/software

Comments on Dynelytics support:

Maurizio Evangelista, Data Analyst (analytical CRM), SBB

“Sincere thanks for your quick feedback and smart solution! Tiptop!”

Sandra Maria Surber, Head of the Data Management department, Statistical Office of the Canton of Zurich

“SPSS products are very well-developed, even if not entirely perfect. But if a problem arises, Dynelytics support specialists help. I get feedback and a suggestion to the problem within half a day. I don’t get that service elsewhere.”

Felix Nef, Workplace Support Leader, ZHAW Zürcher Hochschule für Angewandte Wissenschaften

“Once again, many thanks for the super-fast, uncomplicated help.”

Hanspeter Helfer, Data Analyst / Customer Analytics, BonusCard.ch AG

“Many thanks for your prompt and competent answer. Your service is really 1A.”

IBM SPSS Direct Marketing – optimize marketing without statistics knowledge

Statistical data analysis and, in particular, the use of Predictive Analytics, has been an effective tool in direct marketing for some years already. With the SPSS Direct Marketing module, this can be applied very easily.

Decision trees have been successfully used to optimize direct marketing for many years, or cluster analyses have been used to segment customers in order to better understand them and consequently address them more specifically.
These methods are not easy to use, however, despite the user-friendly interfaces of IBM SPSS Statistics. The question as to which statistical method to use for which problem is not everybody's thing. So that marketing employees do not have to rely on the often expensive and time-consuming support from specialist departments, we offer the SPSS Direct Marketing module, which mainly embeds proven statistical procedures in a user-friendly and question-oriented interface.

The starting point is your question: Direct Marketing offers seven techniques:

Help to identify the best person to contact

Segmentation of contacts into clusters

Creation of contact profiles who are likely to react to offers.

Identification of postcodes that most frequently respond to marketing campaigns.

Selection of contacts most likely to buy

Comparison of campaign effectiveness (control group)

Data scoring with an existing model

> "So that marketing employees do not have to rely on the often expensive and time-consuming support from specialist departments, the SPSS Direct Marketing module is the ideal solution."

Suitable questions can be selected directly from a pre-defined selection. The proven RFM method (Recency – Frequency – Monetary Value) is also available. In addition, the user lands in an adapted dialog box in which the information required for the task must be provided, and then SPSS Statistics directly runs the necessary analyses and presents the results in the output. SPSS also helps to interpret results, which are often in cryptic statistical terms, into terms which marketing professionals can understand.
Where possible and when installed, a model (for example the profile of people who frequently respond) can be saved as an xml file and used later to score cases.

SPSS Direct Marketing simplifies the use of tried and tested marketing methods and can boast unique return on investment. Optimization techniques can be used for non-statistical purposes quickly and efficiently. ●

www.dynelytics.com/de/software

A lot of data mining for little money

Expand your SPSS Statistics to a data mining workbench

Do you already work with SPSS Base and possibly want to work with SPSS Decision Trees? Then build your software into a data mining workbench, consisting of **Viscovery SOMine for SPSS, SPSS Statistics Base, SPSS Decision Trees and SPSS Neural Networks** and which covers all the steps of a data mining process according to CRISP.

IBM SPSS Statistics Base is an ideal and wide-ranging tool for efficient and multiple database creations for modelling purposes Empirically, up to 90% of the cost of a data mining project is used for processing data. SPSS Statistics Base provides support throughout this phase and makes this task easier for you. Different data sources can be read in, converted and linked together. This is very quick, flexible and can also be automated. This is the perfect base for using different data mining algorithms.

With **SPSS Decision Trees,** the most efficient decision tree algorithms are available. Often data mining projects deal with questions with "dependent" variables. This means that a past known incident is modelled. For example, when a group of customers is compared with a group of non-customers. For such questions, decision trees have proved very useful: They do not make any demands on specific distributions in the data and they can deal with different measurement levels in the data. In addition, the representation as a decision tree is a quick and visually attractive way of interpreting results.

With **SPSS Neural Networks** you have access to state-of-the art algorithms from the fields of artificial intelligence. You can simply develop models with dependent variables and reveal and model complex relationships within your data sources. If there are highly complex, non-linear connections, classic statistical models are often insufficient. In these cases, methods from the field of artificial intelligence often prove useful.

