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**BUSINESS INTELLIGENCE TECHNOLOGIES FOR MARKETING
AND SALES: CUSTOMER DATA MANAGEMENT AND ANALYSIS AT
WELOCALIZE LIFESCIENCES**

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CHAPTER 1

BUSINESS INTELLIGENCE

1) BUSINESS INTELLIGENCE AND ITS EVOLUTION

1.1) Evolution of Information Technology¹

The first rudimental digital computers appear in the late 40's. The goal of the first decades after their appearance has been to develop applications capable to offer to enterprises efficiency gains by automating routine operations especially in administration, production, research and development. It has been only from the 70's that companies began to demand increasingly complex software applications in order to easily access useful information, in a timely manner, for decision making. This software was called Management Information Systems (MIS). The major obstacles to an effective development of such systems laid in the lack of visualization capabilities of the computers at that time, which were used to communicate information through printed documents. In addition, the organizational structure of larger part of the companies foresaw a centralized Information Technology department resulting in very long-time delays, when information or changes to applications were requested.

From the late 80's there have been the introduction of the Personal Computer with graphic interfaces and pointing devices. Consequently, has been possible for the first time to implement applications capable of sophisticated interactions with the users and of graphic representation of results. Knowledge workers have been made independent from IT department thanks to the new autonomous processing tool. This increased independent processing capabilities is known as "*end user computing*". The computing power held by users brought to the construction of small databases and the development of simulation models often by means of spreadsheets, considered the true ancestors of business intelligence architectures. Concurrently the term of decision support system made its appearance along with executive information system and strategic information system. The last two systems were intended for unstructured decision-making processes, meaning decisions for which is not possible to develop a structured sequence of actions, representing in this way passive systems oriented toward timely and easy access to information.

¹ Sturdy G., "Customer relationship management through business intelligence", 2013
Shariat M., Hightower Jr. R., "Conceptualizing business intelligence architecture", 2007
Woodside J. M., "Business intelligence and learning, drivers of quality and competitive performance", 2010

The profound changes occurred in the socio-economic context during the 90's have led to what is generally defined as the Information and Knowledge Society. The advent of Globalization has made the economies of various countries highly interdependent and integrated, while at the same time the massive spread of internet utilization, wireless devices and new, more sophisticated means of communications enabled high-speed transactions and the transfer of large amount of data. The easiness of access to information and knowledge have offered countless advantages to the economic actors. Individuals now can carry out on-line commercial and banking transaction and are increasingly acquainted with their needs and ways to obtain tailored services. On the other side enterprises can now create products and service that better address the customers' needs thanks to the more and more effective use of data to create knowledge databases. For example information given to the sales manager of a retail company, such as the number of sales receipts over 100\$ per week, or the number of customers holding a loyalty card who have reduced by more than 50% the monthly amount spent in the last three months, represent meaningful pieces of information that can be extracted from raw stored data. Information is transformed into knowledge when it is used to make decisions and develop the corresponding actions. Knowledge is information that works in a specific domain mixed with the experience and competence of the decision maker in that domain.

Low-cost massive data storage technologies and the wide availability of internet connections have made available large amounts of data that have been collected and accumulated by the various organizations over the years. As a result, in that period emerge the necessity to physically separate the database intended for decision support from the ones underlying the operational information system, bringing to the introduction of concepts such as Data Warehouse and Data Mart. The effective use of those data to gain competitive advantage is, though, a task that technology alone cannot perform. It is necessary that the knowledge stored in almost every company be analysed and made available in ways such that decision makers can made timely and effective decisions. Technology in this sense is not a perfect substitute of the human capital but is rather seen as a complement of the human mind that still made the effort to try to understand what the data are revealing.

1.2) Business Intelligence Definitions

Toward the end of the 20th century the term Business Intelligence started to be widely used describing and incorporating the decision support system architecture and models to transform data in useful information and knowledge. Scientific and professional literature reviews provide for several definitions of Business Intelligence, but as argued by Arnott & Pervan

(2005) “*BI is a poorly defined term and its industry origin means that different software vendors and consulting organizations have defined it to suit their products; some even use 'BI' for the entire range of decision support approaches(...)*”. As note by English (2005) most of the definitions focus more on the technology side. The first definition of BI belongs to Gartner Group which in 1996 define it “*as the application of a set of methodologies and technologies, such as J2EE, DOTNET, Web Services, XML, data warehouse, OLAP, Data Mining, representation technologies, etc, to improve enterprise operation effectiveness (...)*”. Later Raisinghani (2004) define it as a “*general term for applications, platforms, tools, and technologies that support the process of exploring business data, data relationships, and trends(...)*”, while Lonnqvist & Pirttimaki (2006) consider it as a systematic process of data gathering, analysis and dissemination in order to allow for data-driven decision making processes. In addition, Zeng et al. (2006) categorize BI technology based on the method of information delivery: reporting, statistical analysis, ad-hoc analysis and predictive analysis.

As it is possible to note what these definitions have in common is the lack of importance given to human factor. This lead English (2005) to define BI as “*the ability of an enterprise to act effectively through the exploitation of its human and information resources (...)*”. Here English highlight the relevancy of people viewing it as a complementary factor, without which is hard to exploit the true competitive advantage that may stems from the information gathered. Moreover, he adds: “*There is no business intelligence without the people to interpret the meaning and significance of information and to act on their knowledge gained (...)*”.

Tvrđíková, (2007) in its definition of BI recognize the existence of diverse BI users with different demands. People dealing with BI systems can be divided in three groups each presenting related needs. *Analysts* define and carry out domain-specific analysis, they analyse data producing reports and dashboards and providing useful insights to the organization. They have a sound understanding of the business and of the related performance measures. Collaborative processes and infrastructures should be implemented in order to allow for a wide and massive use of their analytical insights by the user community. *Users* are those who “consume” the information to make fact-based decisions. The roles inside a user community vary from operational workers to executives. Clearly each user identifies primary needs that vary on the basis of the belonging department. For example, financial executives will need applications and data totally different from the marketing executives. The last group is composed by *IT enablers* whose role consist in designing, building and maintaining the systems. Given their involvement in the designing of the system and given its purpose

consisting in generating useful business insights, their knowledge should not stay bounded in the IT domain, but it should comprise a profound business understanding.

Drawing from these reflections, companies should find ways to bridge the gap between IT and the business side. Gartner for example recommend a Business Intelligence Competency Center (BICC) bringing together IT, analysts and business experts, in order to form cross-functional teams. Once identified the importance of both technology and human factors, the focus shift on analysing the “decision spectrum” a BI system must support. In this sense Taylor & Raden (2007) clearly state that BI must support all kind of decisions made by middle, high level managers and executives ranging from strategic decisions, tactical decisions, to operational decisions. A strategic decision affects a large part of the organization for a long period of time and strongly influence its general objectives. A tactical decision is usually restricted to a single department with a time span limited to the medium term. These kinds of decisions are taken by middle level managers respecting the framework delineated by strategical decisions. Operational decisions are taken by low-level managers responsible for a single task or activity and have a modest impact on the future.

The importance of technology, human factor and the acknowledgement of the different BI users through the analysis of the different decision-making processes these systems must support have led English (2005) to define BI as the supply of “*quality information in well-designed data stores, coupled with business-friendly software tools that provide knowledge workers timely access, effective analysis and intuitive presentation of the right information, enabling them to take the right actions or make the right decisions(...)*”.

2) PREREQUISITES FOR BI SUCCESS

2.1) “Data Culture” and Organizational Learning

Companies have become increasingly aware of the potential of data exploitation to profit from market opportunities. Data-savvy companies are those that can effectively benefit from the use of the information embedded in the data to support decision making.

These companies are said to own a “data culture”: they understand that facts analysis must affect the way business processes are designed and employ cross-functional teams that seek, analyse and share relevant data. The best example of a data-driven culture can be found in those companies applying the organizational learning principles. Peter Senge, American systems scientist and senior lecturer at the MIT Sloan School of Management, coined and defined the term “Learning Organization” as: “*a compelling vision of an organization made up of employees skilled at creating, acquiring, and transferring knowledge. These people*

could help their firms cultivate tolerance, foster open discussion and think holistically and systemically (...)”.

Later Garvin (1993) suggests that a learning organization is characterized by the ability to modify the company’s behaviour to reflect new knowledge acquired. A learning organization, thus, focus on developing and using information and knowledge, relying on skilled and trained employees, to alter the company’s behaviour, in order to improve organizational results. An Individual Learning strategy emphasize the training and education of individuals, affecting the value of the human capital inside the organization by means of managerial development programs, on-the-job training, apprenticeship programs and informal mentoring programs. This strategy, along with the formal transmission of explicit knowledge, focus on creating exchanges of tacit knowledge. Grant, (1966) define it as knowledge that cannot be codified because it exists only in the mind of the experts and can be observed only through application and acquired through practice. As it is recognized by Probst and Buchel, (1997) *“learning by a social system cannot be equated with the sum of the learning processes undergone by individuals (...)*”. Consequently, individual learning is considered only a part of the widest path bringing to a data-savvy company.

Organization learning focus on learning by the social system investigating how the knowledge is shared, what are the values and norms and what is the pattern followed in response to potential changes in the business environment. It pursues the creation of social capital encompassing communication and relationship-building skills through the deployment of organizational processes including formal training and practice in effective teamwork, change management techniques, case management for continuous improving.

2.2) A Model of Organizational Learning

Shih Yung Chou and Charles Ramser, (2018) develop a multilevel model of organizational learning as opposed to single-level models viewing it as a top-down and organized event initiated by the leader (Berson et al., 2006; Vera and Crossan, 2004).

The authors built a sequential model made of constructs whose materialization allow companies to reach the goal of organizational learning. As stated by Organ, (1988) organizations often rely on employees’ extra-role behaviours to enhance effectiveness and efficiency. The extra-behaviour identified by the authors as one of the most prominent is “helping”. “Helping” is a voluntary behaviour that aim to help other members or to prevent the occurrence of task-related issues, manifesting itself by transfer of knowledge, skills, know-how from the helper to the receiver. Helping has always been considered a mechanism occurring among employees or from a leader to a subordinate. However, as stressed by the

authors, upward helping from employees to leaders may play a pivotal role in enhancing the leader human capital through the transfer of crucial task-related capabilities. This requires the development of high-quality leader-employee exchange relationships that may be achieved by means of formal organizational socialization such as meetings and trainings and informal ones such as events and social gatherings.

Moreover, a leader can acquire the employees' point of view, understanding their emotions, improving the leader's capability to build close ties with them and increase its social capital. In turn, an augmented leader's human and social capital translate into the leader's capability to stimulate employees and be connected emotionally to them, acting at the same time as a source of inspiration. This fosters a working environment characterized by employees encouraged to act independently and creatively. The leader's augmented human and social capital influence positively the Knowledge Leadership which refers to functions of coaching, facilitating and supporting employees in their learning process and networks needed for achieving organizational objectives (Skyrme, 2000). Since one of the leader's functions is that of facilitating the acquisition and transferring of knowledge, the reception of employees' suggestions, opinions and ideas is essential for developing knowledge leadership (Davenport et al., 1998).

Knowledge Leadership is influenced by psychologically empowered employees, by means of their "voice", because as pointed out by Boudrias et al., (2009) empowered employees conceive them as competent individuals who can influence the working environment in a meaningful way. Consequently, the authors posit that when employees exhibit higher levels of voice behaviour intended for improving the current organization condition, they transfer innovative and new knowledge to the target, who typically is the leader (Liang et al., 2012). Moreover, they stress the importance of the working environment that encourages these kinds of behaviours, proposing cross-departmental and cross-level training and the exercise of individualized consideration. To conclude their model of organizational learning Shih Yung Chou and Charles Ramser (2018) identify in Knowledge Leadership the element that positively influences it, stating that "*knowledge leadership offers a stable and consistent platform for the members of an organization to collect, share, and create knowledge that results in long-term advantage (...)*".

Drawing from above it is clear that companies capable to create a such environment will be the ones that benefit the most from the implementation of BI systems. A learning organization thus guarantees time for reflection and psychological empowerment to the employees, it is open to new ideas and appreciates differences. Assuming the point of view of a BI project companies can evaluate how close is the company in becoming a data-driven organization. A

commonly used criteria is to control the users' adoption. This can be done by tracking the usage of reports, dashboards and of the different data sources along with the assessment of their use in the intended way. Corporate sponsorship coming from a corporate senior manager that understands the benefit of a data-driven culture may play a crucial role in propelling a learning organization. In addition, BI champions, typically subject matter experts willing to collaborate with sponsors to deploy the system across the organization, can help to spread the utility of reports and dashboards.

3) BUSINESS INTELLIGENCE TECHNOLOGY AND CLOUD COMPUTING SERVICE MODELS

3.1) BI Technology

The concept of BI can be decomposed into three parts: A) Data Capture/Acquisition, B) Data Storage, C) Data Access & Analysis

Each of them makes use of different tools pursuing different objectives that grouped together give a framework of a BI system architecture. Fig. 1 represents a BI architecture showing from the bottom to the top the components belonging to the three abovementioned categories.

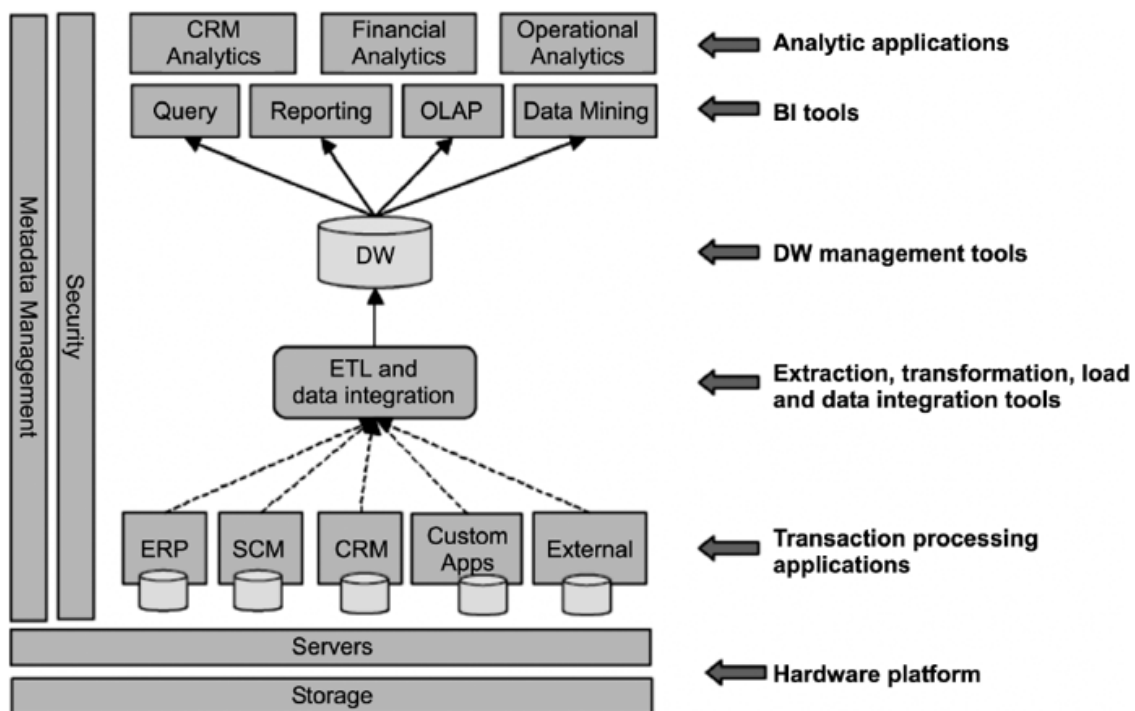


FIG. 1: A BI ARCHITECTURE, Source: “Business Justification with Business Intelligence”, Jayanthi R., 2008

A) Data Capture/Acquisition

This component represents the back end of the architecture consisting in systems that interface with operational systems in order to load data in a data warehouse. Online

Transaction Processing (OLTP) system serve this purpose by managing the transactional data of a company. Transactional data is information that tracks typical business transaction varying from payments received, payments made, products movement to inventory, orders taken, etc.

OLTP involves inserting, updating, deleting small amount of data in operational databases. It is structured to be customer oriented and to manage daily data without referring to historical ones and providing fast query research for IT professionals or clerks. The ACID properties developed in computer science aim to guarantee the reliability of the process. A transaction is seen as a sequence of operations part of a single unit of work. The abovementioned properties state that a transaction is successful if the whole sequence of actions is successful ensuring in this way data consistency, meaning that the data written in the database must be valid according to predefined rules. Data flowing to operational databases can also derive from IoT, sensors or other applications like a CRM software.

The loading of the data coming from operational databases and external sources into the data warehouse is preceded by a process characterized by three phases: Extraction & Cleansing, Transformation, Loading, performed by ETL tools from which the acronym derives. In the first phase data are extracted by multiple sources and cleaned in an attempt to fill in missing values, remove unwanted transactions, such as duplicate or irrelevant ones, fix structural errors such as inconsistencies found on categorization. The second phase aim to transform data from the original format to a format accepted by the destination database. It is a fundamental part of every attempts to perform data integration. It may refer to actions like adding, copying, replicating data, or destructive actions like deleting fields and records or structural ones involving the renaming, moving, combining of columns in a database. In the third phase after the cleansing and transformation process data are loaded into the Data Warehouse.

B) Data Storage

The first definition of Data warehouse (DW) has been coined by Bill Inmon in 1990. He defines a DW as a *“subject oriented, integrated, time-variant, non-volatile collection of data that is used primarily in organizational decision making (...)”*. The difference with respect to an operational database reside in the data architecture, structured for query analysis. A DW is said to be “subject oriented” because it is organized around major subjects like customers, suppliers, products and sales. It supports the decision-making process by providing concise views excluding those data that are not useful for that specific decision or analysis. A DW is “integrated” because the data originate from different sources. Since data are stored to provide

an historical perspective every structure contained in a DW owns implicitly or explicitly an element of time, explaining the “time-variant” characteristic used in the definition. “Non-volatility” is a characteristic of a DW due to its physical separation from the operational environment. This means that it only requires two operations: Accessing and Loading of data. DW are made of Fact Tables containing data corresponding to a particular business process. Each of the row of a Fact Table represent a single event associated with the process in question which contains data associated with that event. Facts are defined as objects that is possible to aggregate, like total revenues, numbers of orders, quantity sold etc. Complex analysis and visualization of data is facilitated by the multidimensionality feature allowing for views of the data from different perspective. As examples sales location, product sold, salesperson and time of sales may be dimensions of interest in a sales DW.

Dimensions are made of objects which cannot be aggregated or summarized and may be built hierarchically, as in the case of dates organized as day/month/quarter. To develop a DW properly a company must at first identify the business process that it wants to model. The next and the most relevant decision face the choice of the “grain” of the business process. This is related to decide what type data and at which level of detail will be used to represent the selected business process. Considering a retail company this imply to decide whether the grain of the fact table of the sales process be a single item purchased or an entire transaction. If for example the single item is chosen as the “grain” this would mean that a single customer transaction may generate multiple fact tables entries. After the construction of fact tables a DW design is completed with the choice of which dimensions and measures apply to each fact table record.

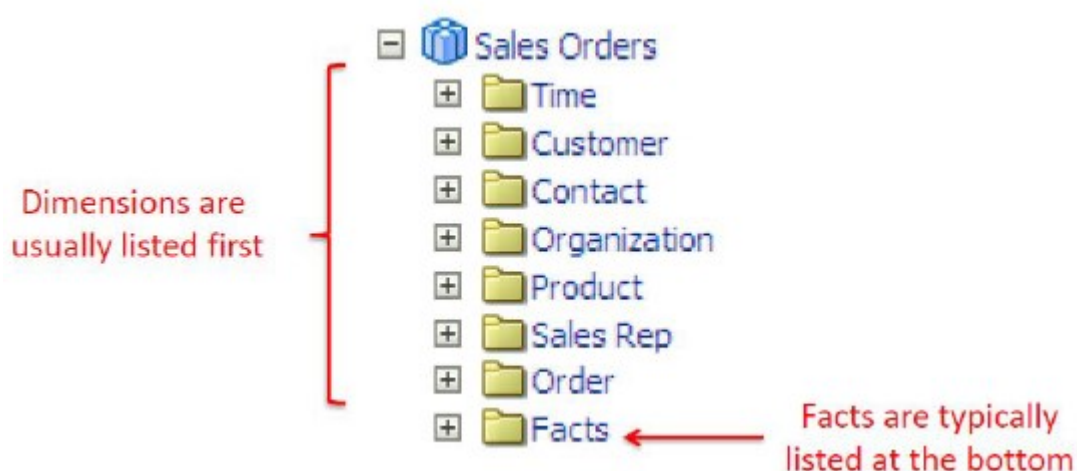


Fig.2: POSSIBLE DIMENSIONS IN DW FOR SALES ORDERS, Source: “Oracle Business Intelligence for the Enterprise”, Marco Lee H., 2014

As it is possible to note in Fig.2 the “Sales Order” business process is made of dimensions consisting of qualitative data like time, customer, contact and facts. Facts components are depicted in Fig. 3.

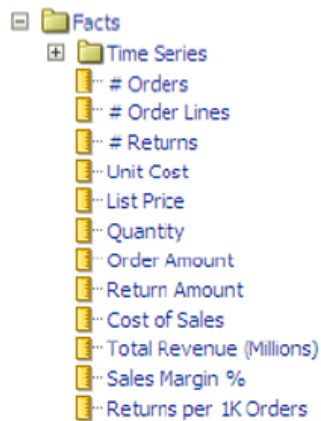


Fig.3: FACTS IN A DW, Source: “Oracle Business Intelligence for the Enterprise”, Marco Lee H., 2014

Combinations of facts and dimensions creates the basis to build reports used in decision-making or business analysis. In addition, DW can be refreshed to update the derived data following a modification of the source data. The time and modalities to carry out a refresh are decided by the DW administrators on the basis of the users’ needs and traffic.

Metadata, literally “data of data”, are needed and used to provide for instructions to users, helping them to understand what the data means, in which way is possible to access them, which data are available etc. This information can include definitions of data, business definitions, business rules and assumptions. DW can be interrogated through the use of queries built with SQL language in order to extract already filtered data.

The BI architecture can be equipped with Data Marts, defined as smaller DWs created by individual departments or divisions. They can be created to contain data supporting decisions related to specific products or functions like finance or marketing. Data Marts are more easily implementable due to lower costs a company is subject to. Moreover, they allow for enhancement in users’ response time thanks to the reduction in the volume of data managed. However, due to the separation of data, the chance to have a full corporate picture allowed by the implementation of BI systems based on DW is jeopardized, even if Data Marts can be integrated.

C) Data Access & Analysis

This component of a BI system comprises knowledge discovery tools such Online Analytical Processing (OLAP) and techniques such as Data Mining (DM).

OLAP have the capability to perform analysis and exploration of data involving complex computation and provide users with several visualization opportunities. Forman (1997) describe as the main features of an OLAP application the multidimensional view of data, calculation capabilities and time intelligence. The multidimensionality concept refers to quick and flexible access to data and information by means of actions like:

A) Roll-up, which summarize data with an increase generalization. An example is the view of sales revenues by a store in a city aggregated at the city level.

B) Drill-down, which increase the level of details of the view. Considering the same example above from the city to the stores.

C) Slicing and dicing, which break information in smaller parts allowing for different point of views. Moreover, in articulated views made of several visualization, the action of slicing and dicing affecting a visualization made projections on other ones.

D) Pivoting, which perform a cross tabulation by sorting, counting and summarizing data.

Data Mining refers to techniques used by statisticians and data analysts to establish patterns and find relationships among data. DM activities perform two actions on data, Interpretation and Prediction according to the main purpose of the analysis. Obviously interpreting is related to finding regular patterns among data that can be expressed through rules. Classification models are used for this purpose. Prediction aim to anticipate the likelihood of a certain random variable value in the future, utilizing techniques related to the time series analysis field or econometric regressions. As recognized by Rygielski et al., (2002) DM helps business analysts to generate hypotheses, but it does not validate the hypotheses. The challenge is to be able to utilise the available information, to gain a better understanding of the past, and predict or influence the future through better decision-making (Ganguly and Gupta, 2005). Modern data analysis makes use of Machine Learning to allow machines to acquire knowledge for problem solving presenting them historical cases.

3.2) Cloud Computing Service Models

Nowadays companies can benefit from the Cloud Computing solutions present in the market. Cloud Computing as defined by the National Institute of Standards and Technology's (NIST) is *“a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (for example, networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction (...)”*. Solutions like the pay-as-you-go computing service are very attractive for small and medium size companies that can, in this way, avoid huge initial investments in infrastructure and its maintenance. In addition, they create agility in

responding to changes and give support to intra-organizational collaboration (S. Marston, Z. Li, S. Bandyopadhyay, J. Zhang, A. Ghalsasi, 2011). Cloud computing platforms maintain more than the hardware and give customers a set of virtual machines in which to install their own software. They provide for a seemingly infinite amount of computing power and storage space available on demand, in a pay-only-for-what-you-use pricing model. Organizations that choose to build a BI system based on cloud computing solutions should use a component-based approach in which the service characteristics to privilege can be synthesized as follows:

-the reusability, that is the possibility to use the service for many workflows.

-the substitutability, meaning that alternative solutions can be implemented, avoiding the supplier lock-in.

-the scalability, regarding the ability to extend the service as the business expand.

-the customizability and reliability and a low cost of ownership.