And last but not least: With **Viscovery SOMine**, leader in the field of self-organizing maps, you can explore data intuitively and effectively and develop optimal segmentation.
In many cases, not only are questions solved with dependent variables, but homogenous groups in the data are revealed. Or, in other words, you want to develop "data-driven" segmentation. Viscovery SOMine is based on a Kohonen network (neural network for clustering), which is implemented in such a way that a very high number of neurons with large data quantities can be dealt with. These neurons efficiently learn the data structure and then, in a second step, are brought together into meaningful groups. Viscovery simplifies the interpretation of clusters with a unique visualization (a key function) and provides you with a tool with which you can make your project results accessible in an impressive way.

The **integration of these tried and tested products** allows for quick, intuitive and efficient data exploration, segmentation, profiling and predicting. ●

We offer this workbench as an attractive bundle together with a half-day individual introductory course with a data mining expert from Dynelytics AG. We will show you the basics of working with SPSS Statistics and with Viscovery SOMine and how both analysis environments interact.

www.dynelytics.com/de/software
www.viscovery.net/somine

„SPSS C&DS" for department-wide and location-independent teamwork for analytical processes

With IBM SPSS C&DS – Collaboration and Deployment Services – a company's analytical activities and documents are optimally bundled, represented and distributed. Thanks to the open and modern architecture, complex projects can be implemented quickly and easily into existing company environments.

SPSS Collaboration and Deployment Services (C&DS) is the backbone for the co-operation of all analytical applications, regardless of whether they originate from IBM SPSS or from third parties. They allow all people involved in an analysis and implementation project, even complex, to collaborate smoothly and securely. C&DS is based on modern architecture and thanks to its graphic interface is easy to use.

The following functions make SPSS Collaboration and Deployment Services a powerful analysis environment:

C&DS offers location-independent, central administration for all analytical relevant elements such as models, reports, programs, workflows, project documentation, etc. Not only can all desired file types be selected for uploading and downloading, but documents can be directly opened, processed and saved with the usual analytical tools.

Access control: C&DS is integrated into existing authorisation systems and only allows and manages authorised access.

New C&DS Single Sign on. In other words, a single login is enough to connect to all analytical applications, for example SPSS Modeler Server or SPSS Data Collection.

Analysts and specialists work together on analytical projects. They provide individual documents or complete folders for individuals or teams. Specialists provide comments on new predictive models or put forward new ideas. Team members are automatically informed of activities.

You can automatically create and share relevant, customised reports including charts and tables with the entire team, or with customers or partners. Get reactions and manage feedback.

Carry out recurrent tasks automatically at the touch of a button or with a notification service.

Process management guarantees that the most up-to-date version of a model is always used and that all components of a project are filed away centrally in a database with an automatic check of the version.

Audit functions: Not only are non-controlled modifications to important folders prevented through automatic versioning, but it is also possible to automatically track modifications and to audit access via protocols.

Track the quality of your implemented predictive model, automate the evaluation process and react directly to changes in customer behaviour.

The possibilities of SPSS C&DS go much further. Different Swiss companies use the software to automatically check the efficiency of data mining models with a web-based model dashboard and to automatically create and optimize models. ●

SPSS Collaboration and Deployment Services are the analytical hinge of the different SPSS applications and simplify life in many companies with complex data mining, statistic or survey projects.

Dynelytics supports you with the installation of this software and provides individual training courses, such as how to manage C&DS and how to create reports.

MORE INFOS

Read how SPSS Collaboration and Deployment Services are used in the Statistical Office of the Canton of Zurich
www.dynelytics.com/upload/references/315.pdf
www.dynelytics.com/de/software

“Dynelytics is the only IBM Support Providing Premium Business Partner in Switzerland for the entire range of SPSS software. Our maintenance customers in Switzerland receive uncomplicated and quick help by telephone or e-mail and benefit from our long-standing experience as SPSS Schweiz. If you buy software from us without maintenance, you get free installation support for 4 weeks after the purchase.”

CUSTOMER CASE

Health management: Helsana automates corporate customer surveys

Dynelytics developed a health portal for Helsana, with which the largest health insurance firm in Switzerland can initialise and manage enquiries at different levels and departments for its corporate customers. The solution includes customised online reporting.

Helsana

As part of its "Helsana Business Health" service, Helsana's health management department regularly carries out surveys on the employees of its corporate customers.

How do employees feel at work? How do they perceive their working environment? The results should show the strengths and weaknesses of a company. Through revealing work-related stress and resources, the survey identifies areas for improvement, in order to improve the well-being and health of employees.

To do this, Dynelytics developed and made an online solution specifically for Helsana, in close collaboration with Helsana's health management department. With it, questionnaires can be introduced and managed with up to 100 different firms per year. Usually, each questionnaire concerns between 5 and 300 employees. Questionnaires concerning up to 30,000 employees in a large firm are also being planned.
In principle, the same questionnaire is used for all firms. Periodically, a review can be carried out and, if necessary, be adjusted. This is a quick and easy process.

Long-term hosting of the questionnaire infrastructure at Dynelytics

The forms are hosted for several years on Dynelytics servers and the collected data is stored and archived confidentially.

In detail, Dynelytics carried out the following work for the online questionnaire solution:

- Programming of the online questionnaire with around 60 questions in German, French, Italian and English
- Creation of a URL for the questionnaire
- Data storage and administration in a database
- Technical support for participants in German, English, French and Italian, throughout the duration of the survey

Self-service portal for Helsana's health managers

To manage all participating firms and internal users, Dynelytics also developed an online administration portal. The Helsana health managers can connect to this self-service portal and open a new company to be surveyed. They enter the internal departments of this firm and the planned duration of the survey.
The portal then generates an individual link to the survey for each firm and department. This link is sent automatically by e-mail to the Helsana department and to the personnel department of the firm in question, and is then transferred to employees in the corresponding departments.

The health managers can enter the number of people to be questioned per firm and department, so that afterwards the response rate can be automatically calculated and represented in the online report (see below for details).

Multi-lingual paper questionnaires

Dynelytics also programmed the possibility to create paper questionnaires in a straightforward manner. The Helsana health manager selects the relevant firm, the department and

Eliane Stricker, Monika Lanz and Carina Zachariah, Helsana Health Management Departement:

"Super, thank you so much for this insight! It looks great. Warm greetings and a big thank you for the excellent work of the entire Dynelytics team!"

the preferred language. They obtain a printable PDF file of the questionnaire, which has the company's name, department and individual link to the questionnaire on it. In addition to the four main languages, this paper questionnaire is also available in Albanian, Portuguese, Serbo-Croatian, Spanish and Tamil and gives people who do not have Internet access the opportunity to take part.

Quick and easy evaluation: The programmed online reporting solution

With the customised web-based portal solution designed by Dynelytics for Helsana, collected data can be used for a long period and data can be compared consistently and automatically, without any additional evaluation work required by Helsana. Data is collated anonymously and the results are presented in an attractive and clear form via web reports (or file download) and made available to authorised users.

The online administration portal offers the following additional functionalities:

- Easy system management for Helsana users. For each user, a role and profile can be established; according to the role, different abilities and authorisations are granted
- Helsana can open new users independently
- Users simply require a common browser; it is not necessary to install any software
- The application is maintained lastingly on Dynelytics' servers
- Evaluation of the questionnaire data and information on response rates can be called up every day for each firm surveyed

All queries are password protected and encrypted.

A variety of evaluation functions provide access to detailed results

Authorised Helsana users can make an online report of the firm surveyed.
The reports contain important summary graphs to compare 6 to 8 departments in a firm. Additionally, the reports contain around 15 pages of graphs and tables per firm and per department.

The following evaluation types are retrievable:

- Reporting of answers per firm
- Breakdown of the answers of a firm according to criteria such as gender and department
- Comparison of the values of a firm with the previous year's values of the same firm
- Comparison of individual departments in a firm
- Reports can be downloaded as PDF or PowerPoint files.

The portal functions can be easily extended

In the Helsana health portal, additional questionnaires can be integrated at any time. A recently-added possibility enables the contact person of Helsana's corporate customer to be questioned as to their satisfaction with Helsana health management, by way of another questionnaire. There is also the possibility to complement the standard questionnaire with individual, company-specific questions.