Service-oriented BI systems components such as DW, OLAP and end-user ones can be bought individually or in a single package as a service. The service models underlying a service-oriented BI system can be grouped into Software-as-a-Service (SaaS), Data-as-a-Service (DaaS), Infrastructure-as-a-Service (IaaS) and Analytics-as-a-Service (AaaS).

Software-as-a-service models allow the client to use or rent the applications from the vendor without having to install it in their own PC. The licensed applications run in a cloud infrastructure managed directly by the vendor who provide access through interfaces like Google chrome, Internet explorer. This kind of service model focus on end user needs by providing existing applications which were directly developed by the provider (A. M. MayankaKatyal,2013). The cost reduction deriving from the software licensing is one of the major benefits for the companies, although pricing policies vary from flat rate to charges according to the use of the application. Among the products falling into this category are Salesforce.com, Gmail, Microsoft Office 365.

Platform-as-a-service models go a step further by providing to the clients a platform in which the developers can develop their applications without any need to manage and install the development environment. The customer has control over the applications deployed and their configuration without caring about the cloud infrastructure (Z. Mahmood, 2011). The cost of the service can be determined on the basis of the amount of data transferred or the platform utilization. PaaS models increase the flexibility of the applications development process by adapting to the emerging circumstances. It decreases the cost of data storage and the need to rely on IT experts to manage the infrastructure. Examples of products are Google AppEngine, Microsoft Azure, Yahoo developer Network.

Infrastructure-as-a-Service model provide to the clients both virtual infrastructures on the cloud and raw hardware components, as well as virtual machines, that is, a software that create a virtual environment emulating the behaviour of a common physical machine (PC, servers etc.), via web-based service (J. Gibson, R. Rondeau, D. Eveleigh, and T. Qing, 2012). Vendors usually provide maintenance and support as well. The virtual machine can be rent and paid by as long as it is needed. The cost is influenced by the infrastructure requirements demanded by the client, with pricing policies that foresee cost increases deriving from the amount and duration of the virtual machine. Interestingly some vendors offer the opportunity to connect the virtual machine to the company network by mean of a Virtual Private Network (VPN), that is, a private network ensuring privacy by mean of the utilization of a private communication channel, with at least two factor authentications. This imply that the company's network can be seen as a one scalable IT infrastructure (C. N. Höfer and G. Karagiannis, 2011). The client keep control over CPU, memory, storage and deployed applications while the providers is responsible for hosting the infrastructure and maintaining it operative.

These kinds of services enable the clients to increase or decrease the infrastructure on demand, moreover it reduces the cost of human resources and hardware allowing for low obstacles to entry. As noted by B. Kepes, (2013) the absence of standardization in the cloud computing services may cause that the Service Level Agreement (SLA), explaining the definitions of the contract, monitoring, negotiation of resources, will lack the clarity as for the duties each party have to respect, with the likelihood of affecting the quality of the service. Amazon EC2 and S3, Gogrid, IBM BlueHouse are among the products falling under this category.

Starting from the assumption that data can reside in a server at a server farm many kilometres away from the place data are used a Data-as-a-Service model, by ensuring direct access to the data sources, being them files or structured databases, provide the clients with an interface that allow for the possibility to interrogate the server containing the data, through open standard languages such SQL, XML. The process end with the restitution of the data by mean of another interface. Before the introduction of Master Data Management system in the cloud, operations like data cleansing, necessary to ensure data consistency and quality, were carried out in a centralized place. Solutions of these kinds ensure cost savings arising from the lack of investments in databases. In addition, they enable agility gains thanks to the minimal amount of changes necessary to adjust the service to the companies' needs. Furthermore, many vendors ensure very cost-effective interfaces by outsourcing the presentation layer. Bearing in mind the benefit that can arise from the utilization of such a service, companies must care

about data location and security. Providers of those services give customers little choice about the location where the data will be stored, improving the risk of access by unauthorized third parties with the likelihood of hurting the business.

4) BUSINESS INTELLIGENCE CRITICAL SUCCESS FACTORS, MEASURES OF SUCCESS AND MATURITY

4.1) Critical Factors of BI Implementation

Critical success factors (CSF) are defined as areas in which positive results will ensure the success of a project. Applied to a BI system implementation this imply that organizations should be involved in the identification of CSF in order to maximize the likelihood of success by optimizing the use of the resources (Yeoh and Popovič, 2016). The CSF contributing to the successful BI system implementation are classified into three major dimensions organizational, process, and technological.

A) Organizational Factors

A.1) Top Management support:

A variety of scholars, (W. Yeoh and A. Popovič, 2016), (A. B. Sangar and N. B. A. Iahad, 2013), have stressed the importance of a serious involvement and engagement of the top management team whose support has been recognized as imperative. Since the implementation of a BI system require the participation of multiple departments, roles and functions, top management support ensure the allocation of resources and the administrative approvals required to put in practice organizational changes, helping in overcoming the obstacles and issues a company face during the process (Adamala and Cidrin, 2011). Yeoh and Popovič (2016), note that top management can influence the acceptance of a BI system by staff people influencing them and breaking down resistances.

A.2) Develop a Clear Vision and Plan Activities:

Setting out a clear vision of the company is essential to identify the possible developments of BI systems. It is logic that the objectives and needs of the organization should be aligned with the characteristics of the BI system. Moreover, having a clear-defined vision influence the commitment of individuals, pushing it toward the intended direction and motivate users in the use of the system (S. Adamala and L. Cidrin, 2011).

A.3) Organizational structure

As stated by (Pedyash, et al, 2013), few studies address the influence of centralized and decentralized organizational structure on the successful implementation of a BI system. The intrinsic nature of a centralized organization, whose main features is the presence of many responsibility layers slowing down procedures and affecting data accessibility and the flow of information, make it a difficult candidate to be a CSF. Decentralized organizations, according to Ismail Al-Alawi, et al., (2007), improve the information flow among departments or divisions allowing for timely decisions taken at the action level. They argue that this type of structure allows for a better communication among employees, top management and customers increasing the availability of information without waiting formal approval, thus avoiding delays.

B) Process factors

B.1) Strong Championship

Championship refers to the manager in charge of the implementation of the system. As stressed by W. Yeoh and A. Popovič, (2016), strong leadership, good business acumen and sufficient technological knowledge are the characteristics of the champion contributing positively. It should be the champion to perform effectively tasks such as: addressing the issues arisen during the implementation process, promote collaboration among business units and maintaining the alignment toward the organizational objectives.

B.2) Users Involvement

The term refers to the participation of employees from various hierarchical levels to the design and implementation of a BI system. User participation has been proposed as a CSF because it provides a base to identify the needs and expectations of employees and align those with the characteristics of the BI system (A. B. Sangar and N. B. A. Iahad, 2013). If users are deeply involved it will be easier to develop a system tailored to their needs and improve its acceptance contemporaneously enhancing their satisfaction (W. Yeoh, J. Gao, and A. Koronios, 2008).

C) Technological Factors

C.1) System Flexibility

A system is flexible when it has the capability to adapt to a variety of user needs and to changing conditions (R. R. Nelson, P. A. Todd, and B. H. Wixom, 2005). The implementation of a BI system requires hardware and software to be flexible to adapt

to emerging or changing business needs. In this way a system can be easily expanded by adding new data sources or new analytical tools. This implies that the system owners with this characteristic are the most suitable to provide alignment with the strategic objective of the company, enabling it to build a system whose design is embedded in the strategy with a long-term view (W. Yeoh, A. Popovich, 2016).

C.2) System Integration

As stated by N. Khojasteh, R. Ansari, and H. R. D. Abadi, (2013) the main goal of a BI system is that of unify the data coming from multiple sources and make them available to be used for decision-making. This implies the recognition of an adequate level of integration among operational databases, applications and business process as necessary. The level and quality of integration play a crucial role in ensuring the maximum benefits from BI implementation and reliable outcomes (Ö. Isik, M. C. Jones, and A. Sidorova, 2013). System integration is also fundamental to improve information quality because it implies the unification of databases into a single user interface (O. Isik, M. C. Jones, and A. Sidorova, 2011).

4.2) BI Measures of Success

Designing a set of performance measures in order to evaluate the success of a BI system is not an easy task. The implementation of a BI system requires time and resources while the main benefit of providing information in an accurate and timely manner is intrinsically not measurable. It is clear that it is difficult to build financial measures justifying the investments in such systems. According to Kaydos (1999), anything can be measured but the question is whether the efforts and money spent turn out to be more than compensated by the benefit accrued from the performance measurement.

An approach used in order to utilize a direct and objective measure, implying a lower level of distortion, could be to quantify the strategic deals that the BI team has been involved in and compare the win/loss ratio against the deals without a BI team involvement. Another direct but subjective measure is to ask managers the effects of the BI system on their decision-making process. Indirect measures must be built with a correct understanding of the cause and effect relationship underlying them (Kaydos, 1999). For example, the utilization of the system is deemed to be an indirect factor related to the effects it produced. An indirect and objective measure of system utilization could be to measure the level of activity over defined datasets or reports, while an indirect and subjective one could be to use a survey asking users the level of utilization of the intelligence in the normal work.

4.3) BI Maturity Model

To assess the maturity of a Business Intelligence system Gartner identify five stages each describing a different level of maturity: A)Unaware, B)Tactical, C)Focused, D)Strategic, and E)Pervasive. People, processes, metrics and technology are the main areas of concerning.

A) Unaware

At this maturity level the company is in an environment characterized by “information anarchy”, whose indicators are inconsistent and missing data coupled with enormous problems in satisfying the information requirements of individuals and departments. The privileged tools are spreadsheet and the company does not recognize the value given by the implementation of performance metrics against which to compare the results. IT department is the only providing reports to the management and control the management of information.

B) Tactical

The investments in BI starts at this level of maturity, often upon request of IT managers. The investments are typically focused on off-the-shelf software able to accommodate the company’s needs. The data tools and applications utilized are in “silos”, meaning that there is a total lack of system integration. Metrics are used at departmental level. Users of the system are not able to benefit from it due to the lack of necessary skills. Management of the company is inclined to mistrust the information provided by the system influencing negatively the level of support given to further investments in system development.

C) Focused

A company that reach this level begin to perceive the benefit deriving from the BI system, but its utilization is limited to a part of the organization. Dashboards are demanded by managers at a department and business unit level with the objective to maximize the efficiency of their department or business units, objectives that may not be tied to the broader corporate ones. Data are still not integrated and the information is made available through complex and time consuming channels. However, system users are trained for basic functionalities and Business Intelligence Competency Center (BICC) starts being formed, bringing together the IT technology expertise and the business acumen of business professionals.

D) Strategic

At this level companies include BI in critical processes. A strategic framework is established comprising financial and non-financial metrics against which to compare operational,

departmental, functional results. Data quality is assessed constantly providing credibility to strategic information to be used in decision-making. BICC are formed and have enough resources to achieve the desired goals. Users receive an adequate training through which their efficiency in data processing is incremented. Information is available across the organization and is often extended to key partners like suppliers and customers. Support to the development of the system comes from the highest level of the management.

E) Pervasive

A company that achieve this level of maturity utilize the BI system in a pervasive way so as to permeate the corporate culture. The system is flexible providing support in facing the fast business changes and different demands. Information is trustworthy and made available to supplier, business partners and customers. Users are well trained and can use the system to retrieve information capable to influence firm performance. Results are measurable and linked to goals.

CHAPTER 2

INFORMATION TECHNOLOGY IMPACT ON PERFORMANCE AND MICROSOFT POWERBI DEPLOYMENT MODEL

1) BUSINESS INTELLIGENCE IMPACT ON PERFORMANCE

1.1) Information Management Impact on Organizational Performance

Sunil Mithas, Narayan Ramasubbu, V. Sambamurthy, (2011), explore the impact of information management capability on organizational performance by leveraging the Baldrige Criteria. Information management capabilities is deemed to have a greater salience in influencing firm performance, while the IT infrastructure provides the base foundation to build these capabilities on. (Cotteleerand Bendoly 2006; Davenport 1998; Davenport and Linder 1994). Capabilities refer to (Marchand et al., 2000):

- 1) The quality of IT management practices, that is the ability to integrate IT into key operational and managerial processes. This means to provide data and information to users with proper levels of accuracy, timeliness, reliability, security, and confidentiality.
- 2) The capability to develop information management processes that help managers to sense, gather, organize and disseminate the relevant information needed at the right time. In order to achieve such objective an organization must provide universal connectivity and access.
- 3) The capability to instill values for a proactive behaviour, tailoring infrastructure to the emerging business needs and probably growing paths.

The three elements listed above contribute to the improvement of three relevant organizational capabilities, customer management capability, process management capability, and performance management capability, that in turn translate into enhanced organizational performance.

Customer management capability defines a firm's ability to determine the requirements, expectations, and preferences of its customers (Liang and Tanniru 2006-07). Karimi et al. (2001) report that firms with a better ability to plan and integrate their IT resources and provide timely, accurate, and reliable information to key stakeholders are more effective in improving customer service and customer relationships. More recent studies have brought the idea that an exchange of information between IT and customer service units improve the customer's knowledge of an organization as well as the related business processes.

Process management capability is defined as the ability of the firm to obtain flexibility, speed, and cost economy in the product/service design and delivery process, in the processes associated with a growth of the business such as innovation, mergers and acquisitions, project

management capabilities etc. as well as support process such as finance and accounting and human resource management. All the processes described above have the potential to be a source of competitive advantage for firms excelling in their execution. Information management capability provides the reach and connectivity to design and manage processes that connect the firm with its customers, suppliers, and other significant business partners (Davenport 1993). A high level of information management capability enables firms to design metrics and analytics that provide visibility for the real-time performance of various processes, integration between processes, and advance warnings of performance degradation (Kalakota and Robinson 2003). Information management capabilities contribute to the responsiveness of the firms helping them to redesign business process consistently with changing conditions. The influence on business performance pass through increasing revenues or cost reduction, consolidate market position, employee satisfaction, production flexibility and time to market.

Performance management capability is defined as the ability of the firm to configure a performance measurement and control system (PMC) in order to support managerial decision making. The PMC allow for a wiser business management through the appropriate selection of metrics, data gathering and communication of performance deviation on the previously identified metrics. For example, an effective performance management system can enable a firm to detect deterioration in customer order fulfilment-rates, to understand the root causes of this problem, and experiment with alternative solutions. Electronic and real-time operational data (e.g., customer related, financial, supplier related) from various sources enable real-time analysis and decision support to provide the appropriate insights for operational, tactical, and strategic decisions. This means to enable executives to correct actual or potential deviations in a timely manner (Anthony and Govindarajan 2005; Kaplan and Norton 1992)

1.1.1) The Baldrige Criteria and the Estimating Model

The Malcolm Baldrige National Quality Improvement Act of 1987 for the evaluation of firms' performance is a pretty old framework still widely used nowadays by many firms. It was developed in US to deal with enhanced competition in the market that made necessary a focus on the correct use of the resources. The first step in the Baldrige process involves self-analysis and reporting on performance and the status of development of key capabilities within the Baldrige framework. The Baldrige criteria provide detailed instructions and guidelines for firms and organizational units to develop rich descriptions of their capabilities and results relative to each construct.

Information management capability (INFMGMT), customer management capability (CUSTMGMT), Process management capability (PROCMGMT), performance management capability (PERMGMT), part of the Baldrige Criteria, have been described above.

The organizational performance is measured by the Baldrige criteria on the basis of four dimensions:

- 1) Customer performance (CUSTPERF) measures the levels and trends in customer satisfaction, customer retention, positive referral, and product and service parameters relevant for customers.
- 2) Financial performance (FINPERF) measures trends in return on investment, profitability, liquidity, market share, and business growth.
- 3) Human resources performance (HUMPERF), measures employee satisfaction, employee development, job rotation, work layout, and organizational learning.
- 4) Organizational effectiveness (ORGEFFECT) measures operational performance indicators of important design, production, delivery, and business and support processes, such as productivity, cycle time, and supplier performance.

Sunil Mithas, Narayan Ramasubbu, V. Sambamurthy, (2011), collect data through a research website from a highly respect business group with approximately 80 firms with combined revenues in excess of 9\$ billion in 2002. The firms in the business group operate in a wide range of industries, including manufacturing (e.g., steel, automotive, chemicals, consumer durables) and services (e.g., financial, telecommunications, hospitality). The data are represented by the scores generated by the firms utilizing the Baldrige framework. Moreover, the authors collect data coming from intra-organizational units belonging to the group. To overcome the probability of biased scores coming from self-assessment activities a team of examiners constituted by 3-9 members independently review the responses and allocate scores on the basis of the firm's or intra-organizational unit's detailed responses. The robustness of the data is guaranteed by the strong commitment of the group which developed a unit totally devoted to the performance assessment made up of full-time and trained examiners, providing the right context to test the research model. The period under consideration cover the years 1999–2003, with a total of 160 observation from 77 firms and intra-organizational unit.

1.1.2) The research model

Using the above described dataset the authors estimate a linear model estimation approach to relate information management capability to organizational performance, mediated through customer management, process management, and performance management capabilities, utilizing the equations in Fig. 4:

$$Y = \alpha_{10} + \alpha_{11}INFMGMT + \alpha_{12}LEAD + \alpha_{13}STRAT + \alpha_{14}FIRM + \varepsilon_{1,A} \quad (1)$$

$$Z = \beta_{10} + \beta_{11}INFMGMT + \beta_{12}PERFMGMT + \beta_{13}PROCMMGMT + \beta_{14}CUSTMGMT + \beta_{15}FIRM + \beta_{16}SIZE + \beta_{17}SERVICE + \varepsilon_{2,A} \quad (2)$$

Fig. 4: MODEL EQUATIONS, Source: “How Information Management Capability Influences Firm Performance”, Mithas S., Ramasubbu N., Sambamurthy V., 2011

where Y denotes the three organizational capabilities and Z denotes the four measures of organizational performance. The two models comprise control variables, that is variables kept constant throughout the period of data collection. In particular, the first equation, Leadership quality (LEAD) and Strategic planning quality (STRAT) are used as control variables. LEAD is measured by the effectiveness of senior leaders to give the desired direction to the business through the codification and transmission of values. It is also a proxy of the entrepreneurial alertness required to build the necessary organizational capabilities suited to the business environment. STRAT refers to the strategy-making process, including the analysis of customer needs, competition, technology, strengths and weaknesses, and risks (Porter 1996; Porter 2001). High scores on this variable mean that the firm has been able to put in place well-designed processes capable to consider short/long-term risks and opportunities and translate them into actions plan effectively.

In the second equation the authors eliminate the differences due to firm size and industry sector. FIRM is a dummy variable that assumes value 1 when the observation comes from a firm whereas it assumes value 0 when the observation comes from an intra-organizational unit. SERVICE is another dummy variable used to differentiate the industry sector (1= services and 0 = manufacturing). The SIZE variable has been built on the number of employees in the firms or intra-organizational unit using an ordinal scale (1 = less than 200 employees, 2 = 201–2000, 3 = 2001–20,000, and 4 = more than 20,000).

The hypothesis of a positive association of information management capabilities with three organizational capabilities of customer management, process management, and performance management is confirmed by the model. As depicted in Table (1):

	Unconstrained Models			Constrained Model ^f
	(1)	(2)	(3)	(4)
	Performance Management Capability (Equation 1a)	Customer Management Capability (Equation 1b)	Process Management Capability (Equation 1c)	Organizational Capabilities
Information Management Capability	0.237*** (0.001)	0.158** (0.012)	0.197*** (0.002)	0.200*** (0.000)
Leadership	0.319*** (0.001)	0.401*** (0.000)	0.405*** (0.000)	0.375*** (0.000)
Strategic Planning	0.183* (0.073)	0.434*** (0.000)	0.360*** (0.000)	0.321*** (0.000)
R-squared	0.711	0.821	0.808	0.69, 0.81, 0.80

Table 1: RESULTS OF THE FIRST MODEL, Source: “How Information Management Capability Influences Firm Performance”, Mithas S., Ramasubbu N., Sambamurthy V., 2011

information management capabilities are significantly related to customer management (coef = .158, $p < .05$), process management (coef = .197, $p < .01$), and performance management (coef = .237, $p < .01$). As highlighted by the coefficients values the strongest effect observed is on the performance management. The control variables turn out to perform well in differentiating the results. Firm’s leadership and strategic planning have a significant influence on the development of organizational capabilities.

The prediction of the second model regarding a significant influence of organizational capabilities on organizational performance is satisfied. By looking at the result displayed in table (2):

	Unconstrained Models				Constrained Model ^f
	(1)	(2)	(3)	(4)	(5)
	Customer Focused Results (Equation 2a)	Financial Results (Equation 2b)	Human Resource Results (Equation 2c)	Organizational Effectiveness Results (Equation 2d)	Firm Performance
Information Management Capability	0.061 (0.365)	0.391*** (0.000)	0.046 (0.478)	0.050 (0.424)	0.137*** (0.003)
Performance Management Capability	0.241*** (0.003)	-0.022 (0.830)	0.208*** (0.008)	0.389*** (0.000)	0.221*** (0.000)
Process Management Capability	0.041 (0.642)	0.430*** (0.000)	0.175** (0.040)	0.172** (0.034)	0.209*** (0.001)
Customer Management Capability	0.485*** (0.000)	0.190* (0.098)	0.339*** (0.000)	0.213** (0.011)	0.289*** (0.000)
R-squared	0.750	0.741	0.751	0.774	0.73, 0.68, 0.74, 0.75

Table 2: RESULTS OF THE SECOND MODEL, Source: “How Information Management Capability Influences Firm Performance”, Mithas S., Ramasubbu N., Sambamurthy V., 2011

customer performance is most significantly affected by customer management capability (coef = .485, $p < .01$) and performance management capability (coef = .241, $p < .01$). Financial performance is affected by process management capability (coef = .430, $p < .01$) and customer management capability (coef = .190, $p < .10$). Human resource performance is affected by all three capabilities: customer management capability (coef = .339, $p < .01$), process management capability (coef = .175, $p < .05$), and performance management

capability (coef = .208, $p < .01$). Organizational effectiveness also shows a similar pattern and is affected by all three capabilities: customer management (coef = .213, $p < .05$), process management (coef = .172, $p < .05$), and performance management (coef = .389, $p < .01$). Looking at the results the authors are able to show the relevancy of customer management capability, indeed it seems the only construct affecting all dimension of firm performance.

1.2) Business Intelligence Impact on Organizational Performance

A study developed by Elbashir Mohamed Z., Collier Philip A., Davern, Michael J. aims to evaluate the organizational performance impact of BI systems. The authors choose to draw on perception-based measurements considering that some benefits of these system are intangible or qualitative in nature and most of the data items are strategic and confidential in nature being for this reason not publicly available. 50 cases, reported in the Business Intelligence Journal during the period 1999–2004, were analysed to identify candidate items, moreover all of the selected cases relate to organizations that won the annual Best Practice Awards provided by The Data Warehousing Institute (TDWI), based on their effective and innovative use of BI systems.

The sampling frame of the study conducted by means of a Survey consist of 1873 managers with positions such as senior business and IT executives, middle managers, and IT users or as for smaller organization CEO, CFO or CIO were directly questioned in 612 enterprises. The selected firms belong to the category of service industries (46.7%), involving banking/finance/assurance (12.4%), health care and consulting (10%) as the most represented. The non-Service industries represent a share of the 36.6% of the respondents with manufacturing (18%) and retail/wholesale/distribution (14.4%) as the most represented. Data collection has been restricted to firms or Strategic Business Unit in conglomerates that use BI systems provided by a single vendor and actively utilize the technology for their business activities. After the submission of the Survey the authors receive back a usable response rate of 22% and 35% for individual and organization respectively, corresponding to 419 responses representing 212 organization.

As for respondents the average age of respondents was 41.1 years, with 16.5 years of work experience. 54% of the respondents classified themselves as business executives/managers, while 46% were IT executives/managers, with 13% reported that they hold both business and IT jobs. 54% of respondents reported between 5–8 years of experience with BI systems, while 26% had more than eight years of experience.

1.2.1) Research Hypothesis

The Survey utilized by the author comprises a list of 18 performance measures used to assess the impact of Bi systems. For each of the 18 measures four factors were developed identifying different channels of contribution.