Care-free hosting in the DyneCloud

The entire solution runs in Dynelytics' cloud, known as the DyneCloud. Helsana does not need to worry about software licenses, programming or infrastructure. Like other hosting customers, it enjoys an optimal technical infrastructure with generous bandwidth via optic lines and the highest possible security thanks to encrypted data input, multiple firewalls, automatic backups and reliable data protection. And last but not least: The DyneCloud computers are in Switzerland.

The leading team of the Helsana health management department – Eliane Stricker, Monika Lanz and Carina Zachariah – is delighted with the solution:
"Super, thank you so much for this insight! It looks great."
"Warm greetings and a big thank you for the excellent work of the entire Dynelytics team!" ●

MORE INFOS

Are you interested in this solution?
Talk to Rolf Pfister:
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PCAP-Suisse - Patient Care Analytics Platform

Hospitals use their own benchmarking instrument to compare quality of care. The University Hospital Zurich, Wallis Hospital and Aargau Hospital are taking the initiative to learn more about their processes.

PCAP-Suisse

Due to new hospital requirements, care services want to learn more from data already collected internally. With an instrument developed by Dynelytics for and in collaboration with care professionals at the University Hospital Zurich, the Wallis Hospital and LEP AG, it is now possible to compare care statistics between hospitals in a straightforward manner. After the initial one-off outlay, all participating hospitals get cost-effective trimester reports with meaningful tables and graphs. Benchmarking is a recognised quality assurance principle in business and public administration.
In hospitals, the introduction of a new flat-rate payment (SwissDRG) scheme was a considerable incentive to better interpret statistics and compare them with other hospitals. Particularly of interest are hospital care services, which make up 30 to 35% of case costs.

SwissDRG marked a new era for hospitals

In October 2009, on the initiative of the care departments at University Hospital Zurich and Wallis Hospital, a work group was commissioned to develop an indicator-based model to steer care services within the framework of the introduction of a new billing system planned for 2012. In 2012, under the name SwissDRG, a new era of flat-rate charges began in the Swiss healthcare system for in-patient treatments.

The idea of both care departments was to be able to use the indicator-based model as the basis to compare processes. The intention was to better assess efficiency of care and improve it. An important requirement was that the data necessary to do this had to be taken from existing routine data. Importance was also given to sharing experiences with other hospitals, learning and exchanging efficient work processes.
The leading hospitals and experts from LEP AG took part in the development project. LEP AG has been active in measuring performances and processing documentation in the healthcare system for over 20 years with its LEP method. This method is the standard in the majority of Swiss hospitals, as well as in many German hospitals.

Intensive development work for the PCAP-Suisse model

Dynelytics was selected as the IT partner and assigned to collate, process and analyse different sets of data and develop reporting structures. The anonymous data required from the hospitals is handled confidentially by Dynelytics, and continuity and comparability is ensured for recurring benchmark reports.
The steering committee for content development of the "Patient Care Analytics Platform" – known as "PCAP-Suisse" – consisted of Regula Jenzer Bürcher, Director of Care and Medical Technology and Therapeutics of University Hospital Zurich, Mario Desmedt, Director of Care of Wallis Hospital and Markus Jakober, Manager of LEP AG. Carmen Oggier from the company ph-c led and coordinated the development process.

The benchmark project met its targets and is used in practice

After intensive development work lasting two years, the PCAP-Suisse model was presented in 2012.
The targets were reached in full, so that it is possible to carry out a benchmarking of DRG values for all participating hospitals. Diagnosis Related Groups (DRGs) are an economic medical patient classification system with which in-patients are classified into groups on the basis of their diagnoses and their ensuing treatment, assessed according to the costs incurred for the treatment.

The benchmark report is regularly produced each trimester for each participating hospital. The following are mainly compared:

- the mean of services on a case-by-case basis of the LEP (care performance) system
- the mean number of care days and
- the mean of care activities according to DRG and hospital.

The analyses generated show, for example, in which areas a hospital performs particularly well or particularly poorly and which processes can be optimised. Thanks to this, success factors can be identified

and the efficiency of care assessed and improved. The chronological sequence is also interesting: At any time, any changes in a hospital's values compared to the previous trimester or previous year can be assessed. The pilot report already reveals clear differences between processes at University Hospital Zurich and Wallis Hospital.

The indicators of the PCAP-Suisse reports help to improve processes

The project developer was very satisfied with the result. Regula Jenzer Bürcher, Director of Care and Medical Technology and Therapeutics at USZ: "Many thanks to the representatives of Dynelytics for their input and for implementing the solution. They put the indicators in a very clear and legible form."

Per hospital and trimester, a Healthcare Analytics Report consisting of over 60 pages is produced. Following a Management Summary, the Top 5 DRGs measured always appear on a double-page:

the biggest economic impact,

the highest number of cases,

the biggest total care efforts and

the biggest proportion of long-stay patients.

Clearly portrayed numbers and graphs allow the current trimester to be compared with the previous ones. All results are shown in comparison to the average values of reference hospitals.

Every hospital can take part simply and cost-effectively

To take part in PCAP-Suisse benchmarking, certain data must be sent to Dynelytics in the form of an Excel file. Dynelytics processes this, collates it and produces reports, which are sent back to the hospital in PDF format. The Dynelytics project leaders are at the disposal of the hospital representatives to answer any questions. Upon request, implementation support can also be provided by LEP AG.

In the future, further hospitals should join PCAP-Suisse. The Aarau Hospital has already joined. It would also be interesting if many smaller hospitals took part, to which a particularly inexpensive price is offered. The more hospitals there are involved in the comparison, the more effective the method is.

The method can be further developed at any time and adjusted to changing requirements. For example, costs for individual treatments could also be included in the comparison. Similarly, it is possible to provide all indicators in an interactive, individually adaptable online solution, rather than individual PDF documents.

The purpose of the PCAP-Suisse benchmarking will remain the same, namely to treat patients in the best possible way and to apply hospital resources as specifically as possible. ●

Regula Jenzer Bürcher, Director of Care and Medical Technology and Therapeutics at USZ

> "Many thanks to the representatives of Dynelytics for their input and for implementing the solution. They put the indicators in a very clear and legible form."

MORE INFOS

Are you interested in this solution?
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Automated one-to-one feedback: ideal for getting the opinion of Caritas Schweiz employees

The Caritas employee questionnaire involved self-rating and line manager-rating with the aim of developing an analytical wage system

CARITAS Schweiz Suisse Svizzera Svizra

By order of Alice Mäder-Wittmer, personnel manager of Caritas Schweiz, in 2012 Dynelytics questioned all employees by way of an online survey. It was not the usual employee questionnaire; instead, this questionnaire was part of a wage system revision. Employees and line managers answered questions concerning the requirements and weaknesses of their role.

Here is an example of some of the questions:

"To be able to carry out your job correctly, which type of education, continuing education and job experience are required? Please answer this question regardless of your own career and enter the prerequisites for the job".

"How many simultaneous tasks must you plan and organise independently?"

Dynelytics programmed the questionnaire, containing around 60 questions, as an online form and hosted it on its server. Technical support for participants was included.

In my opinion, which skills are necessary for the job and how do my superiors consider this?

In order to attain a combination of individual assessments and assessments by line managers for each participant, the survey followed this procedure:

Dynelytics sent each participant at Caritas Schweiz an e-mail with a personal login and a description of the planned process.

The employee clicked on the individual link provided in the e-mail and was then able to answer the questionnaire online.

Once they had filled in the questionnaire, they entered the e-mail address of the relevant line manager.

An e-mail with a link to the filled-in questionnaire was then sent automatically to the line manager. He or she could then go through the questionnaire again, with the participant, and change answers together if necessary.

The questionnaire was only considered complete once this step was finished; from then on, no further modifications were possible.

At the end of the survey period, Dynelytics delivered an Excel file with the detailed results to Alice Mäder-Wittmer. This file gave a summary of the answers of each person.

The results were very useful for Caritas. The survey guaranteed that employees were informed of the wage revision approach and the instruments used. It took employees and line managers several attempts to discuss the results. The purpose was to conclusively establish the requirements for different functions at Caritas Schweiz, also used to assign a wage category and therefore a wage.