	Factor 1	Factor 2	Factor 3	Factor 4
<i>Factor (1) organizational benefits:</i>				
Eigenvalue=8.33; Variance explained 46.30%; Cronbach's alpha=0.90				
BV17: Increased revenues.	0.71	0.19	0.24	0.23
BV18: Reduction of lost sales.	0.71	0.35	0.03	0.26
BV19: Increased geographic distribution of sales.	0.61	0.32	-0.06	0.38
BV20: Enhanced profit margin.	0.79	0.19	0.20	0.17
BV21: Increased return on investment (ROI).	0.75	0.13	0.33	0.16
BV22: Improved competitive advantage.	0.74	0.18	0.37	0.09
<i>Factor (2) business supplier/partner relation benefits:</i>				
Eigenvalue= 1.85; Variance explained =10.29%; Cronbach's alpha=0.89				
BV11: Improved coordination with business partners/suppliers.	0.20	0.85	0.24	0.06
BV10: Reduction in the cost of transactions with business partners/suppliers.	0.00	0.72	0.34	0.33
BV12: Improved responsiveness to/from suppliers.	0.27	0.85	0.18	0.16
BV13: Increased inventory turnover.	0.36	0.75	-0.01	0.24
BV6: Reduced inventory levels.	0.30	0.53	0.08	0.36
<i>Factor (3) internal processes efficiency benefits:</i>				
Eigenvalue= 1.51; Variance explained=8.41%; Cronbach's alpha=0.82				
BV2: Improved efficiency of internal processes.	0.16	0.21	0.81	0.04
BV3: Increase staff productivity.	0.10	0.19	0.80	0.17
BV4: Reduction in the cost of effective decision-making.	0.48	0.00	0.67	0.09
BV5: Reduced operational cost.	0.45	0.18	0.54	0.20
<i>Factor (4) customer intelligence benefits:</i>				
Eigenvalue= 1.05; Variance explained =5.85%; Cronbach's alpha=0.82				
BV8: Reduced customer return handling costs.	0.30	0.15	0.09	0.83
BV7: Reduced marketing costs.	0.09	0.14	0.40	0.77
BV9: Reduced time-to-market products/services.	0.31	0.15	0.34	0.67

Table 3: RESULTS TABLE, Source: “Measuring the effects of business intelligence systems: The relationship between business process and organizational performance”, Elbashir Z. M., Collier A. P., Davern J. M., 2008

Table (3) shows the items grouped on the basis of the highest impact that they have on the four factors as well as the loading of the performance measurements indicating in bold the highest values. The bold values indicate that the measure have its higher impact on the dimension represented by the factor. As an example to clarify, the measures BV8, that is, “Reduced customer handling cost”, impact more significantly on the customer intelligence benefits provided by BI systems. The first factor named *Organizational Benefits* comprises the direct measures associated to the organizational performance, encompassing financial, market and shareholder value performance compared to the previously set expectations. The business process benefits are represented by the other factors. The second factor, *Business supplier/partner relation benefits*, includes benefits that organizations gain from improved relations with business partners and suppliers, such as reduction in transaction costs, enhanced coordination with business suppliers and partners, and better inventory management. The third factor, *Internal processes efficiency benefits*, refers to benefits that arise from the improvement in the efficiency of internal processes such as enhanced staff productivity and the reduction of operational costs. The fourth factor, *Customer intelligence benefits*, comprises benefits arising from a better understanding of customers' buying habits, prediction

of customers' future needs, and the introduction of new products and services accordingly (Cottrill, 1998; Head, 2004; Marin and Poulter, 2004; Cavalcanti, 2005; Fuller, 2006). This translates in a reduction of the time required to deliver new product or services and a reduction of marketing costs given the more accurate customer segmentation made possible by BI systems.

Are also evident the similarities of the business process benefits factors with the dimensions of Porter's (1985) value chain activities, specifically: inbound logistics (supplier/partner relation benefits), operations (internal processes efficiency benefits), and customers (customer intelligence benefits). Moreover, these three dimensions show consistency with the previous literature analysing the IT payoffs.

Mahmood and Soon (1991) argue that IT improves organizations' performance along the value chain of the firm in three dimensions: 1) performance benefits upstream (inter-organizational efficiency and coordination with suppliers), 2) internally (economics of production and internal organizational efficiency), and 3) downstream (marketing, sales, and the after sales service). Zhu et al. (2004) decompose the performance impact of IT measures into upstream (procurement costs and coordination with suppliers) internal dimension (including efficiency of internal processes and staff productivity), and downstream impact (including effect on sales and customer service).

1.2.2) The relation between business process and organizational performance

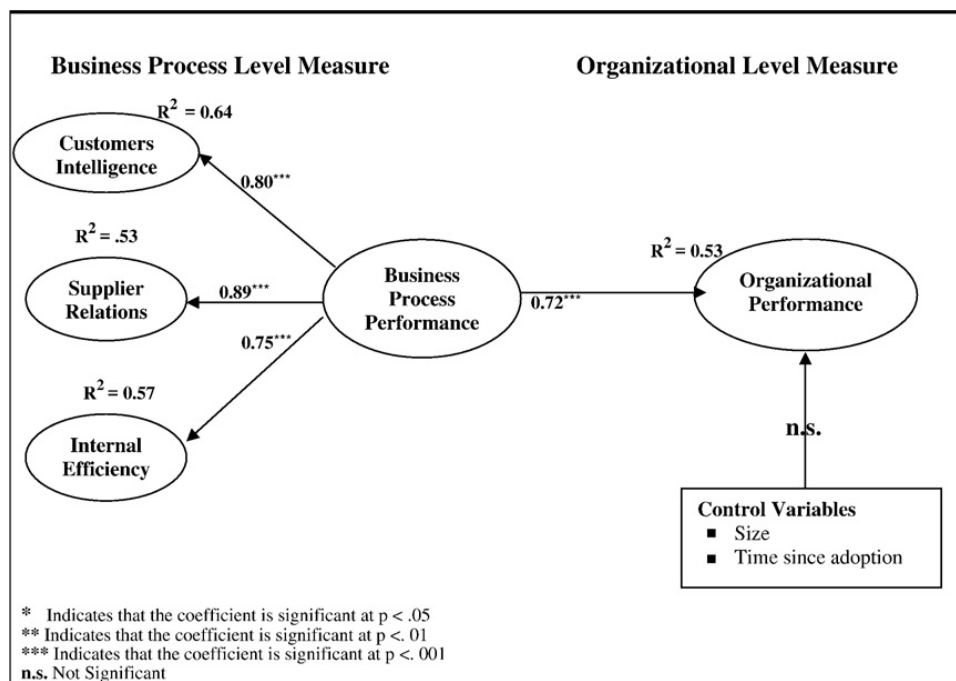


Fig. 5: STRUCTURAL MODEL PATH, Source: "Measuring the effects of business intelligence systems: The relationship between business process and organizational performance", Elbashir Z. M., Collier A. P., Davern J. M., 2008

Fig. 5 depicts the structural model path developed by the authors. The Partial Least Square technique has been applied to test the significance of the parameters estimates. Two control variables have been added, firm size and time since adoption. The size of the firm has been considered as an indicator of investments capacity in IT. Number of employees and gross revenues are the two variables chosen to identify larger firm. Time since adoption control variable is useful to control for the effect of developing expertise in the use of the BI systems. However, none of the two control variables proved to be significant.

The results in the chart show a relevant impact of business process performance and its three reflective factors (0.80), (0.89), (0.75) with a p-value <0.01. The effects of business processes performance on the organizational performance is also relevant and positive (0.72). The R² is a statistical concept used to determine the variance explained by the parameters. The variation in the organizational performance explained by the business processes performance induced by BI systems is about 53%.

Another element possibly affecting the results of BI systems impact on performance may be the membership of the firm to different industries. Moreover, the industry may be considered a proxy for the competitive and business context in which a firm perform its activities. The authors decided to test a regression of organisational performance on the business process performance measure incorporating a dummy variable assuming value 1 when the firm belongs to the non-service industry, assuming value 0 when the firm belong to the service industry.

The results confirm a significant relationship between business process performance and organisational performance for both service and non-service sectors. However, there is a relevant difference between service and non-service industries, with the latter showing a significantly stronger relationship between business process level performance and organisational level performance. It seems that non-service firms are able to convert business process benefits more effectively into enhanced organizational performance. This is not a surprise for the authors considering that one of the elements comprised in the process level benefits is the relations with suppliers, representing a far more critical component of the non-service industries value chain.

2) MICROSOFT PowerBI

2.1) Magic Quadrant and PowerBI Features

“Magic Quadrant” is a periodical review of BI technologies and market trends published by Gartner. The assessment of the vendors’ value proposition has been analysed by comparing

the characteristics of the product against defined critical capabilities. As for the infrastructure of the BI system have been identified as relevant, capabilities concerning platform security, administration of users and auditing of the platform access and utilization as well as high availability and disaster recovery. Relevant is also the possibility to connect to various sources of databases and the capability to build, deploy and manage analytics applications in the cloud. Advanced analytics capabilities should be easily accessible through menu-driven options and analytics dashboards should provide highly interactive data visualization and exploration. Analytics-as-a-Service vendors notably increase the capability of the firm to perform analysis of the business without requiring huge investments in IT infrastructures.

Another favourable distinction among the offers is the capacity to publish and share content on mobile devices. Microsoft offers data preparation, interactive dashboards and augmented analytics through PowerBI. The product is composed by a desktop application called PowerBI Desktop, configured as a SaaS model, that provides for a web application on the basis of various licenses, and an application for mobile devices Windows, iOS, Android. Gartner evaluate Microsoft as the leader in the market, owning a product that is increasingly adopted and positively revised.

Among the strengths of PBI, Gartner “Magic Quadrant” emphasize the ease of use for complex type of analysis. PowerBI supports complex data models with integrated advanced analytics. Augmented analytics is a term to describe efforts in making PBI more and more usable by professionals having a business background without owning a deep information technology knowledge, called citizen data scientists. The field of data preparation is an area affected by augmented analytics, helping data scientists in the cleaning process of the data. Another area affected is the “queryability” of data meaning that it would become easier to interact with data, for example by using natural language queries instead of encoded ones. The embedded OLAP system allow for multidimensional view of the data. In addition, Microsoft PBI can count on a robust user community contribution often providing answers to specifics questions.

PowerBI is a product strongly targeted to business users. It is equipped with connectors to a broad range of data sources, including big data systems and on-premises or cloud-based applications like Salesforce. With PBI desktop business users have the capability to build datasets utilizing data coming from different sources, they can create dimensions, calculated fields and measures by means of the Excel-based DAX language. Report and dashboard can be shared through PBI service, but the possibility to share contents and interact with other PBI users presupposes the subscription of a Pro license. Users can also connect to report and dashboard via mobile apps, PowerBI mobile. PBI supports a large a set of visualization tools

like bars, lines charts, scatter plots, pie charts, treemaps etc., and custom visualization which can be downloaded from the web. PBI is equipped with natural language queries that can be used to produce meaningful visualization by mean of the function “Q&A”.

2.2) PowerBI Deployment Models

Javier Guillén, Melissa Coates (2016), identify three possible approaches to the deployment of PowerBI. The first approach is called “*Business-Led Self-Service BI*”, whose scenario see business users as the role with major involvement and control. In this scenario the business unit take ownership and support of the system and business users are involved in data preparation, modelling and report creation. Data can come from governed data sources, and the authors encourage their utilization, but this scenario is characterized by the frequent use of non-standard and non-governed data sources like industry statistics purchased from a third party.

The first phase of the deployment model starts with the assessment, performed by a PowerBI champion, of the current vs desired state. A PowerBI champion is a person that assists technical and project leaders with the implementation of the system and facilitates communication among stakeholders, promoting collaboration and best practices. The desired state is what is called a “data-driven culture” that can be checked out by interviews or surveys aimed at understanding the current state of the infrastructure, the PowerBI skills level, and at categorizing the reporting and analytics needs, identifying the gaps. The second phase involve the creation of selected reports, which should have the lower complexity and higher business value possible, that should be delivered to subject matter experts for immediate feedbacks. The third phase is characterized by the publishing and monitoring of the previously identified reports through the web based PowerBI service. The fourth phase see the involvement of the PowerBI champion that must lead the process to fully transmit the vision of a data-driven culture by disseminating the PowerBI knowledge to the internal community of users. The authors recommend to actively share knowledge through the implementation of internal user groups with a common knowledge base showing frequently asked questions. They recommend also to actively collect best practices to streamline reporting and define the means for sharing and to provide training to the different users.

The second approach, “*Corporate BI*” denote a solution that foresee the ownership of the entire BI system by the IT team which release reports upon request to business users. The first phase related to this approach starts with the IT team compiling requirements in order to evaluate which areas of the business may be excluded by the scope of an enterprise DW or BI environment. The requirements comprise data sources, structure and complexity, semantic

interfaces, business rules, report layout and interactivity needs. The second phase foresees the use of strategic prototyping. Business users may have issues in identifying the abovementioned requirements, but this can be overcome by providing data samples and interactive mock reports and collecting feedbacks. In the third phase feedbacks deriving from the utilization of mock reports are analysed, detecting their limitations. Users should inform about the need of new data sources or a higher level of interactivity, they should inform about the comprehension of business rules, calculations and naming conventions. In the last two phases the PowerBI system is developed and support and training to users is given.

The third “hybrid” approach proposed, “*IT- Managed Self-Service BI*”, detects a scenario in which business users use PowerBI as a reporting layer utilizing standardized and governed data sources managed directly by the IT team which is also responsible for the semantic layer. In this way it is possible to ensure data quality and consistency more effectively. Moreover, the IT ownership of the semantic layer helps in mapping complex data into familiar business terms such as product, customer, revenue with the benefit to provide a consolidated view across the organization. In this scenario happens what the author called “ownership transfer” meaning that IT may adopt PowerBI reports built by business users or the latter may take on a reporting initiative started as an IT project.

The IT adoption of a report happens when it is recognized that the benefits accruing from it could span the entire organization, justifying its incorporation into the IT strategic initiatives. The IT team carries out an evaluation of the report assessing the validity of data sources, may replacing them with others, of the validity of data models ensuring the correct use of the DAX language and the look and feel compliance of the report with respect to corporate branding standards. This certification phase ends with cost-benefit analysis performed by comparing the amount of work that the IT must carry out by means of additional data integration, modelling and the benefit of the ownership transfer including the IT governance of a BI relevant asset with an increase in data quality. The IT adoption takes place whether the ownership transfer has been judged positively.

The deployment model dealing, with the opposite and more uncommon case foreseeing the business adoption of an IT generated report, starts with the interest of a PowerBI champion who offers to own it. The champion then reviews the report considering the compliance with the business requirements, identifying the gaps if existing. When end users will feel comfortable with the report, and the latter will have acquired the necessary credibility, they will start to use it to run their business operations.

CHAPTER 3 RELATIONSHIP MARKETING AND CRM TECHNOLOGY USE IN SALES AND MARKETING

1) RELATIONSHIP MARKETING (RM)

1.1) The Shift Toward Relationship Marketing Strategies

The aim of a relational marketing strategy is to initiate, strengthen, intensify and preserve over time the relationships between a company and its stakeholders, represented primarily by its customers (Berry, 1983). Relational marketing became popular during the late 90s as an approach to increase customer satisfaction in order to achieve a sustainable competitive advantage. Many reasons have contributed to the spread of relationship marketing strategies. The complexity of the market has become far more challenging because of the concentration of companies in larger enterprise with enlarged basis of customers. In addition to this, the shortened obsolescence of many product coupled with the customers' ability to compare different offers shifted the focus on the satisfaction and retention of customers. Another reason contributing to the shift toward new marketing strategies can be identified in new web-based technologies with which companies gain in term of easiness of interactions with their customers. By combining the abilities to respond directly to customer requests and to provide customers with a highly interactive, customised experience, companies have a greater ability today to establish, nurture, and sustain long-term customer relationships than ever before.

Traditionally marketers have been trained to acquire customers pursuing mass visibility in order to attract potential customers or steal them from competitors. Customer acquisition was thus based on large amount of mass advertising and price promotions. The importance of RM is highlighted by the frequently referenced argument that attracting a new customer costs as much as five times more than keeping an existing one (e.g. Christopher et al., 1991; Filiatrault & Lapierre, 1997). Moreover, has been assessed that a tiny proportion of a company's customers wallet will generate the bulk of a company profits, so identifying, collecting and keeping clients is the very essence of customer relationship management (Clemons 2000). Other relevant contribution can be found in Reichheld and Sasser Jr (1990), which state that existing customer are less price sensitive and cost less to serve and in Rigby et al. (2002), which highlight that loyal customers offer businesses a steady customer base, more frequent and steady purchase cycles, and higher profitability.

1.2) Satisfaction and Loyalty

Following the theory's provisions firms made intensive use of metrics capable to give an indication of the customers' satisfaction level. For sure more significant in business contexts characterized by the presence of a small and relevant number of customers, Customer Satisfaction Surveys are used by firms pursuing the aforementioned goals. Companies ask questions to their customers in the effort to determine a rate of satisfaction and implement the necessary changes in the areas that need them. Focusing on a B2B context a survey with this objective contains questions about:

1. Service staff availability, courtesy, reliability, complaints resolution etc,
2. Product/Service characteristics like perceived quality and price equity, including the delivery time,
3. The company itself like its financial reputation and ease of doing business.

Since satisfied customer tend to be involved in repetitive purchases, it is crucial to measure satisfaction levels in the clients' employee roles having a direct or indirect impact on current or future purchases. The prevailing classification, provided by the literature on the buying behaviour (Dawes et al., 1998; Webster and Wind, 1972), of the receivers' different positions help companies to determine which attribute of the term satisfaction have an influence over which group of roles. A Decider is someone empowered to approve the final deal. Gatekeepers are those roles who control the flows of information inside the decision-making unit, they can be also proactively engaged in the research of information. Influencers refers to roles like external consultant or specific matter expert identifiable with those who have the higher persuasive power. Buyers have the formal authority to arrange the terms of the purchase following pre-specified criteria against which judging potential offers. Users are those involved with the future use of the product/service helping in defining its specifications. Jeanne Rossomme (2003) split the term satisfaction in four constructs attempting to better address the different roles varying experience and perceptions of the reality.

Information satisfaction refers to satisfaction with the information used to opt for a product. Affecting directly the pre-purchase expectations and post-purchase evaluations of performance this dimension is relevant for those roles where information is the primary outcome of interest, mainly deciders, gatekeepers, influencers (Moriarty and Spekman, 1984). Performance satisfaction as defined by Wilson (1995), reflects the overall performance of the supplier in product delivering and in supporting the transaction tracing as the most influenced the buyers and deciders. Users pose particular emphasis on Attribute satisfaction, a micro-measure important to identify key issue of the product/service, deriving from the evaluation of a specific dimension. Personal satisfaction is shared among all roles referring to a

psychological judgment of pleasure and comfort of the relation. Based on this analysis companies can tailor questions in order to receive accurate feedbacks and evaluate each category separately.

More used in B2C context are loyalty programs, capturing with the term a variety of marketing initiatives such as reward cards, gifts, fidelity cards, dedicated support contacts, dedicated price promotions or incentives. Kumar and Reinartz (2012) analyse the impact of the various activities on profit evidencing that customers tend to exhibit behavioural loyalty, that is to transact more with the company for a number of reasons including convenience, price, and a sense of loyalty. Several measures are employed by the firm to evaluate the loyalty level of its customers: basket size, the purchase frequency acceleration, price sensitivity, share of wallet, retention, and lifetime duration. Price sensitivity concerns the effect on the customer purchasing behaviour due to changes in the price of the product/services being sold. Retention is measured as $(1 - \text{Churn Rate})$, with the latter representing the share of customers lost in a given period of time. Moreover, it should not be ignored the medium-long term effect of the loyalty program which reside in the information about individuals and their behaviour and preferences a firm is able to acquire by operationalizing it. This process of learning allows the company to provide a better-tailored value proposition through effective product/service offerings.

1.3) Referrals Marketing

The loyalty effects are not limited to the abovementioned ones, indeed another important aspect is the willingness of the customer to “talk about” his experience with a certain enterprise. Customer reference marketing, as a phenomenon, needs to be distinguished from word-of-mouth (WOM) communications (Trusov et al., 2009). While WOM is typically described as an informal interaction between customers, and thus may be characterized as a market-level phenomenon, largely beyond the control of marketers, customer reference marketing concerns supplier-initiated activities undertaken in order to leverage customer relationships and previous deliveries (Jalkala and Salminen, 2010). In the process of customer reference utilization, existing customers typically work as important advocates and “enthusiasts” for the supplier company (Osarenkhoe and Bennani, 2007), by giving testimonials and providing information about the delivered solutions and their performance. These kinds of reference customers are generally considered as powerful marketing tools to increase a firm credibility.

According to Johnson et al. (2003), the following are the factors that contribute to a customer's willingness to refer:

1. Relationship appraisal with the salesperson: Referrals result from the salesperson and customer having a good relationship. An empirical study that examined referrals found that high levels of relationship quality with the salesperson are associated with customer likelihood of referring business to the salesperson (Boles et al., 1997).

This implies that it is still necessary to leverage the quality of the salesperson pursuing an elevated personalization of the relationship. This means that the automation tools provided by the online technologies must be used carefully and in a way such that the customers never feel abandoned.

2. Perceived relationship continuity: The easiest referrals come from clients with whom the salesperson has an ongoing relationship (Washburn, 1996).
3. Satisfaction: Customers who have higher levels of satisfaction within the buyer-salesperson relationship are more likely to have positive appraisals of their relationship with their salesperson (Biyalogorsky et al., 2001).
4. Trust: Trust is defined as having confidence that the salesperson can be relied upon to behave in a manner that serves the long-term interest of the customer (Wilson, 1995). Customers' assessment of the degree of trust they have in their salesperson will influence their overall evaluation of the buyer-seller relationship.

2) CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

2.1) CRM Definition

The term CRM following Payne and Frow (2005), refers to *“A strategic approach that is concerned with creating improved shareholder value through the development of appropriate relationships with key customers and customer segments (...)”*. CRM unites the potential of relationship marketing strategies and IT to create profitable, long-term relationships with customers and other key stakeholders. CRM provides enhanced opportunities to use data and information to both understand customers and co-create value with them. This requires a cross-functional integration of processes, people, operations, and marketing capabilities. A key role of CRM is to integrate different functions by leveraging business process automation, technology solution and information system to maximise the value of each customer's contact (J.-S. Chen et al., 2009). Value creation implies the determination of the most appreciated attributes of the product/service as well as the recognition of which customers or customer segments are the most valuable for the company. As noted by Wells et al. (1999) marketing and IT department need to work together to produce a seamless level of interaction.

Looking at the technology side, it is straightforward to address the increasing use of relationship marketing strategy to the possibility to retrieve, store, analyse large amount of data coming from online software. This data can be transformed into knowledge and leveraged to implement the desired actions. To ensure that IT solutions support the CRM practice of the organisation, it is important that the information management technology is planned around the customer. Technology enables companies to operationalize their CRM strategy through the management of the information coming from different sources, including marketing, sales, customer and field service. The information collected on a customer should include such items as sales contact history, sales orders (including order history and current order status), products purchased, product pricing, account affiliations, contracts and compliance, entitlements and warranties, service history (including service order details), and responses to marketing campaigns. Collecting and analysing the data coming from every touch point translate in the creation of useful information that can be used to learn about the customer organization.

In addition to customer focused IT department and Relationship marketing strategies another ingredient the literature identify as necessary for an effective CRM implementation is a customer-focused organisational climate. “Climate” in an organization refers to the shared beliefs and values in an organisation in terms of its systems, practices, and leadership style (McMurray, 2003). It stems from the employees’ perceptions of the firm’s practices and procedures that are rewarded, supported and expected regarding customer service (Schneider,1980; Schneider et al., 1998). A customer-focused climate, involving for example the use of feedbacks to modify internal processes, is the one allowing for a positive customer experience.

2.2) CRM Software Composition²

Business functions like sales, marketing, customer service should work together with IT departments in order to build a successful CRM system supporting the business in the daily operations. CRM software packages vendors recognize the importance of the different functions involved in a successful implementation of a CRM strategy providing software that in general present four modules, each in support of a different function.

1. Sales Automation Module: designated to automate sales-related tasks such as sales-customer interaction, contact scheduling, sales campaign and promotion activities, sales lead tracking, sales trends and forecasting, sales knowledge exchanging, inventory control

² Lin C. M., “A study of mainstream features of CRM system and evaluation criteria”, 2003

and monitoring, reducing sales cycles, etc. The key features offered by the main vendors encompass:

- Personalization of the software layout with the inclusion of the preferred items
 - Sales Distribution Channels to support the customers and internal management
 - Instant Sales Information available through accessible databases
 - Sales Activity and Time Management
 - Sales Account, Contact, and Opportunity Management
 - Forecast Sale Trends and Revenues Accurately
 - Analyse and report and Analyse of Sales Opportunities
2. Marketing Automation Module – This module is designed to automate marketing related tasks such as marketing analysis and planning, marketing campaign activities and location, products promotion and scheduling, pricing compatibility and competition, marketing trends and forecasting, marketing knowledge exchanging, etc. Marketing Automation software should include data analysis for planning the campaign, defining the targeted customers, determining the channel of location and communication, and launch promotion.
 3. Customer Service & Support Module – This module is designed to document and manage customer information and activities including unmet customers, new customers, existing customers, and valuable customers.
 4. Reporting and Analysis Tools – These tools are a set of software and technology to enable cross-channel, complete view of sales, marketing, and customer service information that stored on company's databases for analytic reporting and analysis.

Organizations need to identify which are the SFA tools requirements appropriate in their business context. The most acknowledged SFA providers are Salesforce, Microsoft, Oracle, SAP, SugarCRM, and NetSuite. Today with cloud-based or SaaS/PaaS solutions companies can avoid massive investments in IT infrastructures and can reduce the time needed to operationalize their CRM strategy. A firm must carry out a deep analysis of their needs and what are the expectations related to the utilization of the SFA tool.

The first basic consideration is to detect which will be the number of concurrent users of the system, meaning users accessing the system at the same time, also referred as “number of seats”. This become relevant when the price of the software varies with respect to seat licenses. An important characteristic of some SFA software is their modularity. This means that the SFA provider should offer the possibility to the firm to break down major function into modules enabling separate purchases and increasing flexibility. The ability of the solution

to be scalable must be considered, as it implies the ability to provide to the firm the same level of efficiency as the company grows. Technical training and support, provided by the SFA supplier through different channels and ways, must be evaluated in advance along with the frequency of version update, whose release may add new functionalities or may resolve past issues. In doing this a provider should not incur in disruptive changes and communicate with their customers to allow for a proper planning. Particular attention should be devoted on the possibility to customize the software and to integrate it with other systems related with production environment. Turning the focus on the users, mobile devices access and synchronization along with offline access become central considering the different electronic devices being used.

2.3) CRM Software Benefits and Impact on Profits

CRM software are technology solutions that enable companies to automate the process of customer acquisition and to enhance the probability to establish long-term relationship. Drawing from a literature review conducted by Eli Jones, Keith A. Richards (2009) the benefits associated with their implementation include:

1. Reduction of support costs due to a higher automation in performing tasks
2. Increased ability to perform effective customer segmentation
3. Ability to provide integrated offerings across channels
4. Quicker and more precise assessment of increases/decreases of Customer Equity (CE)
5. Ability to exploit historical data
6. Improved Pricing
7. Improved customization of the offering
8. Ability to foresee potential problems with customers
9. Ability to detect favourable trends in building relationship
10. Knowledge transfer from high to low experienced salespersons

Jones and Richards (2009), investigate the benefits of implementing a CRM strategy, linking it to the concept of Customer Equity (CE). In the calculation process for CE, individual customer lifetime values (CLV) are determined for each customer and ultimately CE is related to a return on marketing measure defined in relation of the total marketing expenditure. Customer lifetime value is defined as the net present value of a single customer's value. CE is defined as the discounted sum of each customer's CLV. Customer Equity is a construct made up of three components: value equity, brand equity, and relationship equity directly influenced by CRM strategies. Value equity is the customer's appraisal of the brand based on its utility. Customers evaluate what is given up and what is received to determine this aspect

of equity (Zeithaml, 1988). Managers have three levers that impact value equity: the customer's perceptions of quality, price, and convenience. This type of equity is fundamental to establishing long-term relationships. Brand equity is a more subjective appraisal of the brand and is more concerned with the image and mission than the rational evaluation of price, quality and convenience (Lemon, Rust, & Zeithaml, 2001; Rust et al., 2000). Brand equity is driven by brand awareness, attitude toward the brand and corporate ethics. Each of these elements serves to enhance the customer's perception of the brand and increase attraction and retention rates. Finally, relationship equity involves the special relationship elements that link the customer to the brand and serve to cement the relationship above and beyond value and brand equity. Relationship equity represents the impact on the customer from the company's attempts to build relationships and operate retention/loyalty programs (Lemon et al., 2001; Rust et al., 2000).

By using information available in the CRM software managers are able to evaluate the trade-offs associated with customer that are expensive to acquire and those who are less expensive, compared with their long-term profitability, and manage to target customers across a range of acquisition costs and retention rates. The Acquisition cost is defined as the total spent on sales and marketing divided by the numbers of new customers acquired. The effect on value equity derive from the fact that leveraging data a firm can target customers that are more likely to find the products/services attractive leading to improved perception of price, quality and convenience. CRM systems fill the gap between distribution channels in a way such that customers' information coming from different sources can be used by the salesperson in direct contact with the customer.

Ensuring a consistent customer experience across channel impact value equity by increasing the convenience perception and may result in improved possibilities to up-sell and cross-sell, affecting both value and brand equity. Customer Acquisition effectiveness is enhanced thanks to the availability of price and delivery time information that can be leveraged by the salesperson. Additionally, better information translates into the possibility to influence the customer perception and attitude toward the brand and tailor the offering or offer special recognition. CRM technology aids in the allocation of costs to individual customers and reduces the need to average costs across large groups of customers (Buttle, 2004; Rust et al., 2001), allowing for an effective pricing policy.

In an interesting study G. K. Hunter and W. D. Perreault Jr (2007), investigate the impact of the adoption of SFA tools on two different aspects affecting sales performance, the performance with customer and the internal role performance. The former is defined as the ability of the representative to cultivate relationships with a customer organization. Internal

role performance is measured as the contribution the salesperson give on the resolution of internal issue. Since nowadays organizations tend to be customer focused, its role become more and more crucial. A well-performing salesperson on this side is informed about production schedules and technology advances. It is always in front line recommending improvements in operations and procedures and it has a profound knowledge of the product/service characteristics. Interestingly the authors, utilizing data coming from the sales force of a major consumer packaged goods company, found that the return of an investment in sales technology is higher from an internal role perspective, with efficiency gains as opposite to external effectiveness.

2.4) Salesperson technology adoption hurdles

Although the technology introduction clearly enhances the capabilities of a firm to engage with customers, company's sales force can be reluctant in adopting a technology for many reasons. The management must consider them and find ways to overcome the initial concerns, because as noted by Ahearne, Jelinek and Rapp (2005) only an adequate training and support moderates the relationship between SFA usage and salesperson efficiency and effectiveness. Among the reasons, the fear of changing previously established workflows plays a major role. In addition, the salesperson may feel that an excessive use of the technology with relative time consumption may hinder the relationship with the client and short the time dedicated to build it. The necessity to learn how to use the technology and the time invested in trainings may cause the salesperson to be hostile.

When it comes to use the technology to transfer information organizations must overcome another hurdle. They should provide incentives to the highly experienced salesperson in order for him to share information with other less experienced colleagues. This is not an easy task given that a part of their compensations is directly linked to the results. Once this hurdle is overcome the knowledge of highly experienced workers, stored in a central repository, can be accessed and used by anyone, taking on the function of a Knowledge Management System. According to D-G. Ko and A. R. Dennis (2004), experienced representative, since they have less to learn, may benefit less from the utilization of technology tools while less experienced ones may be overloaded by useless information. This highlight the importance and the centrality of the role of sales employees, which in performing their daily activities must think carefully about the accuracy of the information put in the system.

At the same time tough, the authors recognize the value of new information and the fact that it may be assimilated in a more effective and rapid way by experienced salespersons, arguing

that experienced representative may be particularly good when it comes to find relevant information foreseeing the possibility to use it in order to boost sales.

3) CRM TECHNOLOGY: SALESFORCE AND ITS FUNCTIONS

3.1) Salesforce

Salesforce is an US based company with headquarters in San Francisco providing customer relationship management services and selling other applications focusing on sales and marketing digitalization, like Salesforce for sales and Pardot for marketing campaign. Salesforce offers the Einstein Analytics Platform (formerly Wave), Einstein Discovery (augmented analytics), and Einstein Data Insights (AI-automated insights for Salesforce reports). The Analytics platform has been introduced with the aim to help the management identify trends, correlation and test hypothesis using Artificial Intelligence instead of the usual manual exploration of data. Einstein Analytics delivers a portfolio of contextually relevant, self-service analytics apps that empower every CRM user to explore data and uncover insights. Einstein Discovery go beyond, offering to the management recommendation on how to take actions, auto-generated slide containing visualization and talking points. With Discovery a sales manager can for example be informed about the factors that have contributed the most in closing deals across products, regions, industries etc.

Following Gartner Magic Quadrant Salesforce software is awarded as the leader in augmented analytics with on-going investments in the fields of data preparation, conversational analytics, and proactive alerting. As far as the development of the software is concerned, Salesforce allows everyone to become a developer using Trailhead, the interactive and gamified learning platform. Moreover, Independent Software Vendors (ISV) utilizing AppExchange can extend the power of Einstein Analytics to more roles, department, industries by registering and publishing applications or by selling customized contents like datasets. Thanks to the acquisition of MuleSoft there is no need to rely on ETL tools provided by third party to achieve an effective data integration, indeed the abovementioned acquisition has added to the software the capacity to be connected to a broad range of data sources. Among the “cautions” provided by the Gartner Magic Quadrant the cost represents the principal one. The customers interviewed express concerns about the pricing and packaging offers rate above the average. In addition, scores for ease of administration, development and deployment, and for integrated workflow put Salesforce at the bottom of the preferences. As a motivation Gartner affirm that

custom programming, that is the necessity to write a computer program to meet a given need, is still required for many actions that are often ready and available in other platforms.

3.2) Lead management

Lead Management is a key function of SFA products constituting along with Opportunities Management that part of the system devoted to the management of the Sales Pipeline. It is easy to identify benefits deriving from an investment in such tools. In the past sales representative were used to rely on post-its or notes on paper sheets to store customer data and information or as reminders for future tasks to be performed. With software now is possible to collect, organize, analyse data coming from identified leads. Alerts and reminders help salespersons to manage a higher number of leads without losing memory of what they are expected to do. Tasks carried out and all the other interactions, being them marketing emails campaign, phone calls or online demos are recorded and stored. Dashboards allow for a simple and clear flow of internal communications regarding leads activities. The leads can be classified in “hot”, “warm”, “cold”. For hot leads can be the time to call them while cold leads may be stored in a database for massive marketing emails campaign or for further investigation of the causes that have brought them to the “cold” state.

By providing for the integration of multichannel customer and prospect response data with customer and prospect databases marketers are able to evaluate the outcome of marketing programs among different channels. The management of the company have to identify the characteristics of the lead contributing to his assignation to a particular segment. Salesforce Pardot is a part of the Salesforce Sales Cloud that focuses on digital marketing and sales solutions. Pardot focuses on B2B marketing automation and integrates both sales and marketing reps.

It works by assigning two kind of values: Lead Scoring is based on the level of activities performed by the lead whereas Lead Grading is based on the fit with the product/service in question.

ACTIVITY	POINTS	NOTES
Custom Redirect Click	+3	Points assessed for each click.
Email Open	0	Points assessed for each open. You can enable email opens to affect the prospect's score only once. For accounts provisioned on or after April 11, 2014, cumulative scoring is disabled—points are assessed only for the first open.
Form Handler Submission	+50	Points assessed once per successful form handler submission.
Form Submission	+50	Points assessed once per successful form submission. If the form is on a Pardot landing page, the submission is recorded as a landing page success.
Landing Page Success	+50	Points assessed once per successful landing page submission.
Page View	+1	Points assessed for each page with Pardot tracking code viewed in a visitor session. If you use page actions to customize point values, only the page action score adjustment is applied.
Tracker Link Click	+3	Points assessed for each tracked link click.
Video Conversion	+50	Points assessed when a visitor converts on a video turnstile using the Wistia connector.
Video Play	0	Points assessed for each video a prospect plays.
Video Watched 75%+	+25	Points assessed each time a prospect watches at least 75% of a video.

Fig. 1: PARDOT LEAD SCORING, Source: <https://ebq.com/b2b-guide-pardot-lead-scoring>

As it is possible to note in Fig. 1 Lead Scoring is built by assigning points to the Leads activities considering their relevance. Watching a demo online together may and should be considered more valuable than the Lead action of opening an email.

GRADE	SCORE
<p><i>Threshold: B</i></p> <p>Criteria:</p> <hr/> <p>JOB TITLE</p> <ul style="list-style-type: none"> - Executive or Staff? <p>JOB FUNCTION</p> <ul style="list-style-type: none"> - Marketing or HR? <p>LOCATION</p> <ul style="list-style-type: none"> - Country or State? <p>COMPANY SIZE</p> <ul style="list-style-type: none"> - SMB, MM, Enterprise? <p>CUSTOM DATA</p>	<p><i>Threshold: 200 points</i></p> <p>Criteria:</p> <hr/> <p>FORM COMPLETED</p> <ul style="list-style-type: none"> - Demo Request or White Paper? <p>PAGE VISITS</p> <ul style="list-style-type: none"> - Pricing or Careers? <p>WEBINAR / EVENT</p> <ul style="list-style-type: none"> - Registered or Attended? <p>EMAIL</p> <ul style="list-style-type: none"> - Open or Click? <p>CUSTOM DATA</p>

Fig.2: PARDOT LEAD GRADING, Source: <https://www.pardot.com/blog/4-lead-scoring-and-grading-scenarios-explained/>

Lead Grading, as depicted in Fig. 2, qualify the leads using different classification criteria, like industry, firm's size, job title, distance from the sales point to cite some of them. Based on those scores and grade the software is able to perform a screening process providing to the salesperson only the most relevant leads. E.g. let's imagine the result of an outbound e-mail

marketing campaign displayed in front of the software user. Through the feature of visitor tracking contacts are classified in who have opened the mail and may sub-classified with the respect to a time-criteria and who have opened the e-mail and clicked to a link concerning a certain specific topic. Coupled with the criteria set by the company for Lead Grading the software is able to classify or at least suggest to the salesperson the next action he may carry out on that contact. If a lead has showed interest in a topic by clicking to the related link it will be necessary to try to understand the needs of that contact related to that argument, setting the conversation in a way that enable the maximum retrieving of information. Apart from emails campaign this software allows for the analysis of data coming from newsletters published in the company's website, tracking of the activities on the social media after the publication of a post.

In order to build an effective lead management process is crucial to identify the key activities that move the leads forward in the lead conversion funnel and to establish the criteria that make a lead qualified. A famous approach for lead qualifications, suited for B2B companies is called BANT, invented by IBM. The acronym stands for Budget, Authority, Need, Timescale. Budget analyse the lead from the point of view of its conformity with the price of the product being sold. In a B2B environment it could be defined as an assessment of the purchasing power. Authority investigate the decision-making power of the lead inside the customer organization looking at the role or at the department in which the subject work. Need refers to the analysis of the needs of the lead comparing them with the product/service characteristics. Timescale is the period of time in which the lead usually makes a purchase, if it exists, and may be correlated with certain customer process cycles.

3.3) Opportunity Management

Opportunity management solutions are often embedded in lead management ones. Once a lead is converted into a contact a salesperson may open opportunities related to that contact. Opportunities are expected future sales constituting the lifeblood of every sales pipeline. Salespersons can use SFA automation tools to manage all the activities that may lead to win the opportunities. Fig. 3 shows an example of an Opportunity page in Salesforce.

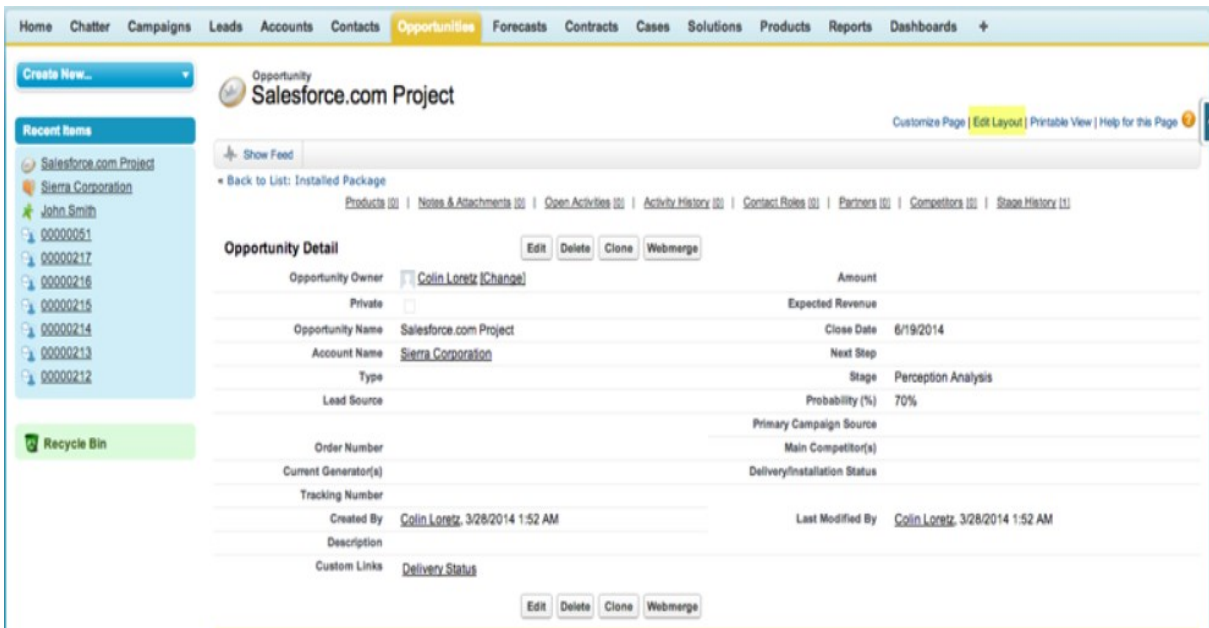


Fig. 3: SALESFORCE OPPORTUNITY PAGE, Source: https://support.webmerge.me/hc/en-us/articles/206527236-Complete-Installation-and-Setup-Guide?mobile_site=false

These activities are related to a probability of winning the opportunity. E.g. a conversation by mails between a salesperson and a contact regarding an opportunity may reflect a probability of 10% of winning it. As the process goes on an online demonstration of the product or service capabilities may be associated to a probability of 80% of closing the opportunity. Information about Leads Source helps to identify through which channel the lead has been attracted. The Opportunity Owner indicates who is responsible to manage the opportunity. The Next Step field indicates which are the activities the salesperson has planned to carry out in the future so as to win the opportunity.

The pipeline created by the opportunities can be analysed by the management trying to understand the future flows of revenues and the period of time of their arrival, moreover it can be compared with the actual volume of sales deriving from new clients business or new business with the same client. The solutions today in the market allow for a unified view of the customer by combining the information coming from all the interactions with the contacts, revealing their preferences, needs and past issues. Every interaction can be tracked and connected to actions and reminders for follow-ups. A contact page in a CRM software includes information like, past activities, number of purchases, related opportunities, past issues and complaints. With the utilization of the modules offered by Salesforce it is straightforward to foresee the benefits that occur with the digitalization of the management of the lead qualification process and the opportunities coming from existing and potential customers.

CHAPTER 4

BUSINESS INTELLIGENCE (BI) AND CUSTOMER RELATIONSHIP MANAGEMENT (CRM) INTEGRATION

1) ENABLING CRM THROUGH CUSTOMER DATA INTEGRATION: A TECHNOLOGY FRAMEWORK FOR CUSTOMER RELATIONSHIP ANALYSIS

1.1) A BI Architecture for CRM: Applying Knowledge Management Theory

Knowledge Management (KM) and Business Intelligence are extremely interlinked theories. Business Intelligence can be seen as the ultimate purpose of knowledge management since it concerns ways of delivering the right information at the right time (Murfitt, 2001). Winer (2001) recognize the important role of BI systems in supporting a customer-centric environment highlighting the importance of a framework for the management of customer knowledge. BI systems are responsible for creating, structuring and disseminating knowledge among business users, while traditional CRM systems have focused on transactional data to manage the customer interactions, referring to operational CRM. BI and CRM system integration is deemed to be the only possible way to exploit the benefit of a CRM strategy. Knowledge-enabled CRM allow organizations to evaluate key business measure of customer satisfaction, loyalty and profitability, as well as identifying and addressing customer needs (Fahey, 2001; Reichheld and Scheffer, 2000; Winer, 2001).

Drawing from above, the purpose of the technology related to CRM should be that of obtaining detailed knowledge about the customer's behaviour, preference, needs, buying patterns and utilize the acquired knowledge to negotiate prices, promotions, tailoring the offering to its needs (Kohli, 2001; Shoemaker, 2001). An ideal framework has been proposed by Ranjit Bose, Vijayan Sugumaran (2003) with the aim to provide for a single and consistent view of the customer across the organization by means of a technology architecture that support knowledge-based interactions with each customer.

The authors point out the importance of several KM capabilities that a company must provide and support in order to build an effective knowledge-based CRM. *Presentation* capability comprises the access and display of information in a single interface, designed to let users know where to search. *Personalization* capability refers to the delivering of tailored content and information on the basis of individual or departmental user profiles. *Collaboration* capability concerns the connections of people across the organization to disseminate best practices and discussions. The *Process* function allow users to have access to decision support

system increasing responsiveness to customer and partners. *Publishing and distribution* capabilities refer to the possibility of capturing the relevant knowledge that must be monitored without requiring complex computer languages. *Integration* refers to the function that guarantee a consistent and seamless navigation among knowledge sources to provide to users the possibility to exploit the entire organization knowledge in the context of their roles. The authors propose an architecture for a customer-centric CRM system consisting of four major components: A) knowledge acquisition, B) knowledge repositories, and C) knowledge utilization.

A) Knowledge Acquisition

It is the component responsible for the acquisition of relevant data. Transactional databases should provide to organizations information about customer transactions, while other software should provide information about customer preferences and characteristics giving a comprehensive picture of the customer profile. In addition, information about organizational processes, policies and standard procedures should be available along with industry information.

B) Knowledge Repositories

This component encompasses technologies performing the data storage function. It should contain customer transactional data such as the latest purchase, the date, the amount, the discounts and customer profile data such as the customer history and preferences along with ratings that can be used by the sales representative to identify the status of the customer. Along with customer information it is recommended the storage of policies and standard procedures coupled with industry information involving changes in government regulation or new benchmarks to follow.

C) Knowledge Utilization

This component is responsible for activities related to retrieving, applying and sharing relevant knowledge. It enables users to search the knowledge repositories for specific information strictly related to the issue the company is facing.

Fig. 1 represent a technology architecture suitable to implement a CRM strategy.

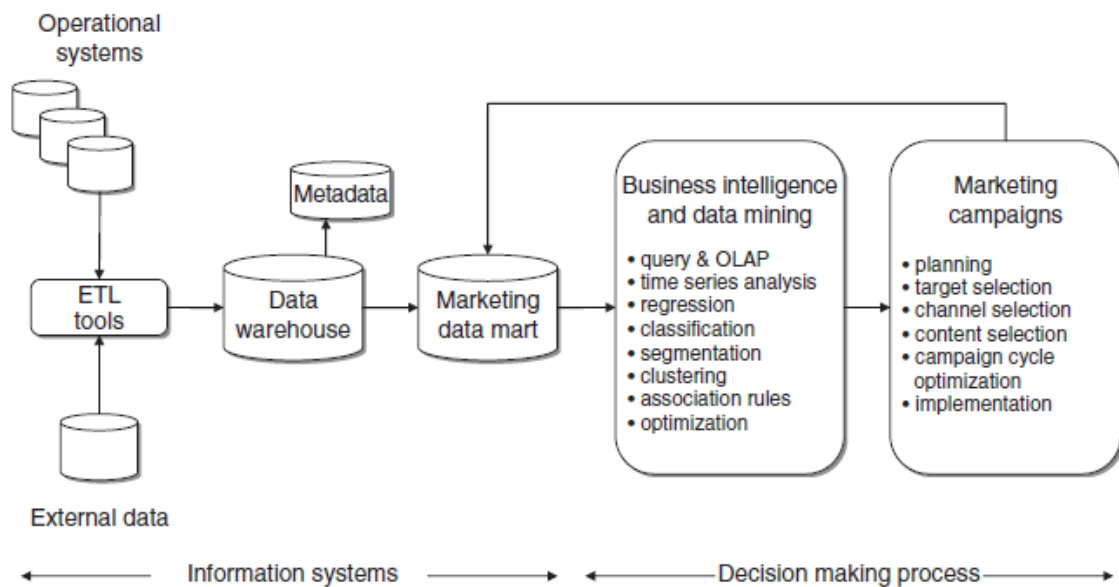


Fig 1: A BI ARCHITECTURE FOR RELATIONSHIP MARKETING, Source: “Business Intelligence: Data Mining and Optimization for Decision Making”, Vercellis C., 2009

Fig. 1 furnishes a complete view of a BI architecture for marketing purposes. It includes the company tools performing the activities outlined in A) such as Operational/Transactional databases, ETL tools and the recommended use of external data. The DW components accomplish the activities outlined in B) along with Data Marts containing information related to a specific department and in collaboration with metadata that should provide information about data and business rules, policies and best practices. The activities carried out in C) are part of the intelligence tools providing data transformation, visualization and analysis, contributing to the decision-making process.

1.2) The Importance of Customer Data Integration to Enable CRM

Companies have been collecting data coming from customer interactions since long time in a number of different databases. This often imply the existence of variances in the capture and storage process that led to discrepancies in customer data. As a consequence of the information inaccuracy, customer may find themselves repeatedly providing the same information to the company, causing their dissatisfaction. The company run in this way the risk to make customers feel ignored, irrelevant. Cost increases may derive from storing unnecessary and duplicated data with the risk of sending the wrong offer to the wrong client. Customer data integration is crucial to enable an effective CRM implementation. Disparate customer data must form a cohesive information flow available during any customer interactions. Two of the most common approaches include the utilization of marketing data marts or the development of interfaces that allow applications managing customer data to

interact. This last approach is effective when the number of applications managing customer data, e.g. Billing, Accounting, ERP, CRM, is limited. Data latency resulting from the difference in time from a customer interaction, e.g. Opt-out for the next email campaign, and the consequent update of the database is one of the most common symptoms related to the utilization of the two approaches along with data inaccuracy.

Moreover, since every database is mainly built to support a business case capturing and storing data in different ways, (e.g. production, finance), there is no standard way to integrate customer data at the point of contact. Data management requirements identified by the literature can be summarized in: the necessity to deliver in an appropriate time frame information to each point of customer interaction; the consistency and accuracy of data that must represent a given consumer entity; the management of each data source through a single point of reference; the access of data available at each point of customer and business unit interaction (Baran et al., 2008). Data management is essential to ensure the maximum benefit from CRM utilization, leading to better customer relationship management (Peltier et al., 2013). Proper customer data management is positively related to the quality of customer relationship and therefore to the success of the business (Soltani & Navimipour, 2016). Moreover, data quality issues in CRM is deemed to be a cause of problems for organizations trying to achieve the maximum advantage from the utilization of CRM system (Reid & Catterall, 2015). As stated by Khan et al., 2012, BI tools play a significant role in enhancing the trustfulness of information ensuring the quality of data.