Alice Mäder-Wittmer, head of personnel, was very satisfied with the entire project and the performance of Dynelytics: "I would like to thank you and your colleagues sincerely. For me, this co-operation was exceptionally uncomplicated, flexible, customer-focused and fast. Super!" ●

INFO

Caritas Schweiz helps people in need in Switzerland and in over 40 countries. Caritas gets actively involved where people in wealthy Switzerland are affected by poverty: families, single parents, the unemployed, the working poor. Caritas organises volunteer support and looks after asylum seekers and refugees. Globally, Caritas provides emergency relief in disasters and helps with reconstruction. Development cooperation helps people to help themselves, in such areas as food security, water, the environment, human rights and education for children and adults. In 2011, Caritas Schweiz made earnings of around 95 million Swiss francs and employed 284 people.

Alice Mäder-Wittmer, CARITAS head of personnel:

“I would like to thank you and your colleagues sincerely. For me, this co-operation was exceptionally uncomplicated, flexible, customer-focused and fast. Super!”

MORE INFOS

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PERSONAL

„Data Mining: My method of choice for practically all analysis situations“ A field report from Josef Schmid

Since Version 4, I have been using SPSS Modeler software almost daily and it never ceases to impress me. IBM SPSS Modeler, the leading data mining solution, is ideal for optimizing marketing campaigns, recruiting new customers, customer loyalty, cross and upselling, minimizing risks and detecting fraud.

Extensive data conversion possibilities

Data conversions and the collation of different data sources are increasingly important for Advanced Analytics: data sources have practically never been so easy to use. Likewise, creating new fields is often one of the most important factors of success for a good model. In this field, SPSS Modeler is extremely powerful. I can‘t remember a single time when a necessary conversion wasn’t possible. With string, data and offset functions, Modeler seems to do whatever you want it to do. This has helped be out of a “spot” many times.

Time series – an extremely powerful algorithm that puts demands on data

The automatic creation of time series, i.e. the creation of forecasts, is a relatively unique feature of Modeler. I know many customers who successfully use this algorithm and get astonishingly accurate forecasts. Modeler can automatically and very quickly create individual forecast models for a large quantity of time series; 1,000 models in just a few seconds!
For time series, data must be processed in a particular way: the time must be in rows, the cases (products, customers, etc.) must be in columns. Modeler converts data into the right format without any problem – the restructure node combined with an aggregate node takes care of this in no time at all. But: Eating creates an appetite. In a real project, several million models have to be created. This is really not a problem, but in this particular case, the entire process must be performed within a database. Modeler supports this perfectly with SQL-Pushback. And normally, this is where the difficulties start: As described above, the cases should be in columns, which means we need several million columns. Certain databases only support 1,024 columns, which is only a fraction of the required amount!

Modeler Scripting – a step to full automation

Good advice is usually expensive, but with Modeler, a solution is quick to be found: as some databases only support 1,024 columns, and this was the case here, the modelling process must be divided into thousands of parts and repeated. This is where one of Modeler’s functions comes into use, and in my experience only a few users are familiar with it: Modeler Scripting automatically divides the process into parts.
The implemented solution looks like this: a scheduler initiates a Modeler process on the Modeler Server, which automatically reads the data from the database, divides it into parts, automatically creates an individual forecasting model for each of the several million data sets and then uses this model to write concrete forecasts in the database.

The “Swiss Army Knife” of data analysis

Modeler creates even more surprises with the multitude of its abilities and offers individual solutions, which I didn’t believe possible to begin with. Some people underestimate – due to the simplicity of the interface – the vast multitude of functions under the „bonnet“. Modeler is really like a Swiss Army Knife of analyses – the impossible becomes possible and you can use it for practically anything! And, last but not least, the accuracy of the forecast models is astonishing. ●

Josef Schmid, Managing Partner Dynelytics AG
is extremely impressed with the possibilities offered by this kind of data analysis with self-learning algorithms. His long-standing experience in customer projects in all fields and with a wide variety of issues allow him to find creative and efficient solutions for practically every data analysis problem. For Josef Schmid, it is clear that the demand and fields of application for data mining will continue to grow with new technological developments in the field of Big Data.
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