Roger J. Baran, Robert J. Galka (2017), identify the key steps necessary to realize an effective customer data integration. First companies need to recognize all the possible touch points, e.g. Web/telephone/email interactions, written documents, face-to-face meetings. Second, a method of collecting information at each of the specific touch points must be defined taking into consideration the different types of interactions: human-to-human when for example the customer is approached by a salesperson, human-to-technology including interactions with websites, social media or technology-to-technology interactions as in the case of IoT or RFID. Third, the authors point out the necessity to establish business rules for data collection. As an example, if a customer enters diverse billing addresses in different touch points a rule determining the trustworthy source of information should be set out. As a fourth step companies should implement a data input process consisting of all the steps required to move data from the point of collection to a place where they can be transformed into a common format. This process must meet the timing requirements and ensure security, consistency and accuracy. Data should not be lost and should be accessible only to those who have permission.

Furthermore, data should be consistent meaning that blanks data field should not appear in the required ones or text should not appear in a date field. Timeliness is essential for CRM purposes. E.g. the promise to answer to a customer email in less than 24 hours can be fulfilled as long as the data repository used by the customer service representative is populated with the information in time. In general, the authors highlight that data deriving from customer interactions should be as close as possible to real time data as opposed to batch data process. The next step involves the definition and implementation of a unique data format in order to eliminate the discrepancies in the sources of information resulting in obstacles to data integration. A company that collect Title, First Name, last name, organization name, address line, secondary address line, country, city, zip code etc. of the customer in different touch points could face data variability. E.g. a possible scenario could be a space limitation of 15 characters in the address field of the company website and an unlimited space in a paper form. Nowadays the advancements in information technology, with software ever more able to connect and exchange information coupled with tools to perform data cleansing and transformation have contributed to increase the easiness to effectively perform customer data integration.

1.3) Technology Tools for An Effective Customer Data Integration and Analysis

A possible solution available to companies in order to achieve the important goal of customer data integration is the DW technology. CRM software works by collecting information at transaction level and from each customer activity. The role of the DW should be to integrate customer data in a repository where business users can find all the related customer information coming from operational, transactional, customer-profile and behavioural data. A customer DW usually have information about customers related to their (Kumar and Reinartz, 2012):

- A) Basic Information: name, addresses, ZIP code, phone number.
- B) Demographic information: age, gender, marital status, education, number of people in household, income, etc.
- C) Psychographic information: values, activities, interests, preferences.
- D) Transaction history: the transactions a customer has conducted; how frequently she/he purchases goods; how much she/he spends; how she/he was acquired.
- E) Other information: inquiries and referrals, satisfaction and loyalty scores.

In addition to the function of data integration companies can exploit the DW to carry out activities like reporting, query creation and use the retrieved information for analytical and forecasting purposes. DW plays a central role in Business Intelligence related to customer

relationship management thanks to the availability of data improving the quality and effectiveness of business decisions. The purpose of utilizing data coming from CRM to carry out analytical activities or support decision makers require a significant discipline in data management. Senge et al. (1999) highlight the importance of data capturing seeing it as the major challenge for an effective information utilization. This imply that the salesperson, who normally are those that enter data in a CRM system, must be the ones who receive the higher level of training and indoctrination about the way to manage data, otherwise all the efforts in building a technology infrastructure to enable CRM can be mined.

A Decision Support System (DDS), part of the available BI tools, can be utilized to process information stored in the customer data warehouse to provide support to the decision makers. It is possible to identify three components of a decision support system often embedded in one product: the reporting, analytical and predictive function. Reporting systems make use of the DW to generate answers to common questions related to customers' demographic characteristics, customers' needs, customer preferable channels. The role of analytical system is to provide answers to more complex questions by explaining the results displayed in reports generated from the DW. Why customers prefer a certain channel rather than another one? Why do we see a decline in average revenue per customer? These are examples of questions that require a significant use of methods and techniques for retrieving knowledge from data and need the utilization of analytical systems. The last component of DDS is the predictive system used to perform forecasts and predict customer behaviour leading to superior customer satisfaction and loyalty (A, Habul, A. Pilav-Velić, E. Kremlić 2012). Thus, CRM cannot be considered as a separate entity from Business Intelligence. They form a unique environment for customer analysis and the backbone to build long-term, profitable customer relationship.

1.4) Analytical CRM as a Result of CRM and BI Integration

The vast amount of customer data collected by organization requires the development and deployment of technology tools enabling the extraction of useful customer knowledge. The integration between CRM and BI technology has become necessary to perform Analytical CRM. Analytical CRM systems can process the sheer volume of customer data to support strategic customer information provision incorporating tools that include CRM portals, data warehouses, predictive and analytical software (Eckerson and Watson, 2001). Mark Xu, John Walton (2005) identify the main purposes of analytical CRM systems highlighting as manager should focus on keeping those systems operative. Identifying strategic customers is the first goal of analytical CRM.

The first category of strategically significant customers is constituted by the ones showing the highest lifetime value. These customers vary from organization to organization and may not coincide with the customer that account for the highest selling volumes (Alexander and Turner, 2001). Among the techniques deployed to detect them the simplest consists in the determination of the 20% of customers that contribute to the 80% of revenues, the so-called Pareto or 80/20 rule. An example of the application of the 80/20 rule is the Attrition analysis whose purpose is to compare the evolution in spending in the same period of time, e.g. two consecutive Trailing Twelve Months (TTM), of two or more years. More accurate predictions of the customer lifetime value are possible through the utilization of a profit/cost matrix as shown in Fig. 2, including also variables depicting the retention or loyalty level.

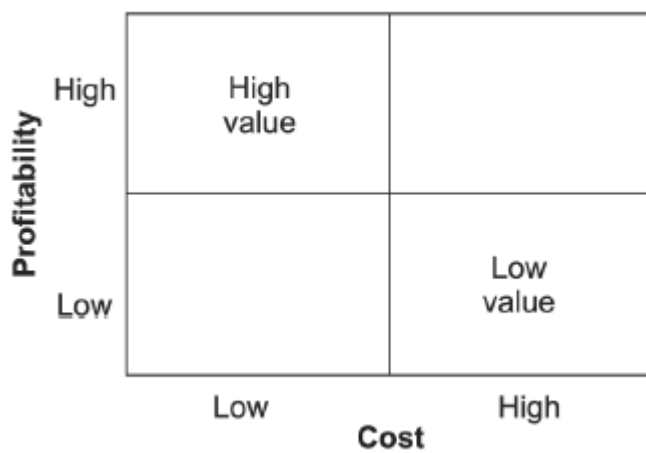


Fig. 2: PROFITABILITY MATRIX, Source: “Gaining customer knowledge through analytical CRM”, Xu M., Walton J., 2005

Customer profitability consist in the calculation of margins, in the simplest form direct cost – direct expenditure, that for the purpose of customer lifetime value should also take into consideration factors like the acquisition cost, the retention cost and the cost to serve along with retention level and loyalty score. The second category of strategically important customers is represented by the “benchmarks” ones, consisting in early adopters of the new product/service whose behavioural patterns may set the trend for other customers. The third category include customers that inspire changes in the supplying company. Such customers add the highest value to the company even if they may be the ones whose management demand a significant amount of resources. The fourth category is made up of those customers that absorb a relevant part of the fixed costs increasing the likelihood to make other smaller customers profitable.

The authors point out another important objective achievable through the utilization of analytical CRM systems, the profiling and segmentation of customers. For effective marketing is essential to identify those customers that have the same preferences and respond

in the same way to the same marketing action. Usually clustering and classification techniques are applied for this purpose. When thinking about one-to-one marketing the focus shift from detecting customers with the same preferences to detect the ones that are the most suitable to a certain product/service (Shaokun Fana, Raymond Y. K. Lau, J. Leon Zhao, 2015). Segmentation enables personalization increasing the attractiveness of the company offering. Among the criteria for segmenting customers Xu M., Walton J. (2005) include customer profitability score, retention score, satisfaction and loyalty score, response to promotion. It is clear that, thanks to customer data integration and the utilization of CRM software combined with BI tools, companies can improve the efficacy of the management of customer relationships.

1.5) Customer Information Uses in B2B Buying Processes

The concept behind the word “customer” differ significantly between the B2C and B2B context. In B2C customers are end consumers while in B2B context the customer is represented by other organizations, being them companies that manufacture or resell or non-profit institutions. Hence, a B2B environment is characterized by a smaller base of customers that usually perform relevant transactions with the company through complex buying processes. In such environment it is extremely valuable to follow a relational approach with the customer by means of direct marketing and personal selling activities (Coviello et al. 2002). In addition, the “personalization” of the business using face-to-face interactions is essential to build a trustful relationship with the customer (Edvardsson et al. 2008). These elements contribute to enhance the complexity of the buying process that is typically carried out by skilled professionals.

The so called “Buying Center” is formed by group of people with different roles in the organization that participate in the purchase decision-making process sharing common goals. Initiators are the people that recognize the need, Influencers are those who evaluate the technical feasibility, Buyers are typically represented by purchasing managers, Champions are those that support the project throughout the organization, Deciders have the final say over the purchase. The literature on organizational buying behaviour distinguish between two different situations, adopting the customer perspective.

The first, called “New Task” define a situation in which the B2B firm tries to acquire a new customer or sell a completely different product/service to existing customers. The second, called “Re-buy” define a situation in which the B2B firm satisfies the already known needs of the existing customer base (Robinson et al. 1967). Adopting the customer point of view the “New task” situation is characterized by uncertainties related to the purchase decision. The

problem or need the customer is facing is completely new and usually typified by a lack of well-defined criteria for comparing products or services requirements.

Consequently, the buying process involves several phases and individuals requiring a significant amount of information to justify the purchase. The phases of a buying process of this kind can be schematized as follows:

A) problem recognition; B) general need description; C) product/service specification; D) supplier search or request for information (RFI); E) acquisition and analysis of proposals or request for quotes (RFQ); F) supplier selection and negotiations; G) order-routine specification; and J) performance review.

At the opposite the “Re-buy” situation, given the low priority decision or problem the customer is facing, is characterized by a streamlined buying process. Usually it includes only the two phases of product/service specifications and performance review, especially in the context of automated procurement process via online platform. Adopting the business intelligence perspective, the two situations described above demand different CRM requirements.

In the “New task” context the focus of business intelligence is directed toward the generations of Leads to obtain access to potential customers, the identification of their unmet needs and of the people involved in the buying process, specifically those who have the final say. In the “Re-buy” situation the focus of business intelligence shifts in anticipating and forecasting the demand and in automating and streamlining the purchasing process as well as collecting relevant metrics that can explain the company performance.

Jukka Partanen, Sharareh Mansouri Jajae, Ossi Cavén, (2017) propose a framework in order to shed light on the “customer intelligence” a company should collect, analyse and deliver in order to efficiently conduct a CRM strategy. The authors ascribe to Operational CRM and IT-enabled CRM the duty to store and deliver “customer intelligence”. IT-enabled CRM clearly refers to BI technologies responsible to integrate the different sources of information to support the work of sales and marketing departments. They ask themselves which are the core KPIs of CRM in the B2B context, distinguishing between process and performance metrics related to the two kind of buying processes, “New task” and “Re-buy”.

First, in the “New Task” context the authors conceive referrals and recommendations from existing customers or partners as important metrics to measure the potential of attracting new Leads. They propose the use of process CRM metrics like the number of articles read in blog or social platform, the analysis of the first contacts and opportunities generated by interactions with the customer, the RFI/RFQ received. Second, information about the customer decider role is vital in enhancing the likelihood of concluding a deal. Similarly, information about the

customer internal sponsor role is crucial considering that it is responsible to “sell” the purchasing project to the top management. Third, a key process metric involves information about the internal or external rationales or pressures the customer underwent, triggering the new purchase need. Fourth, sophisticated CRM system should provide to salesperson insights about the customer business model to estimate the value that the offering of the company is capable to add in terms of cost-reduction, efficiency gains or revenue-generation. The performance metrics identified by the authors, related to the “New Task” context comprise campaign ROI, contract acquisition rate and customer acquisition costs.

As far as the “Re-buy” situation is concerned the authors firstly recommend an initial segmentation based on contractual, non-contractual and one-off customer upon which applying the process metrics. These metrics range from Customer share of wallet, order-delivery time, feedbacks, conversion rates from one-off/non-contractual to contractual. The performance metrics include loyalty and satisfaction rates, churn rate, win-back rate etc. The authors recommend a savvy use of the metrics encouraging the utilization of the ones that are meaningful and add value to the company.

2) SALES ANALYSIS AND TYPE OF CUSTOMER INFORMATION

2.1) Sales Support Technologies Functions and the Role of Information

Sales support is a concept that include the utilization of technologies to provide for customer knowledge and techniques to analyse that knowledge in order to boost sales. Technologies that enable sales support can be classified on the basis of the different functions performed. Technologies can be divided in the ones that help in automating tasks and planning the selling strategy as well as performing forecasts based on trend and opportunities analysis and the ones that perform the reporting and informing functions, comprising tools to find, analyse and distribute relevant knowledge (Widmier et al., 2002).

CRM utilization clearly impact the job of sales professionals including functions like opportunity management, lead management, contact management, calls management and pipeline management (Michael Rodriguez & Earl D. Honeycutt Jr., 2011). The process of sales analysis along with customer profiling, segmentation involves heavy use of information coming basically from the same data that a customer DW contains. In the simplest form the analysis of sales consists in a table listing facts that are not compared against any standard. Whereas comparative sales analysis also called performance analysis is carried out by comparing sales figures to predefined standards. The comparison can be made with forecasted sales and calculated sales budgets and quotas.

In this regard, CRM software helps sales representative to define quotas for the next year and forecast the sales level of existing customers by means of explicitly embedded functions. The quote management function put together the necessary information about product/service and past level of sales to calculate quotas, allowing for the creation of quote templates that can be modified to include new relevant information that may influence the expectations. Sales volume quotas are the most popular and the most understandable by the salespersons, emphasizing the past level of sales. Activity quotas are designed to evaluate the salesperson's effort, being related to the level of activities that he/she is supposed to engage (E.g. calls, webinars, fairs participation). Financial quotas, based on gross margins or contribution to overhead, help salespersons to focus also on the cost of what they are selling, attempting to direct their effort on the sale of the more profitable products and customers. Forecasts may be based on subjective evaluation methods that do not rely on quantitative approaches and are usually based on the salesperson previsions discussed deeply with the sales management. At the opposite objective evaluation methods rely on quantitative approaches represented by time series analysis, moving averages, exponential smoothing, regression analysis of the demand, requiring the utilization of statistical software.

Managers running the process of sales analysis must decide which are the sources of information and the type of information aggregation. The major sources of information are the Enterprise Resource Planning (ERP) and the CRM software as well as information coming from the financial department related to invoices. It has already been discussed the importance of customer data integration that allow for the different sources of information to be contained in a unique repository. But data integration is also fundamental to perform an effective sales analysis based on quality data, calling for the implementation of BI tools. The information utilized include customer name and location, products/services sold, volume and dollar amount, salesperson responsible for the sale, customer industry, preferred sales and distribution channel, terms of sales and discounts applied.

The second type of decision relates to the variables that serve as points of aggregation. The common point of aggregation can be geographic regions such states, regions or the salesperson territory, product/services sold, customer size, market type or distribution channel, method of sales, size of the order. In order to let sales managers focus on relevant information, the reporting system should be centered on providing information upon exceptions and significant deviations from quotas. Nonetheless, the information coming from sales analysis can be used not only for internal purposes but also to present to customers the relevant information that play a significant role in retaining them.

2.2.) Types of Customer Information and Reporting

Park and Kim (2003), classify customer information in three categories: Information of the customer, Information for the customer, Information by the customer. The first category “of-the-customer” is the most widely collected for CRM implementation, including personal and transactional data about customer. In a marketing database this is the principal and most important information used to target customer and to analyse purchase patterns, frequency and preference along with profitability.

Information “for-the-customer” refers to product, service or organizational information perceived as useful for the customer in order to make more data-driven decision. This kind of information is the one that mostly contribute in keeping a stable and long-lasting relationship with the client, acting also as a strategic value of differentiation from the competitors.

“By-the-customer” is information related to customer complaints, claims, details specification etc. This kind of information derive from multiple interactions between the company and its core customer. It must obviously be included in the core customers profiles inside a CRM system and leveraged to perform innovation at product or process level. BI system helps to integrate the multiple data sources of today’s organizations and provide the reporting technology necessary for the decision-making processes of the organization and the customers to be qualified as timely and data-driven. The purpose of a BI tool should be to guarantee easy access to data to carry out data analysis. IT professionals put their effort in designing the BI system technology infrastructure and building a properly conceptualized DW and semantic layer to classify the data in objects with a clear business definition, allowing for simple queries. At the opposite end users focus is on the reporting layer. Providing accessibility to dashboards, reports and ensuring the correctness of their titles and descriptions is a crucial aspect of a BI system which absence undermine all the underlying IT work and commitment in building a correctly modelled DW based on quality data.

The main issue organizations face when dealing with dashboard and reports is to ensure a proper coordination among IT professional and business users to maximize the return of investment in a BI system. The knowledge domain of IT professional often does not often comprise a sound business understanding that reflects in congruously designed reports, easily readable and understandable. Business users have few insights about the possibility of the technology tools due to the lack of technical knowledge, making coordination necessary. Reports can be classified in:

A) Standard Reports, namely fixed reports that are continuously used and do not require any further input. They are connected live to the data in the DW and refresh when the DW refresh is programmed.

B) Parameter reports present a fixed lay-out and require some input from the end users in order to be used.

C) Ad-hoc analysis reports are those created on the spot by the users starting from standard and parameters reports.

D) Metadata reports give insights into what data is available and how it has been transformed. Other reports involve IT technical ones regarding the performance of the system and data quality reports that follow up the evolution of the quality of the information. A clear identification of the main users being them internal or external, along with the respect of the rules for version and release management, is crucial to ensure the control over the generated reports. On the basis of the type of information different reports are built to satisfy the necessity of the parties involved. PowerBI plays a fundamental and essential role in providing a variety of reports that can be built to represent various internal business processes and to provide useful information to the company's customers.

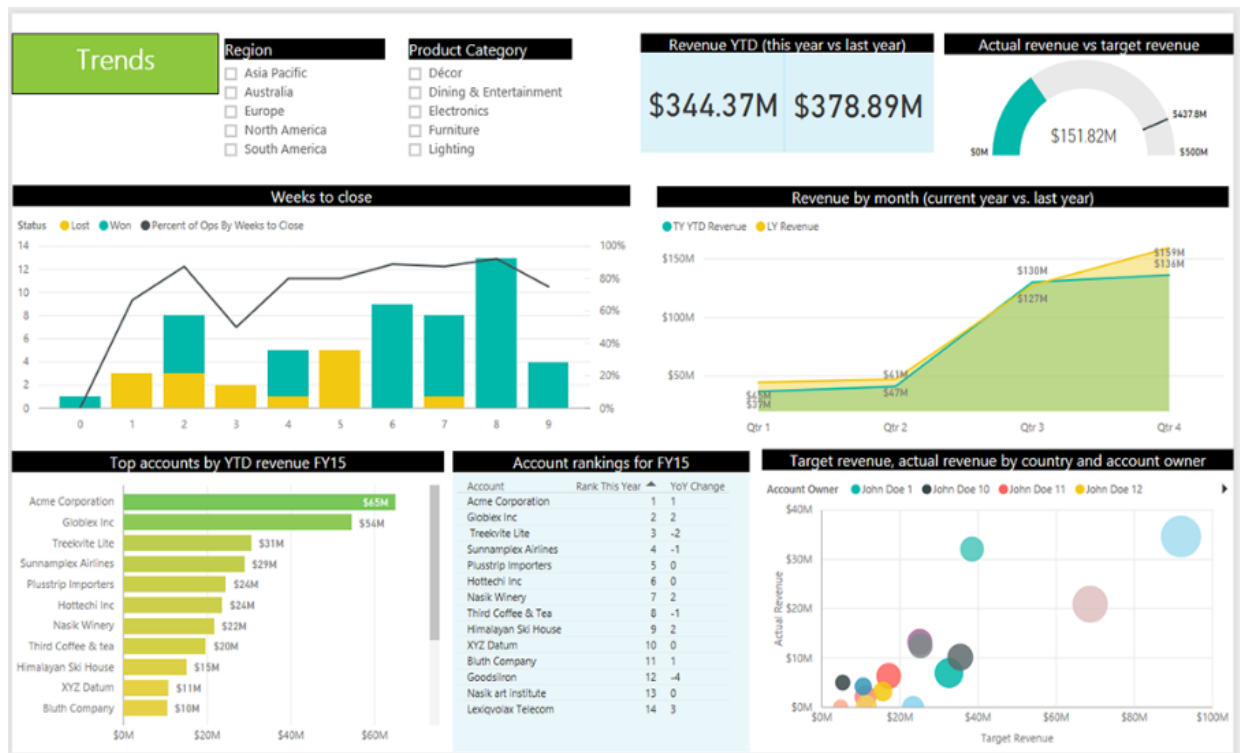


Fig.3 POWERBI SALES ANALYSIS, Source:”<https://powerbi.microsoft.com/pt-pt/partner-showcase/cloud9-sales-management-analytics/>”

In Fig 3 is possible to see one of the possible representations of the sale process performance with which the management can have a picture of the evolution of sales. A designer can build report easily thanks to PowerBI allowing for different views of the same process by means of filters, slicers, geographic visualizations, trend analysis etc. A report of this kind is usually built with a live connection to the DW so as to provide timely information for decision

making without requiring any data intake by the management, whose role would be restricted to the utilization of filters and slicers to change the point of view of the analysis.

2.3) BI Tools Impact in Inside-Sales Approach in B2B Companies³

Inside sales teams are developing fast thanks to communication technologies and to the possibility to control the costs associated to the sales process. In large B2B companies the inside sales teams pursue the selling of the product/service through calls, emails and more rarely by means of face-to-face interactions to prospect and existing customers. It is usually set up as a profit center meaning that the team has to balance revenues with costs. At the opposite the customer service department is responsible for the management of in-bound customers' requests and complaints and are established as cost centers.

An inside sales team requires investments in infrastructures that may not be required by an outside salesforce, meaning that the challenge here is to try to build the same level of rapport with customers that an outside sales force is able to build at the same cost level. Business intelligence tools like CRM software, data mining, predictive modelling and KM software give support to the inside sales team pursuing the abovementioned objective. A goal of sales managers running an inside sales team is to minimize costs by incentivize the buyers to enter in contact with the company. In this regard is possible to foresee four categories of actions that a buyer may be willing to embark on:

- A) A buyer initiates the contact with the company and close the sale, e.g. through the utilization of an e-commerce site or a software that automate the sale process.
- B) A buyer initiates contact with the seller regarding a selling opportunity, but the seller closes the sale. E.g. the buyer requests a quote by email or telephone and after a discussion on it the seller close the process.
- C) Seller initiates contact with the buyer e.g. providing a quote after having received interest from the buyer. The buyer then closes the sale process accepting the quote.
- D) Seller initiates contact with the buyer and it closes the sale. E.g. the seller calls the buyer asking for a purchase intention and if it receives back an affirmative answer it closes the sale process.

It is clear that encouraging the buyers to manage the sales process has positive implications in terms of costs. In this regard the use of predictive modelling and data mining techniques help in detecting those customers who are more willing to manage their sales process. In a “re-buy” situation data coming from previous transactions with the company such as date,

³ Gessner G., Scott A. R., “Using Business Intelligence Tools to Help Manage Costs and Effectiveness of Business-to-Business Inside-Sales Programs”, 2009

quantity, price, channel can be exploited by means of BI tools to generate facts such as order frequency, order quantity pattern, cross-sell or up-sell products/services. This information can then be used to estimate the flow of future revenues and increase the accuracy of the sales forecasts.

Furthermore, the information gathered help inside salespeople to realize which customer have the highest probability to have a sales opportunity and which products/services are the most suitable to be proposed, avoiding waste of time by excluding those customers that are not inclined to purchase. E.g. performing an analysis of the characteristics of the prospective customer that after being called does not make orders can lead to understand which is a common feature that make the sale difficult. Of major importance is also the identification of which part initiates the contact. This information coupled with the order pattern discovered through analytics tools can be exploited to remove those buyers that commence the transaction from the list of those that should be contacted by the salesperson. To summarize the BI tools utilization are supposed to impact the rate at which sales opportunities are found by detecting qualified sales leads and the rate at which those opportunities are closed by offering the product/service most suitable for the customer in question.

CHAPTER 5

EMPIRICAL EVALUATION: WELOCALIZE LIFE SCIENCES

CUSTOMER DATA MANAGEMENT AND ANALYSIS

1) LOCALIZATION INDUSTRY AND WELOCALIZE OVERVIEW

1.1) The Localization Industry

The Localization Industry begins to develop in 1980s when the first personal computers became to be widely used by end-users who did not necessarily have a background in computer programming or engineering. In the late 70's and in the early 80's Microsoft and Sun Microsystems began to expand internationally with oversea investments in Japan and in Europe. This shift of computer use coupled with its international expansion called for a modification of the product features and functionality. Software and hardware should meet the local standards and habits as well as the local language requirements. As an example, considering the Spanish keyboard it has been immediately clear that it should have contained the letter "ñ" widely used in that language. It was from the 90's that the industry became widely spread following the expansion of the IT giants. In addition, many of the software manufacturer started to outsource the localization services in order to focus on their core competencies. Nowadays Ireland is considered the world-centre of localization. The 95% of products to be localized originate in USA and it is ascertained that the majority of the profit derives from localized product that are sold abroad.

According to a research conducted by Nimzi, a market research company, gently provided by Welocalize, the localization industry is set to grow following the expansion of the IT global market. Software, representing the 13% percent of the global IT Industry, is considered the faster growing sector with an 8.3% growth rate. This growth rate is associated to industry trends that include:

- A) Increasing access to the high-speed internet globally (including mobile), contributing to the growth of the B2C market.
- B) Increased need for and focus on online security. Next-generation security related to new technologies is expected to continue to drive growth.
- C) Increased focus on solutions development for small and medium-sized.
- D) The continued growth of social media platforms and surrounding services/applications.
- E) The transition from boxed product to SaaS (subscription model) for both B2B and B2C solutions.

Translation services are only a part of what the term “localization” really means. Localize a product means to adapt it both to the language and to the culture of the foreign country. Localization comprises thus the linguistic adaptation and cultural adaptation of the product. Language adaptation requires the translation of the graphical user interface made by dialogues, menus, strings including the appropriate format for numbers, time, currency and measurement.

Cultural adaptation goes beyond the simple translation referring to the history, the religion, the songs and folklore of the country under exam. Localization is strictly related to the digital evolution of the society and is a term used to describe services undertaken on digital materials. In this regard the specific challenges of the localization process can be identified in the file formats, in the fonts, in the space restriction of the user interface and in the context and visual translation environment. A classic example of a localized brand is McDonald’s whose product vary from country to country, e.g. in India is not possible to sell beef because the cow is considered a sacred animal consequently is not possible to find it in any Indian McDonald’s.

1.2) Welocalize Business Overview

Welocalize is one of the major Language Service Provider (LSP) in the world positioning itself at the 8th place according to the Common Sense Advisory research of 2018. It has been founded by Smith Yewell and Julia Yewell in 1997 in USA, with headquarter in Friedrich, Maryland. It ranks 4th in the list of the US language service providers. Welocalize is undoubtedly a relevant player in the Localization industry, whose mission is to *“accelerate the global business journey by enabling brands and companies to reach, engage, and grow international audiences”*. The company is widely spread across the globe with offices in the most important cities of USA like New York, Boston, Houston and in European cities like Barcelona, Milan, Chester, Dublin, London. Moreover, it can count on offices in the two most important emerging economies like China and India and in the megalopolis of Tokyo. Welocalize reported a total turnover of about 242 MM USD in 2019 with a workforce that stood to 1500 employees across the globe.

OUR HISTORY



1997 // Company Started
2000 // Expanded Market into Germany (Acquisition)
2005 // Established European Headquarters in Dublin (Acquisition)
2006 // Opened APAC Services in Jinan and Beijing, China (Acquisitions)
2007 // Added to APAC Presence with Tokyo Office (Acquisition)
2008 // US Acquisitions Including GlobalSight Technology, Leading Open Source Translation Management System
2010 // Major Expansion in Europe with UK Acquisition of Lloyd International
2012 // Added Legal Services with Market Leader Park IP Translations (Acquisition)
2014 // Acquired CD Language Solutions in Houston, Texas
2014 // Acquired Agostini Associati in Milan, Italy
2015 // Significant Investment from Norwest Equity Partners
2015 // Acquired Adapt Worldwide (Traffic Optimiser) in London, United Kingdom
2015 // 11th Year on Inc. 5000 Fastest Growing Private Companies
2016 // Nova Language Services Acquisition Expands Regulated Industry Solutions in Life Sciences (Acquisition)
2016 // Global Language Solutions (GLS) Acquisition Strengthens Life Sciences Market Leadership (Acquisition)



Fig 1: WELOCALIZE ACQUISITION HISTORY, Source: Internal Material

The objective of the acquisitions program carried on by Welocalize throughout the history, as depicted in Fig. 1, has been that of offering *“integrated, multilingual solutions at key steps along our clients’ global business journey to transform all content types for local audiences. From international patent filings, digital content marketing, investor reporting communications to on-page SEO and regulatory compliance e-learning content (...)”*.

Among the portfolio of companies Welocalize can rely on to pursue the abovementioned objective, Park IP Translation accomplish the function of providing foreign language solutions for patent filing, prosecution, litigation support and e-discovery. On the digital marketing side Welocalize acquired Adapt Worldwide and SearchStar to deliver multilingual digital marketing content in the effort of providing visibility and increasing conversion rates for brands entering and growing new international markets. The services provided by Adapt and SearchStar span PPC, SEO, content creation, display, programmatic, analytics, and conversion optimization. The acquisition program clearly increases the likelihood to cross-sell services and aim to completely fulfil the translation requirements along all the pre-commercialization phases of the clients’ products. Moreover, with the SearchStar and Adapt acquisitions the company expanded in the post-commercialization phase in the effort to play a role in the marketing campaign of its clients relying on digital marketing and campaign optimizations capabilities.

The so called “4 Pillars” of Customer Service, Quality, Innovation, Global Teamwork, guides and inspires the employees across the globe. Customer Service imply responsiveness, friendliness and professional approach with the customer or a colleague that need an internal service. This “pillar” aims to build a long-lasting and loyal relationship with the customers developing a value-adding partnership. Quality is deemed to be essential to build a positive reputation and it is pursued by applying the most appropriate alignment of people, process and technology. Innovation is built upon suggestions and way of integrating the best set of language technologies, tools, talent, processes and resources to meet the clients’ needs. Global Teamwork ensure the respect, learning, teaching, listening of colleagues coming from all the parts of the world including behavioural rules that does not tolerate arrogance, aggressivity and egoistical actions.

Following the Nimzi’s market research the 100% of the respondents undertake a formalized process such as a request for information (RFI) or request for proposal (RFP) when selecting a language provider. The identified key criteria when awarding a localization contract span the quality of the translation and of the project management team, the price and past performance, the ability to meet the deadlines and the transparency of the cost structure, the innovation effort of the company matching the values comprised in the 4 pillars.

1.3) Welocalize Service Capabilities

Welocalize professional translation and localization services support more than 525 language combinations to help reach global audiences with accurate, impactful multilingual content. The network of 77,000 linguists, reviewers, and subject matter experts (SME) ensures the capacity to handle any volume and speed. The language professionals’ network is constituted by in-country, native speakers with certified experience or advanced degrees in linguistics. Welocalize specializes in the language, technology platforms, and post-production processes needed to translate and localize multimedia and global e-learning courses. The company offer a full suite of linguistic, technical, and production services to create and manage digital assets, voice-overs, transcription, dubbing, and subtitling.

The localization engineers team works with a wide variety of content publishing tools and learning management systems (LMS) and span multiple time zones across the US, Europe, and Asia. They offer extensive industry experience, managing the complex and multi-layered workflows required to successfully and accurately localize multimedia assets.

Welocalize provides interpreting services leveraging its pool of certified, professional interpreters with technical and subject matter expertise, that allow for an effective

communication in more than 250 languages. Because of this, spoken language assignments can be resourced and delivered quickly to meet the requirements of the client.

To ensure product quality, accuracy, usability, and on-target time-to-market for multiple releases and product launches, Welocalize offers testing services include functional, internationalization, and localization QA testing as well as rigorous UX testing. Tests are executed across many operating systems, browsers, and mobile devices, matching client and target market requirements. All Welocalize testers are native speakers of the locale they are testing and work either at one of Welocalize's testing laboratories or on-site at client locations, depending on requirements.

Welocalize provides foreign language solutions for patent translation and filing management, litigation e-discovery support, and corporate legal services. We deliver foreign filing services in 135+ countries and our language solutions meet stringent quality standards through a network of technical subject matter experts, certified native linguists, and specialized legal interpreters. The company is compliant with ISO 9001 certification obtained in 2015. The secure technology-enabled operations ensure efficiency at global scale, speed and value for leading global brands and law firms.

2) WELOCALIZE LIFE SCIENCES

2.1) Welocalize Life Sciences (WLS) Business Overview

As part of the acquisition program carried on by Welocalize, Nova Transnet, a Barcelona based company, has been recently acquired to expand the business in the life sciences industry. Welocalize Life Sciences has now displaced Nova Transnet integrating it with other units based in Irvine (CA), Chester (UK). It provides expert translation and localization services for the highly regulated life sciences industry, creating specialized language solutions for global biotechnology and pharmaceutical companies across every therapeutic area, from the early R&D stage through commercialization development.

The portfolio of clients includes: Pharmaceutical and Biotechnology companies, Contract research organizations (CRO), medical device manufacturer, institutional review boards (IRB), Healthcare providers.



Fig. 2: WELOCALIZE LIFE SCIENCES MAIN TRANSLATION MATERIAL, Source: WLS Internal Material

The most important source of translation materials, as shown in Fig. 2, derives from the documentation needed to successfully and rapidly conclude all the phases of the drug-to-market process, ranging from regulatory approvals to the commercialization of the drug. E.g. documents like informed consent forms, product manuals & labeling, clinical study protocols, advertising & marketing materials, case report forms (CRFs), patient-reported outcomes (PROs), scientific & technical articles, patents & other IP documents, corporate + investor relations documents, product manuals, websites. Clinical Trials have nowadays become complex and globally distributed in order to reach a larger number of patients across the globe with different ethnicities. CROs and sponsors need to reduce the costs and time of a trial as well as streamlining the communication and increasing the patient engagement.

WLS provides professional translation and linguistic validation of Clinical Outcomes Assessments (COAs) into over 250 languages. COAs must be a reliable and well-defined evaluation of the patients' symptoms, overall mental state. Linguistic validation and cognitive debriefing are the instruments necessary to allow for a correct interpretation of the COA among diverse population ensuring also a conceptual equivalence. Linguistic validation provided by WLS include a rigorous methodology such as forward and the subsequent back translation in the original text. Subsequently cognitive debriefing is applied by testing the text

among representative of target populations to determine whether the respondents understand the text as the original would be understood.

Healthcare and medical translations are an important part of WLS business considering that cultural context and language challenges may impede to a patient to completely understand its healthcare needs. E.g. technical manuals, regulatory documents, medical literature, inserts & packaging etc. Furthermore, the complex and stringent regulatory laws demand for multiple levels of quality control and the necessary expertise needed to fully understand them. WLS provides healthcare and medical translations services in more than 225 languages enabling an effective communication with the patients.

Medical devices represent another part of the business requiring translation services throughout the medical and in-vitro diagnostic device process. Besides translation services the company assist the manufacturers to be compliant with the global and regional regulatory requirements. E.g. documents like instructions for use (IFUs), product manuals & labeling, packaging & inserts, patient handbooks, product information leaflets (PIL), data sheets, user guides, technical manuals, regulatory documents and advertising & marketing materials. WLS is also active in providing translations services for veterinary medicine following the expansion of the market for meat and dairy products, feed additives, vaccines and other animal health products.

2.2) WLS Organization and Knowledge Management

The organization is based on the Lean principle and agile methodologies. In this regard WLS is moving from a “Waterfall” to an “Agile” project management approach with iterative stages that demand the involvement of the clients or to the quality team during the execution of the projects. The production department has been divided by Squad in charge of managing a specific set of clients. Each Squad comprises different roles and occupy a specific table in the office to enhance knowledge sharing and support among the members. Following the “Agile” project management style the squads roles comprise: language engineers that analyse the documents, provide for budgets and evaluate margins; project managers in charge of ensuring quality and on time delivery; talent managers that search for vendors having the right professional characteristics and certification for the problem in question. The open space office bestows the best environment for leader-subordinate knowledge exchange and for fast problem resolutions. Squads are self-managed teams that sets the KPIs to be met in daily and weekly stand-up meetings. They are encouraged to develop internal processes capable to bring flexibility and responsiveness.

Moreover, WLS can count on a knowledge repository software called RFP360 in which to find relevant information concerning all the past RFP/RFI sent to the company. RFP360 allows to automate the management of the RFP/RFI by assigning the questions to the professional having the necessary background to answer which assume the role of the “writer”. To the same question RFP360 allows to assign an “approver” whose role is that of revising the answer and approve its content. Once the answers are revised and approved RFP360 store them in a knowledge repository that can be accessed when needed. Furthermore, according to the literature prescriptions, RFP360 has been linked to Salesforce in order to help the BDs when dealing with a client request and can be accessed in real time during a phone call. In addition, training courses available to all the employees are located in Microsoft Sharepoint, a content management system that allow for the creation of internal website (intranet), including a variety of fields from translation technology to data analytics.

2.3) WLS Standard Workflow

Our Standard Workflow

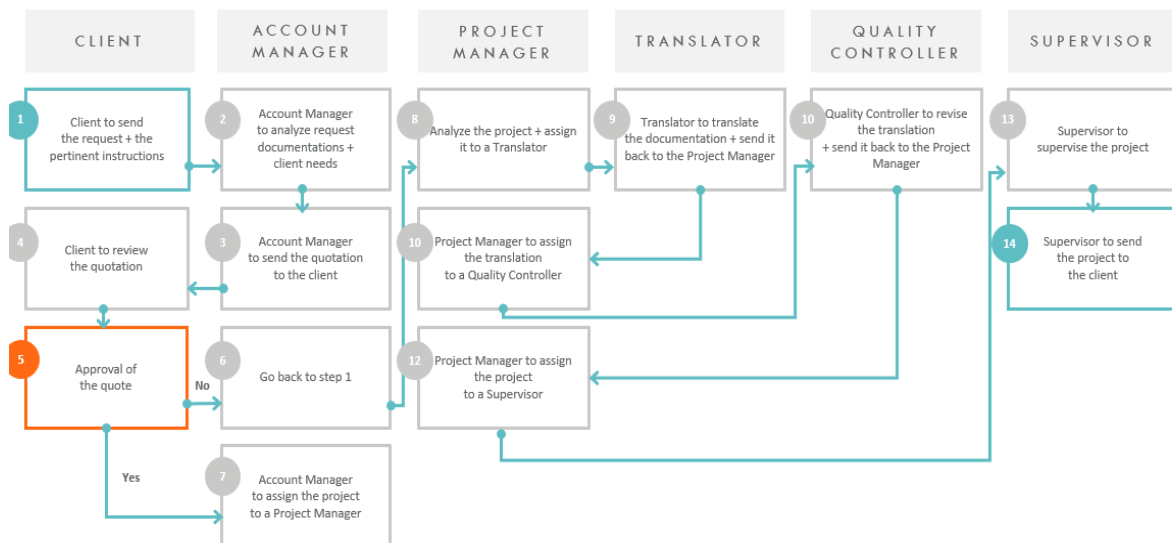


Fig. 3: WLS STANDARD WORKFLOW, Source: WLS Internal Material

In Fig. 3 is described a typical workflow of a request for translation. As it is possible to note there are many steps that involve several professionals inside the company. The journey start with the client sending a request comprising the text or video to be translated and the pertinent instructions. In line with the theory, assuming positive implications in terms of cost when the company encourages the buyers of the services to manage the sales process WLS provides an Application Programming Interface (API) connected with the clients’ content management system (CMS) through which customers can send the requests. The other channels to communicate with the company are emails directly sent to the Business Developers (BD) or

the Client and Technical Service Analysts (CTSA) along with the chance to fill in a form in the company's website, requiring though a longer procedure since it is a tool mainly used by new, small clients looking for random translations. According to the "Client Service" pillar, once the client submits a request through the client portal or by email the request is immediately revised and quoted by an Account Manager responsible to follow the procedure. This second step is based on human interaction to ensure that the clients always feel supported by a professional inside the company and never feel abandoned to a conversation with a software, influencing the relationship equity that in turn enhance the likelihood to have satisfied clients. The quotation is then sent back to the client for approval. Once the quotation is approved the Project Manger starts to assign the tasks to the external or internal certified translator. Pantheon for the major clients. It is the function of the Talent Management Team to search for external translators that meet the desired standard.

Once the translation has been carried out the translators send it back to the PM that in turn assign it to an internal Quality Controller whose function is to assess the compliance with the regulated medical terminology and with the glossary often supplied by the client as well as the compliance with the ISO certification standard. Since the Life Sciences Industry is an extremely regulated environment an external body is also called for to verify the respect of the ISO certifications. For many translation projects is also necessary to perform a back translation in order to conclude the linguistic validation. WLS uses translation memories (TM), databases where words are logged for previously performed translations, to ensure that translators always follow the specific terminology provided by the client in future projects. Translation memories' utilization entail costs saving for the clients. The rates charged differ on the basis of the matches and repetition with the TM, e.g. a 100% match of the text means that the same words has been previously translated and that only a minor revision or adaptation is required, ensuring the lower rate possible. Moreover, TM guarantees consistent quality of output and enable the client to keep a terminological and stylistic consistency.

2.4) Process Innovation

The company is currently undergoing through a process of digital transformation with the introduction of the Pantheon platform. Pantheon is a PaaS in which IT professional can build personalized websites that are hosted and managed directly in the platform. Exploiting the utilization of this new platform the company's IT professional have recently developed a new project management system called "Relay" that collect all the requests submitted by mails or through the API. Relay is nowadays the most utilized project management system in the company handling the majority of the requests, although some of them are still processed with

the old project management system “Falcon” that is equipped with customizations able to handle specific types of requests.

The innovation efforts are directed to the abandon of Falcon and to the complete transfer of all its embedded functionalities in Relay, but currently the company is still using both the system contemporaneously. From a business intelligence perspective this is causing issues concerning the data flow into the DW. Since the DW is now connected with Relay the project created in Falcon must be duplicated in Relay causing errors in both the manual and automatic transfer of information from the two systems calling for a constant revision of the data. Moreover, Falcon must be the more reliable and preferred source of information as it is still the one connected to the financial software that control the issuing of the invoices.

The introduction of Pantheon can hopefully bring to fruition the objective envisioned by company consisting in the unification of the system along all the value chain. The most relevant process innovation recently introduced by the company thanks to the new Pantheon platform has been the development of a new client portal “Junction”. Junction has been totally developed internally by IT professionals working as a hosted website in Pantheon. The major innovation resides not only in the displacement of the old request submitting process but also on the integration of the Vendor Portal and the Client Portal unifying the systems utilized along all the value chain. With Junction translators are given access and share the same system with the clients with the possibility to download directly the material and the instructions and rely on the translation memories embedded in the software. Unfortunately, until now only the major clients can benefit from the portal utilization while the small and new clients must go through the old procedure.

As Doug Knoll, VP Development at Welocalize, points out: *“As localization continues to trend toward smaller and faster projects to support our client’s continuous delivery initiatives, friction must be removed from the entire path between content source and the talent that transforms it (...)”*. With Pantheon the company will be able in the next years to thrive the business thanks to a solid data-driven approach enabled by the systems integration. The relevant information will be all extracted from Pantheon thanks to the connection with PowerBI satisfying the clients’ data needs, which focus on relevant trends across languages spending levels, content types, error typologies, OTD.

2.4.1) The New Client Portal

The client is assigned a Username and Password provided by the sales representative with which it can log in into the Portal.

Client Portal

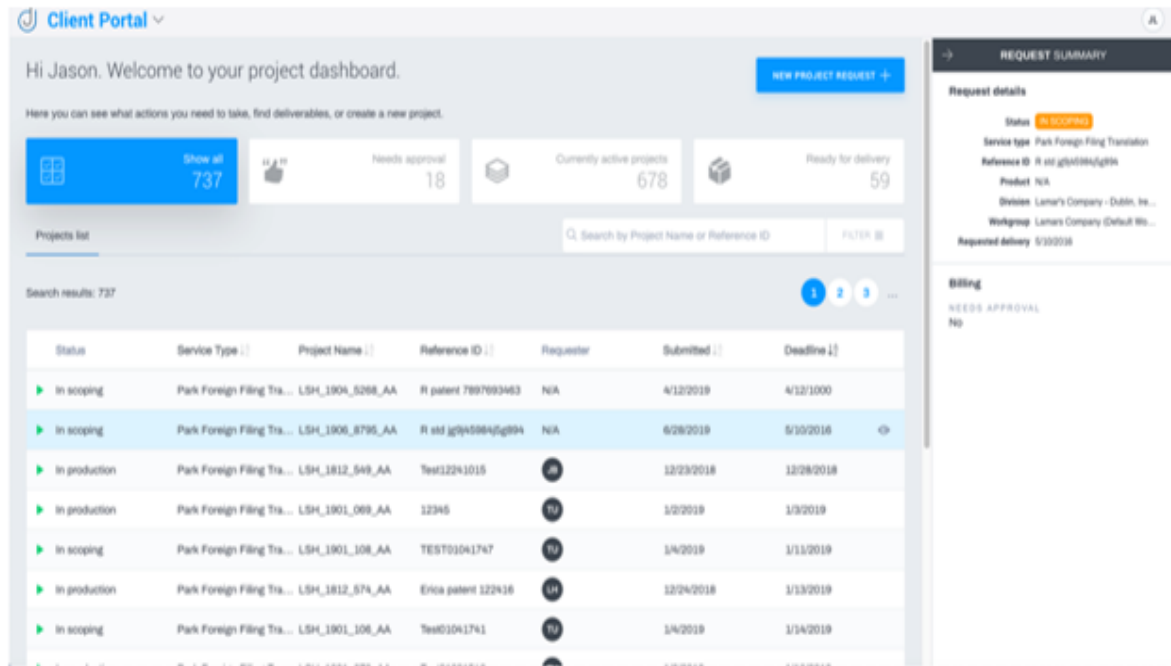


Fig. 4., CLIENT PORTAL DASHBOARD, Source: WLS internal material

Fig. 4 shows the client dashboard upon entering the credentials. By clicking on “Show all” tab at the top of the dashboard the client can see a view of all the completed projects and requests. The other tabs positioned at the top provide views of the projects that still need approval of the quotation, the currently active projects, the translation ready to be delivered and directly downloadable by the client in pdf format.

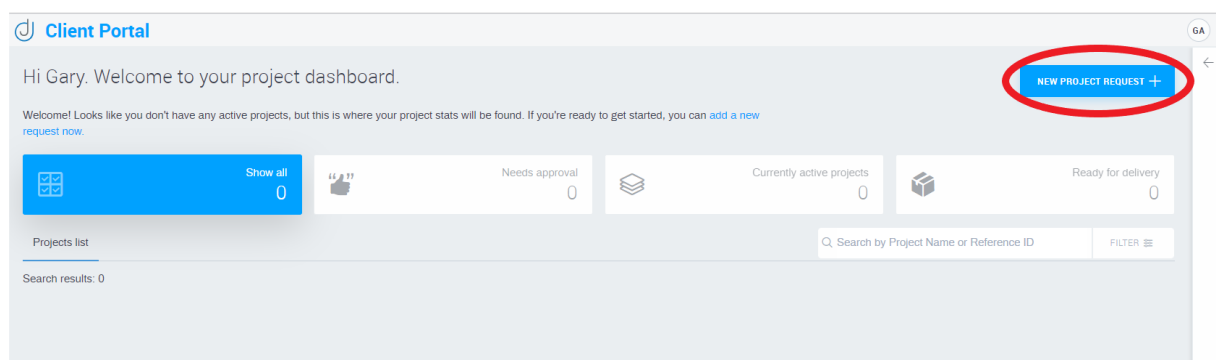


Fig. 5, CLIENT PORTAL REQUEST SUBMISSION, Source: WLS internal material

To submit a request the client must click on the light blue tab circle in red in fig. 5. It has now become a really simple and rapid task for the client whose inputs in the portal are limited to the selection of the types of documents, the selection of a preferred due date, the addition of any comments and recommendation to be followed and the entering of data related to the billing procedure, such as the addition to a Purchase Order. The last actions comprise the uploading of the files and the selection of the languages for translation. With the dashboard is offered to the requester a complete view of all the historical data, providing a single knowledge repository where it can navigate in as well as a tool to directly communicate with the company accompanied by the presence of an Account Manager to allow for a personal relation.

3) THE GLOBAL SALES SOLUTIONS AND OPERATIONS DEPARTMENT (GSSO) AT WLS AND THE SALES SUPPORT FUNCTIONS

According to a non-written tacit NDA with the company the ensuing figures do not show the following confidential information:

- Business Developers' Names
- Clients' names
- Protocol numbers of clinical trial studies
- Requesters' names
- Names of the department members

3.1) Organization and Functions Overview

The Global Sales Solutions and Operations department has been founded to act as a partner of the Sales and Marketing departments providing data, analysis, guidance, tools and in general engaging in all the kind of activities necessary to support the business developers team and the marketing team.



Fig. 6, GSSO ORGANIZATIONAL CHART, Source: WLS internal material

Fig. 6 shows the organizational chart of the GSSO department. It is an inter-divisional, transversal department supplying its services to the two Division which Welocalize is split in, Enterprise and Life Sciences. G. V. is the Barcelona based director of the department as far as the Life Sciences division is concerned, whose role consist mainly in the operationalization of strategic decision and the improvement of the sales performance tracking by means of the utilization of the company's business intelligence tool PowerBI. L. M. based in Chester (UK) share the same director position for the Enterprise business division but her functions are more oriented to marketing activities comprising the utilization of Pardot, the design of marketing campaigns and Lead Gen activities as well as the management of the customer satisfaction surveys. They both report to M. S. based in New York, identifying a three levels hierarchy making the organization of the department flat and decentralized considering the geographical locations of the directors.

The roles insides the departments are various as they are the competencies and the backgrounds of the people involved in. The roles located on the left of the organizational chart in fig. 6 are the ones dealing with the correct functioning of the CRM system comprising professional with a data processing background. The Core functions of the department can be classified in three macro categories, nevertheless the department works as a team with continuous overlapping of functions and day-to-day cooperation.

The first macro category embraces the Marketing and Sales operations, in particular the functions performed are related to:

- A) The Administration of Salesforce data.
- B) The setup and execution of marketing campaigns.
- C) Event communications.

- D) Reporting and definition of KPIs to drive and monitor Sales and Marketing activities.
- E) Structuration and analysis of the CSAT.
- F) Data governance, cleanliness, accuracy and completeness.
- G) Training about systems utilization.

The second macro category comprises general support and Lead Generation function ranging from:

- A) The suspect/target research.
- B) Application of data mining techniques.
- C) Identification of Key Title “movers”.
- D) Lead and Contact cleanup and maintenance.
- E) Identification of lapsed Opportunities and Activities and prompt communication.

The third macro category involves functions related to data and CRM solutions, specifically:

- A) Salesforce software administration of the coding and programming language.
- B) Development of tools, visuals, dashboards, processes, workflows, data structures within Salesforce and PowerBI systems.
- C) Reporting and visualization preparation of the Sales Monthly Business Review with integration of cross-unit customer data.
- D) Automation and elimination of spreadsheet utilization.

3.2) Report Usage

PowerBI allows to track the utilization of the reports created by GSSO team by means of a recently introduced function providing usage metrics. Each report utilization can now be tracked to give insights about the employees that have the higher business intelligence involvement and detect the report usefulness by monitoring the amount of views on a monthly basis. According to theory that recognizes the difficulties in detecting the real value that the business intelligence tools provide to the company in term of direct measures of impact on profit, the report utilization allows for an indirect measure of the business intelligence success. Fig. 7 shows how this simple report has been built. On the left table have been inserted a list of all the GSSO reports while the graph located on the right the shows all the views on a user basis. Since the GSSO department have been explicitly designed to support the business developer is not surprising to find their names at the top of graph “views by users”. This provides an indication of the success of the department other than the business intelligence success giving a clear view that the technology can and should be exploited to increase the likelihood to enhance the performance of the business.

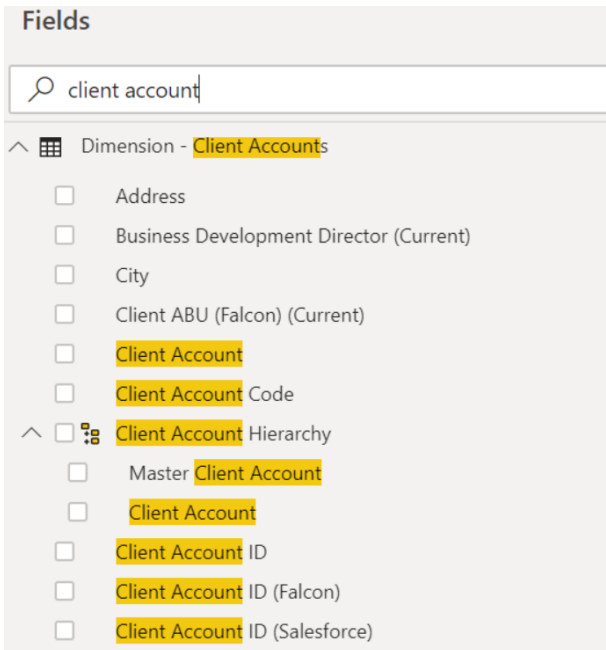


Fig. 8, DIMENSION EXAMPLE IN THE DW, Source: WLS internal material

Fig. 8 shows an example of a simple query in PowerBI to the centralized DW. The “Fields” tab in PowerBI contains all the dimensions, facts and measures of the DW. By simply typing the name of the dimension, “Client Account”, PowerBI gives back the results related to the applied query without the necessity to write codes in form of SQL language to interrogate the DW, increasing notably the easiness to build reports by employees not having a computer coding background. PowerBI is an extremely important self-service business intelligence tools that empower all the authorized users to create reports without requesting them to IT professionals.

3.3.1) The Open Quotes Report

The WLS workflow described above requires the monitoring of the request status to detect the ones that are still pending the approval by the client. It is a task of the BD to follow up those requests that have been quoted and are still classified as “Pending” in order to understand the underlying motivations that push the client to not accept the quotation and supply potential solutions. In this regard the GSSO team provide to the BD the “Open Quotes” report, published in PowerBI online app, that being directly connected with the DW refreshes automatically without any data input by the BD or other GSSO member, providing real-time information.

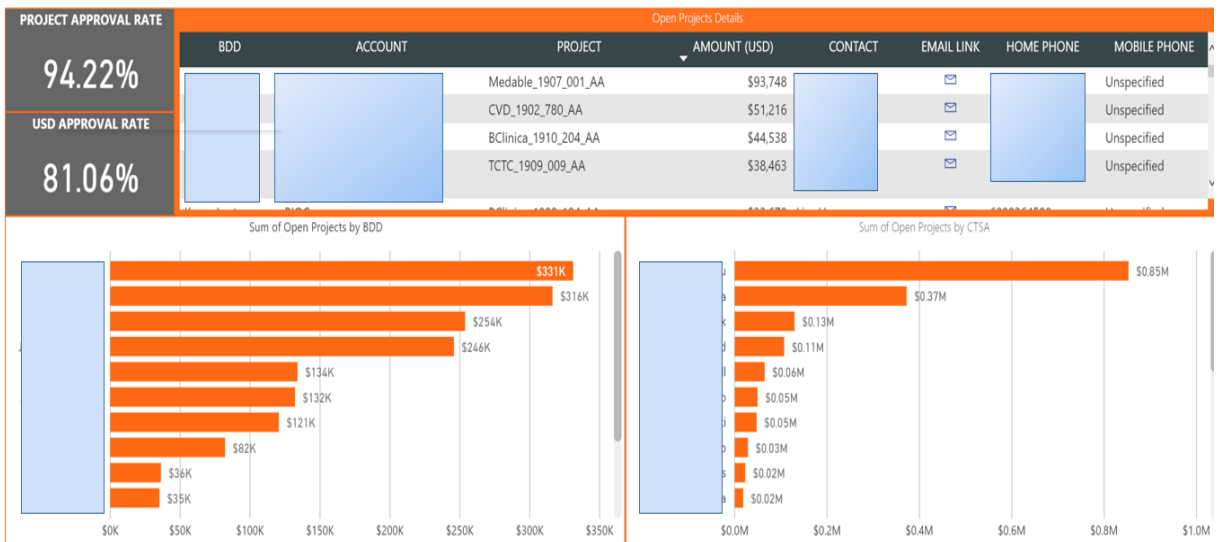


Fig. 9, OPEN QUOTES REPORT: CONTACT INFORMATION, Source: WLS internal material

Fig. 9 provide a snapshot of the Open Quotes report. In the upper part a table shows the BD, the client name, the related project code and the amount capturing data from the project management software. In addition, utilizing data from the CRM software the BDs can rely on information about the contacts who submit the request with the associated information to liaise with them, like the emails, the home and mobile phone numbers. The graph on the left with the horizontal orange bars contains the value of the pending amounts associated with the BD that is in charge of handling the related account. By clicking on the pertaining orange bar a BD can see displayed in the table at the top all the requests that may need a follow up activity. The notably interesting PowerBI characteristic of linking the different graphs in the report, making them interconnected, allows the BDs to filter the data in the report only by clicking on the related graph.

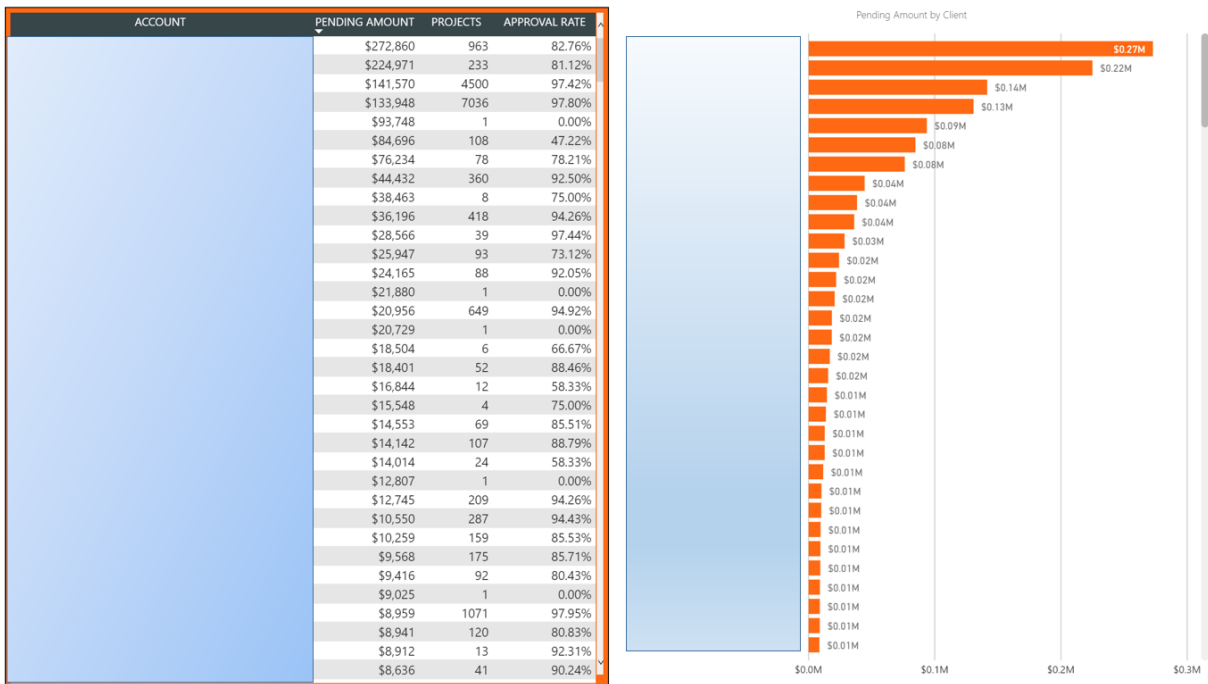


Fig. 10, OPEN QUOTES REPORT: ACCOUNT INFORMATION, Source: WLS internal material

Fig. 10 provide a snapshot of the second tab of the Open Quotes report. The second tab of the report, containing a list of the accounts with the related pending amounts, is mainly used by the management to identify those clients that show the higher amounts to be approved and set out the necessary activities, involving for example a renegotiation of the Master Service level Agreement.

3.3.2) The Weekly / Monthly Bookings Report

The Weekly / Monthly Bookings report in PowerBI, published in the Self-Service application online every week, absolve the function of providing to the management and the BDs a picture of the progress of the business. The definition of “bookings” comprises the translation projects whose quotation has been accepted by the client and whose status is active, meaning that the production team is still processing the translation, or completed. It is used by the management and the BDs to see sales trends, to compare past year results and year to date quotas linked to the clients accounting for the 80% of the revenues of each BDs associated sales plan. As with all the report published in the Self-Service application of PowerBI online, it does not require any data input. The management and the BDs by filtering and clicking on the account they want to inspect can see the progress or regression of the sales amount, comparing it with the past year performance and the actual sales quotas and identifying the best and worst performing accounts to take on the necessary actions.

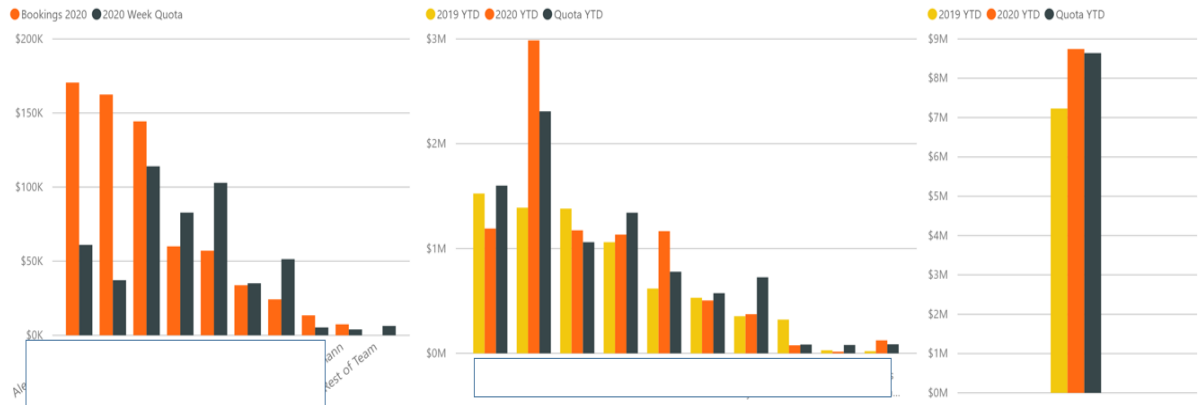
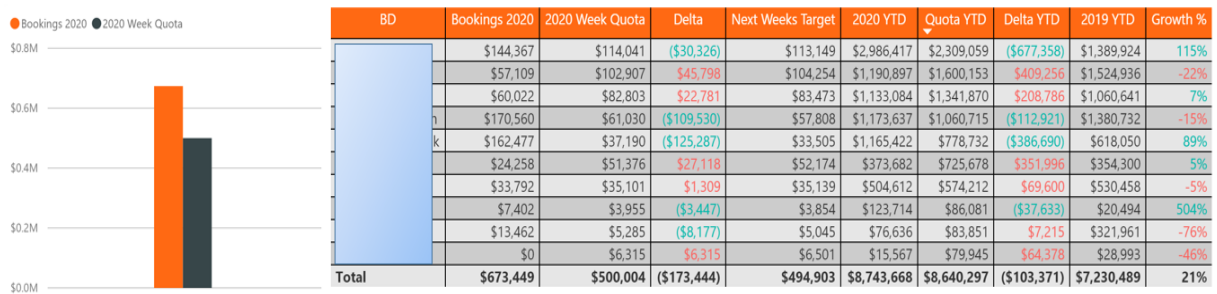


Fig. 11, WEEKLY / MONTHLY BOOKINGS REPORT, Source: WLS internal material

Fig. 11 shows how the report appears in PowerBI online. This tab is used by the BDs and by the management at the weekly sales meeting. The various graphs, starting from the one located in the upper left corner and proceeding anticlockwise, compare respectively:

- the cumulated current weekly bookings against the cumulated current weekly quota
- the weekly bookings amount against the week quota divided by business developer
- the year-to-date bookings amounts against the year-to-date quota and the past year year-to-date results divided by business developer
- the year-to-date bookings amount against the year-to-date quota and the past year year-to-date results

BD	Bookings 2020	2020 Week Quota	Delta	Next Weeks Target	2020 YTD	Quota YTD	Delta YTD	2019 YTD	Growth %
	\$144,367	\$114,041	(\$30,326)	\$113,149	\$2,986,417	\$2,309,059	(\$677,358)	\$1,389,924	115%
	\$57,109	\$102,907	\$45,798	\$104,254	\$1,190,897	\$1,600,153	\$409,256	\$1,524,936	-22%
	\$60,022	\$82,803	\$22,781	\$83,473	\$1,133,084	\$1,341,870	\$208,786	\$1,060,641	7%
	\$170,560	\$61,030	(\$109,530)	\$57,808	\$1,173,637	\$1,060,715	(\$112,921)	\$1,380,732	-15%
	\$162,477	\$37,190	(\$125,287)	\$33,505	\$1,165,422	\$778,732	(\$386,690)	\$618,050	89%
	\$24,258	\$51,376	\$27,118	\$52,174	\$373,682	\$725,678	\$351,996	\$354,300	5%
	\$33,792	\$35,101	\$1,309	\$35,139	\$504,612	\$574,212	\$69,600	\$530,458	-5%
	\$7,402	\$3,955	(\$3,447)	\$3,854	\$123,714	\$86,081	(\$37,633)	\$20,494	504%
	\$13,462	\$5,285	(\$8,177)	\$5,045	\$76,636	\$83,851	\$7,215	\$321,961	-76%
	\$0	\$6,315	\$6,315	\$6,501	\$15,567	\$79,945	\$64,378	\$28,993	-46%
Total	\$673,449	\$500,004	(\$173,444)	\$494,903	\$8,743,668	\$8,640,297	(\$103,371)	\$7,230,489	21%

Fig. 12, WEEKLY / MONTHLY BOOKINGS BUSINESS DEVELOPER PERFORMANCE TABLE, Source: WLS internal material

The table positioned at the top of the page in fig. 11, whose snapshot is provided in fig. 12, synthesizes the evolution of the BDs' selling efforts by comparing the week level of bookings with the same week of the past year and the current week quota. The report is built with cumulated quotas taking into consideration the positive or negative differences accrued in the past since the beginning of the year. In this way it is possible to show the weekly quotas in a dynamic manner reflecting the past level of sales and efforts. These dynamic quotas are shown in the column "Next Weeks target". E.g. a client under/overperforming in the past week will reflect in the report with a higher/lower next week sales quota.

Client	Bookings 2020	2020 Week Quota	Delta	Next Weeks Target	2020 YTD	Quota YTD	Delta YTD	2019 YTD	Growth %
	\$57,109	\$102,907	\$45,798	\$104,254	\$1,190,897	\$1,600,153	\$409,256	\$1,524,936	-22%
	\$6,399	\$32,152	\$25,753	\$32,909	\$230,041	\$455,813	\$225,772	\$384,772	-40%
	\$7,938	\$31,302	\$23,364	\$31,989	\$317,524	\$474,805	\$157,281	\$308,668	3%
	\$50	\$10,780	\$10,730	\$11,095	\$11,814	\$131,462	\$119,648	\$2,051	476%
	\$58,019	\$68,795	\$10,776	\$69,112	\$1,022,565	\$1,139,533	\$116,968	\$922,138	11%
	\$0	\$11,690	\$11,690	\$12,033	\$40,514	\$151,938	\$111,424	\$260,198	-84%
	\$25,714	\$13,883	(\$11,830)	\$13,535	\$101,856	\$189,922	\$88,067	\$139,504	-27%
	\$863	\$9,735	\$8,872	\$9,996	\$42,327	\$129,147	\$86,820	\$57,980	-27%
	\$409	\$7,296	\$6,887	\$7,499	\$3,156	\$87,217	\$84,061	\$10,866	-71%
	\$105	\$8,141	\$8,036	\$8,377	\$27,441	\$105,512	\$78,071	\$42,456	-35%
	\$230	\$6,461	\$6,231	\$6,644	\$3,945	\$77,666	\$73,721	\$9,279	-57%
	\$1,031	\$7,910	\$6,879	\$8,112	\$35,982	\$105,355	\$69,373	\$32,084	12%
	\$0	\$6,315	\$6,315	\$6,501	\$15,567	\$79,945	\$64,378	\$28,993	-46%
	\$0	\$5,303	\$5,303	\$5,459	\$5,485	\$64,573	\$59,088	\$0	
	\$2,374	\$8,868	\$6,494	\$9,059	\$81,883	\$131,745	\$49,862	\$81,745	0%
	\$0	\$3,822	\$3,822	\$3,934	\$1,132	\$45,581	\$44,449	\$14,595	-92%
	\$0	\$3,917	\$3,917	\$4,032	\$3,418	\$47,480	\$44,062	\$34,989	-90%
	\$1,318	\$3,689	\$2,371	\$3,759	\$2,307	\$43,963	\$41,656	\$46,673	-95%
	\$5,127	\$5,022	(\$105)	\$5,019	\$27,114	\$66,825	\$39,711	\$60,981	-56%
	\$0	\$3,176	\$3,176	\$3,269	\$1,258	\$37,984	\$36,726	\$65,319	-98%
	\$16,117	\$5,758	(\$10,359)	\$5,453	\$39,417	\$75,969	\$36,552	\$0	
	\$0	\$5,137	\$5,137	\$5,288	\$37,346	\$73,369	\$36,023	\$134,647	-72%
	\$1,911	\$4,681	\$2,770	\$4,763	\$40,411	\$68,372	\$27,961	\$72,025	-44%
	\$0	\$2,444	\$2,444	\$2,516	\$4,387	\$30,388	\$26,001	\$1,047	319%
	\$276	\$5,820	\$5,544	\$5,983	\$66,360	\$91,163	\$24,803	\$99,622	-33%
	\$290	\$2,127	\$1,837	\$2,181	\$4,536	\$26,589	\$22,053	\$11,015	-59%
	\$0	\$1,766	\$1,766	\$1,818	\$0	\$20,891	\$20,891	\$15,698	-100%
	\$1,298	\$2,692	\$1,394	\$2,733	\$19,478	\$37,984	\$18,506	\$14,329	36%
	\$450	\$2,237	\$1,787	\$2,289	\$12,092	\$30,388	\$18,296	\$34,551	-65%
	\$0	\$1,269	\$1,269	\$1,307	\$539	\$15,194	\$14,655	\$29,039	-98%
	\$49	\$1,483	\$1,434	\$1,526	\$4,338	\$18,992	\$14,654	\$6,262	-31%
	\$0	\$1,448	\$1,448	\$1,491	\$4,587	\$18,674	\$14,087	\$32,997	-86%
	\$122	\$2,956	\$2,834	\$2,920	\$21,582	\$45,581	\$24,000	\$16,781	88%
Total	\$673,449	\$500,004	(\$173,444)	\$494,903	\$8,743,668	\$8,640,297	(\$103,371)	\$7,230,489	21%

Fig. 13, WEEKLY / MONTHLY BOOKINGS CLIENT PERFORMANCE TABLE, Source: WLS internal material

In Fig. 13 the management can control the performance of the accounts and rapidly spot those who have grown the sales dollar volume and those who underperform. The colour format helps in detecting and differentiating the clients rapidly by indicating in "red" the ones that underperform in the week in consideration and in "green" the ones with a positive delta. The % Growth column on the far left is calculated on a year-to-date basis by comparing the year-to-date result of the past year to give an indication of the year to date progress of the account. In this way a BD even if the week delta is negative can plan the initiatives he may want to undertake taking into consideration the year-to-date figures. The same tabs just described are built on a monthly basis as well, to discuss the monthly performance at the monthly sales meeting. The third tab of the report shows the business trends up to date divided on a weekly basis.

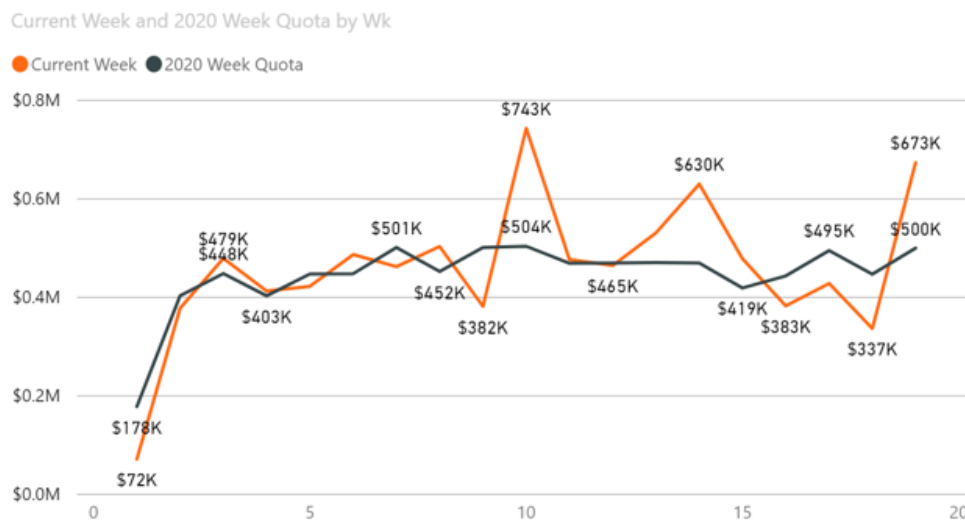


Fig. 14, WEEKLY / MONTHLY BOOKINGS WEEKLY TREND ANALYSIS, Source: WLS internal material

In fig. 14 the weekly results are compared with the current sales quota. This graph is not easy to interpret due to the fact that quotas cumulate over time and the weekly quota can increase or decrease following the BDs forecasts based on past opportunities and level of sales in the same period. In general, when a week is particularly good in terms of bookings, as for example week 10, showing 743k USD, the cumulated quotas construction should reflect in a downshift of the black line as it is possible to note in the snapshot. This should give to the management a more correct view of the performance and about what to expect in the next week.

At the moment of the writing numerous efforts have been done to build the report using the connection of PowerBI with the data warehouse, implying the reliability on real-time data, but there have been issues due to missing connections of the dimensions in the data warehouse. For example, it has not been possible to relate the BDs dimension with sales quotas because the latter is only connected to the accounts dimension. This imply the utilization of an excel spreadsheet that is populated manually with customer data taken from the project management software, the CRM software and the financial software, entailing the necessity of a savvy excel utilization.

Another reason pushing for the utilization of the excel spreadsheet is the correctness of the data. In this regard is crucial the accuracy of the project managers that must not commit errors when inserting the amounts in the project management software Relay and when assigning the tasks, as the amount are taken by the data warehouse as they are, without the chance to evaluate their fairness. With the use of the excel spreadsheet the company can get over these errors and ensure data quality, e.g. by comparing the amounts shown in the project

management software and the financial software with a simple Exchange Rate column that raise doubts whenever is above or under zero.

3.4) Pipeline Management and Analysis

The sales pipeline has been created in PowerBI by the GSSO team in order to visualize the progress of the opportunity creation in Salesforce, giving an intuitive and interactive report whose visualization enhance the comprehension capabilities of the management. The pipeline is built in PowerBI from opportunities data coming from the two Salesforce software utilized by the two Welocalize divisions, Enterprise and Lifesciences. The connection of the two Salesforce software required data standardization, e.g. the standardization of the rules used to classify the opportunities, the rules to classify the activities carried out by the BDs and the rules to classify the stages of the opportunity. The classification of the opportunities has now been standardized in:

A) New Business, meaning opportunity created in relation of activities performed with new clients.

B) Add-On, meaning opportunities of expansion of the business with an existing client in new service lines.

C) Existing Business, meaning opportunities within the same business area associated with accounts aged over twelve months in revenue contribution.

The opportunities stages, e.g. “Active, individually managed”, “study discussed with the client”, “study lost”, “informal commit to organizational level agreement”, “study won”, etc. are associated to a probability of gaining the opportunity. The probability generates in the pipeline the Weighted values, that is the amount that the BD is expected to obtain, calculated by multiplying the associated Unweighted total value by the probability linked to a specific stage. All this information is contained in Salesforce along with the activity history carried out by the BD, such as calls, emails, meetings, etc. and the industry/sub-industry categorization.

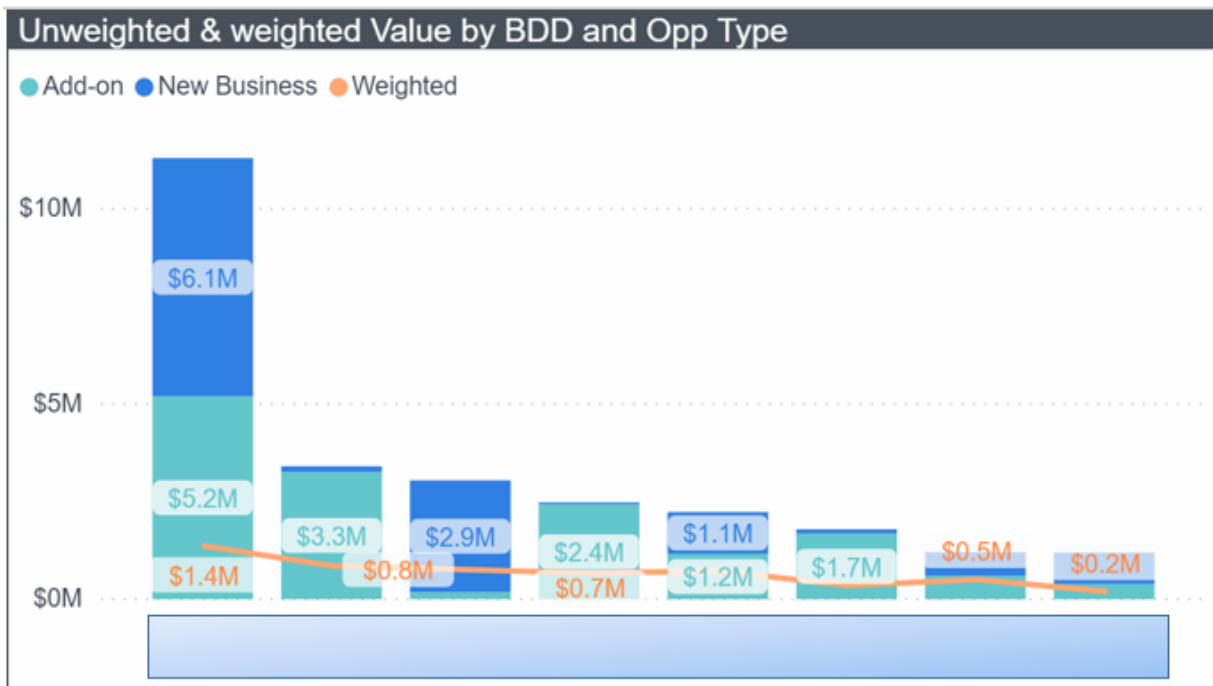


Fig. 15, OPPORTUNITY MANAGEMENT, Source: WLS internal material

Fig. 15, shows the LS report. The graph reflects the amount of opportunities created by the BDs divided on the basis of the abovementioned classification. The yellow line represents the weighted values of the opportunities. This graph is used by the management to monitor the activity level of the BD whose role is mainly that of creating the higher amount of opportunities to populate the pipeline.

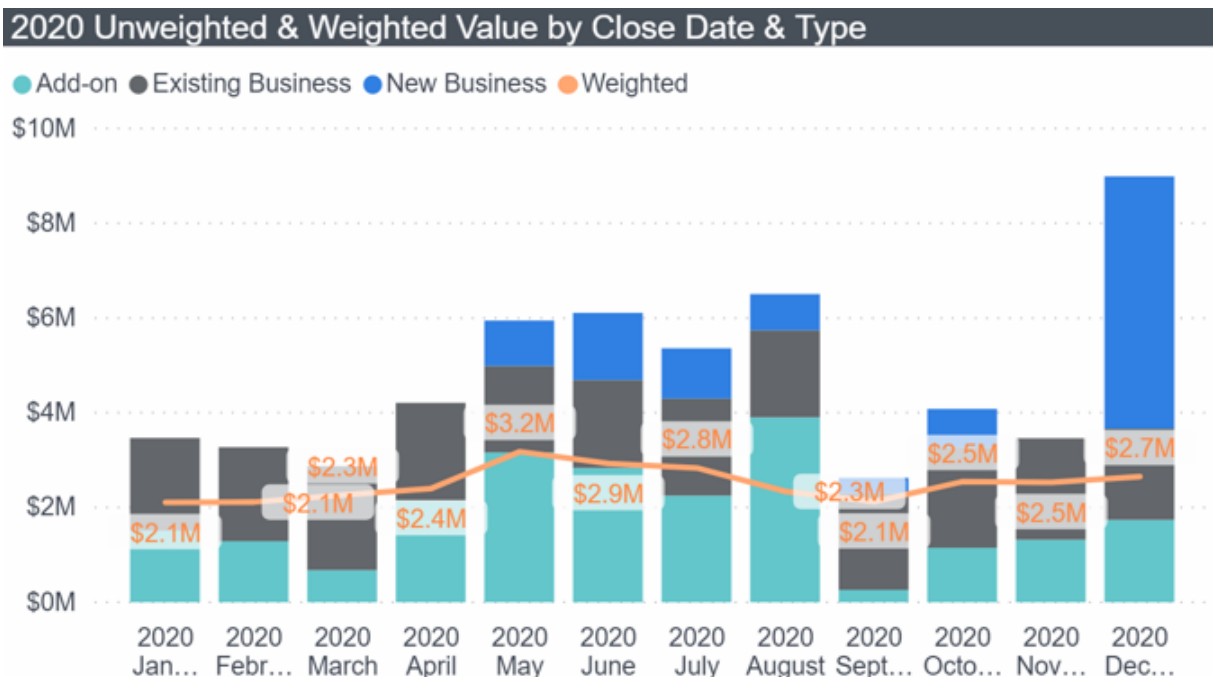


Fig. 16, OPPORTUNITIES BY CLOSE DATE, Source: WLS internal material

The graph in fig. 16 shows the opportunity creation divided by the expected close date. This graph gives an important source to set the expectations about the future amount of revenues. If the BDs have managed the opportunity carefully at least the weighted amount reflected in the yellow line should be transformed in revenues in the indicated period.

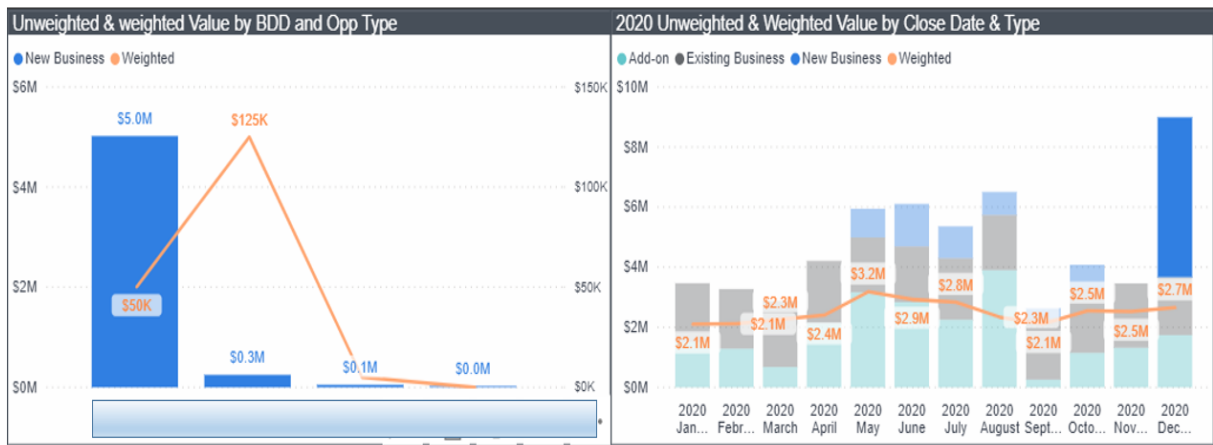


Fig. 17, OPPORTUNITIES BY BUSINESS DEVELOPER, Source: WLS internal material

Thanks to the interconnection of the graphs guaranteed by PowerBI, by clicking on the amount of New Business opportunities with expected close date in December 2020 highlighted in dark blue in the graph located on the right, as depicted in fig. 17, it is possible to see in the graph of the left the associated revenues split by the BDs that created the opportunities.

Unweighted	Weighted	Type	Created Date	Stage
\$1,000,000	\$10,000	New Business	5/15/2020	Active Opportunity (1-10%)
\$1,000,000	\$10,000	New Business	5/15/2020	Active Opportunity (1-10%)
\$1,000,000	\$10,000	New Business	5/15/2020	Active Opportunity (1-10%)
\$1,000,000	\$10,000	New Business	5/15/2020	Active Opportunity (1-10%)
\$1,000,000	\$10,000	New Business	5/15/2020	Active Opportunity (1-10%)
\$250,000	\$125,000	New Business	2/7/2020	Non-Passive RFP/Proposal/NAP (25-75%)
\$50,000	\$5,000	New Business	3/2/2020	Active Opportunity (1-10%)
\$20,000	\$200	New Business	2/25/2020	Active Opportunity (1-10%)
\$1	\$0	New Business	2/17/2020	Meeting/Presentation/Demo (10-50%)
\$1	\$0	New Business	2/17/2020	Active Opportunity (1-10%)

Fig. 18, OPPORTUNITY MANAGEMENT TABLE, Source: WLS internal material

Contemporaneously a table located just above the graph, as reported in fig. 18, gives the information about the client, the opportunity name, the unweighted and weighted values and the actual stage. All this information promptly available for discussion clearly help the management in taking decisions about the next activities to be carried out and imply the

involvement of the BDs that may be required to give explanations about the chosen probability according to the activity performed or the assigned stage.

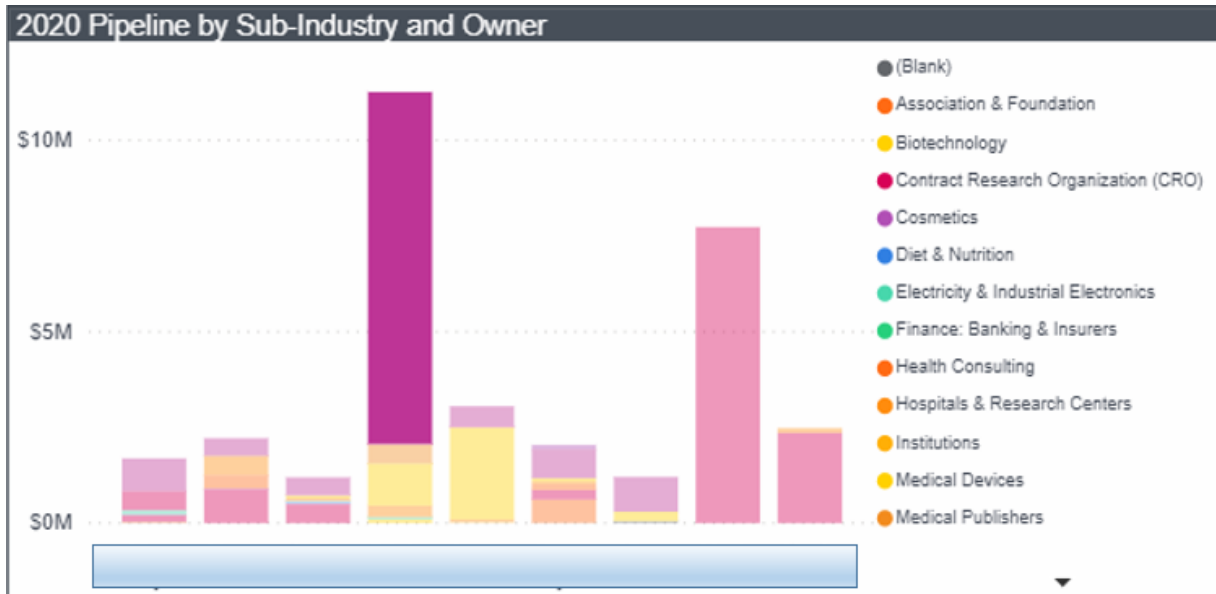


Fig.18, OPPORTUNITY MANAGEMENT BY SUB-INDUSTRY, Source: WLS internal material

Another important source of information stems from the graph shown in fig. 18, with which the management can analyse the opportunities generated in each type of sub-industry. This is relevant to perceive which is the actual segmentation of the business. Fig. 18 has been obtained by clicking on the CRO type of sub-industry associated with a BD. The figure shows that the majority of the activities of that BD are linked to that type of industry. As in all the tabs of the report a table shows the opportunities linked to the BD and the sub-industry type in question. If the management recognizes for example an excess of opportunity generation in a particular type of sub-industry, taking into consideration the amount of work that the production department is able to take on, may direct the BD efforts in another type of businesses. The report refreshes automatically according to the PowerBI refresh schedules implying the reliability on real-time data.

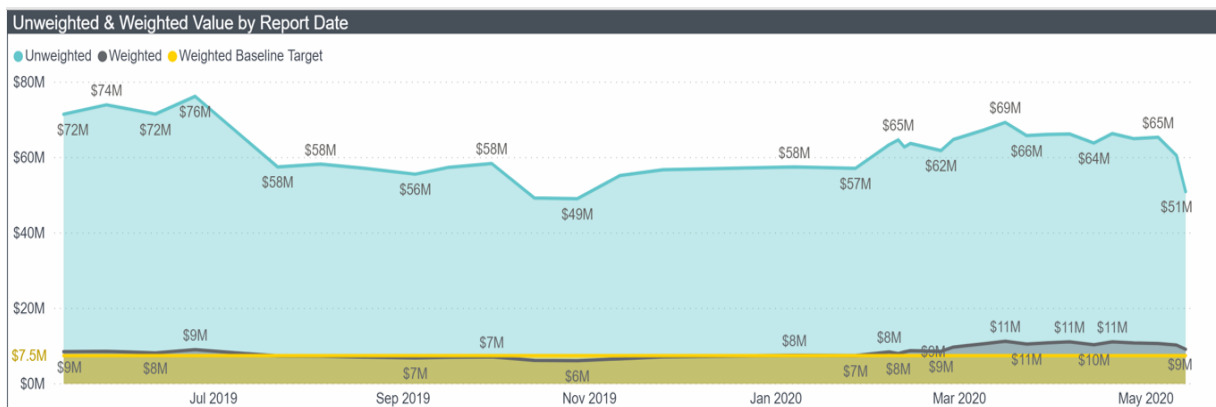


Fig. 19, OPPORTUNITY MANAGEMENT PIPELINE, Source: WLS internal material

The pipeline depicted in fig. 19 results from all the opportunities created by the LS sales team of BDs. This graph is important to detect whether the business is on track. The weighted baseline target highlighted in yellow set at 7.5 MM euro reflects the analysis of the relationship between opportunity generation and the stream of revenues. It has been pointed out by the management that the weighted value of the opportunities should always be above the yellow line to ensure at least the past year performance. This graph has been built by “report date” to reflect all the changes that have occurred in the opportunity weighted/unweighted amounts or in the expected close date and it is the only part of the report that is still updated through an excel spreadsheet. Thus, it does not indicate the value of the opportunities created by month, rather it shows a photograph of the pipeline as it is every Monday, to provide to the management the snapshot of the pipeline trend promptly available to be discussed at the Monday meeting.

4) MARKETING ACTIVITIES

As already described one of the GSSO department function is that of helping the marketing department through Lead Generation activities as well as the management of the generated leads and the ongoing update of Salesforce with new information by means of the identification of key title movers, meaning relevant leads that have changed role inside the same company or took on another role in a different company. Sales Navigator has evolved from an extension of LinkedIn to a separate product available as a SaaS. The tool is utilized to carry out Lead Gen activities increasing the chance to extract useful leads by means of filtering functions like job title, company, current or past position, key words, department etc. After the lead are proved to be relevant by the BD that have to send an event communication or start a marketing campaign, the next step involves the email validation process. To perform the validation of the emails the company utilize Filezilla, a SaaS. The software works by uploading an excel file containing the email address and then send back a response on the basis of the motivation of the email bounce. This can be an incorrect domain or other types of motivations that can be analysed to improve the process of email validation increasing the chances to liaise with the selected leads.

4.1) Pardot Functions

Pardot is the marketing automation module of Salesforce. It allows to handle massive email campaign, to track the activities of the website visitors and of any other customer touchpoints. Furthermore, it allows to automatize the management of the lead qualification process. After the identification of the leads and the email verification, as described above, those who pass

the test are inserted in Salesforce. With Pardot the company can conduct marketing activities and qualify the leads. Pardot works by assigning a Lead Score and a Lead Grade.

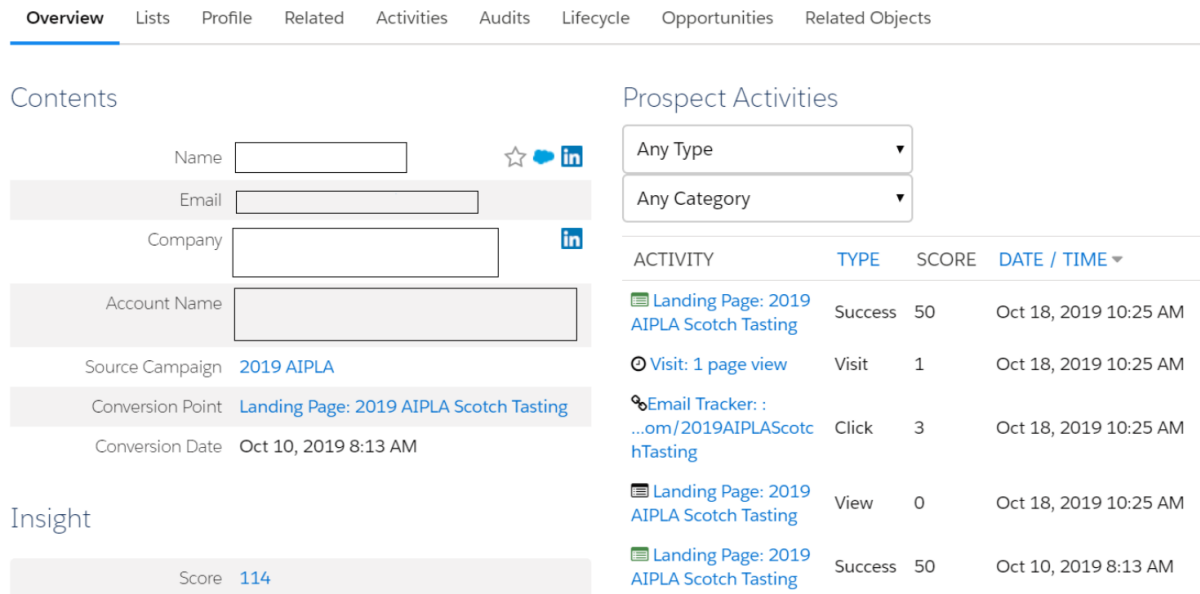


Fig. 20, LEAD OVERVIEW IN PARDOT, Source: WLS internal material

Fig. 20 shows the overview page of a lead. In the “insights” field at the bottom of the figure appears the lead score assigned by the software based on the activities performed by the lead displayed on the right. The score is discussed and assigned by the GSSO marketing members. As it is possible to note in the figure a score of 50 points have been assigned to the lead after he/she visits a landing page contained in the 2019 AIPLA campaign. Other examples of grading include: the assignation of 100 points whenever a lead fill in an online form and attend a company webinar, negative points associated to inactivity periods. Another important Pardot function is the email tracking that allows to keep track of the activities carried out by the lead such as the simple email opening, how much time the lead remains in the email page, how many clicks and at which links the lead clicked. The email tracker has been assigned a score of 3 points for a click, as in the figure. Lead Scoring is thus based on the lead behaviour. The grades are associated to the leads on the basis of their demographic characteristics. These are as in the case of the scores discussed and pre-set in the software. WLS assign grades based on the following leads and belonging company features: Job title, Department, Company size, Annual revenue, Industry and Location. Lead Scoring and Lead Grading are then combined to qualify the lead by associating the Marketing Qualified Lead (MQL) or Sales Qualified Lead (SQL) status. A MQL is a person who have shown a behaviour revealing an interest for the company’s services while a SQL have not only shown an interest but is deemed to be ready to make a purchase. Pardot is utilized to surface the leads and classify them in MQL through the

combination of lead scoring and lead grading already described, but the qualification of SQL imply an active involvement of the BDs that have to establish through a call or by emails communication the interest and the decision making power of the lead.

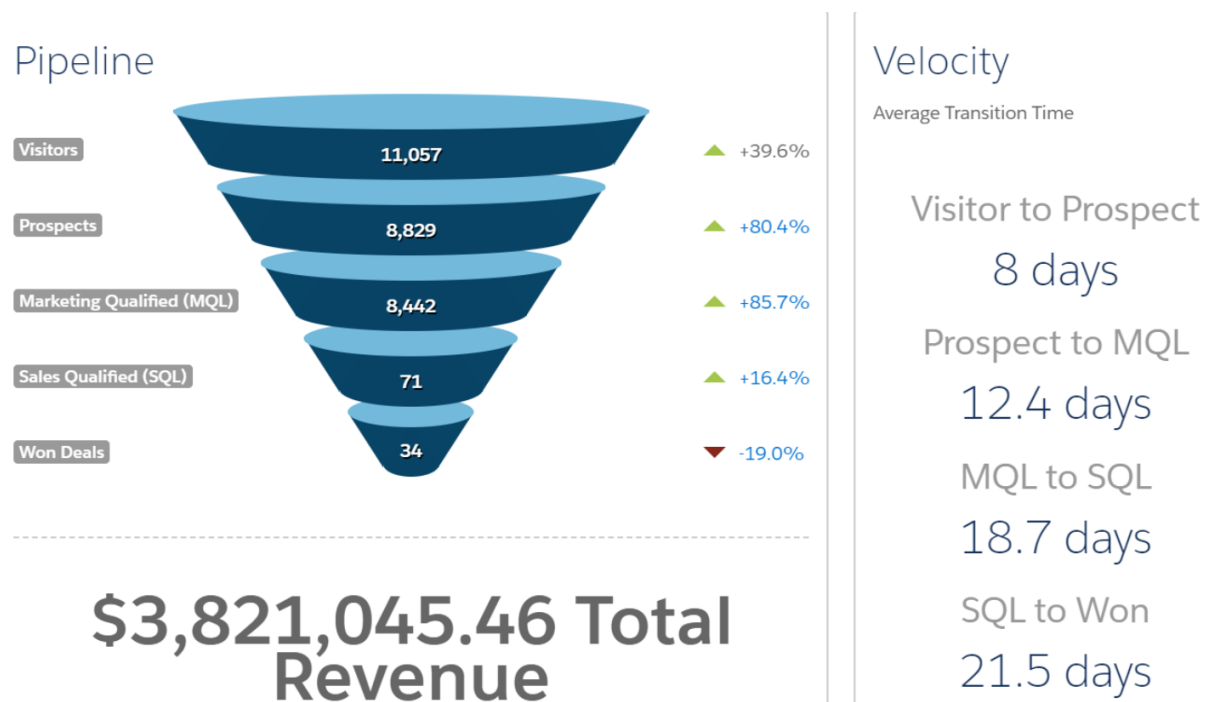


Fig. 21, PARDOT LEAD CONVERSION FUNNEL, Source: WLS internal material

Fig. 21 provides the lead pipeline as it is shown in Pardot considering all the marketing activities performed in the past year. The percentages on the side of the funnel reflect the performance of the past year compared with the performance of two years ago. As it is possible to note there have been a progress in terms of the volume of leads contacted by WLS, meaning an increased efficiency in Lead Gen process, but the deals won have decreased of about 19%. One of the possible reasons could have been a discrepancy between the qualification process criteria and the actual interest to make a purchase. Another important information displayed on the left of the figure is the average time needed to carry the lead to the next stage of the funnel.

In a B2B environment is difficult to track the roles empowered to make purchases of services since the existing clients' requesters can have the more disparate roles comprising interns as well. Thus, an analysis of the requesters for the existing clients based on the roles and industry won't be effective in order to derive the information about the decision makers and improve the Lead Gen activities, that remain mainly based on the experience and the instinct of expert BDs. In this regard a possible source of information could be the utilization of information about the belonging department coupled with the percentages of quotes accepted. If it emerges that a certain department has the lowest acceptance rate of quotes that

information could be used by the BDs to perform activities by asking questions about the motivations pushing toward that low acceptance rate. Moreover, it represents a signal about the presence of decision makers in a department rather than in another one. Though, the company do not perform any analysis of the requesters based on roles, departments and industry classification.

4.2) CSAT and Quality Issues Report

The analysis of the Information by the Customer is considered to be crucial by the company which intensely commit itself in its gathering and analysis to try to measure, according to theory assumptions, the level of customer satisfaction and the associated consequences on customers' referrals.

WLS poses particular attention in developing and analysing the results of the Customer Satisfaction Survey it proposes to their clients on a quarterly basis. The function of the CSAT consists in the analysis of the insights and critiques coming from customers feedbacks with the objective to identify main areas of improvement and categorize the client on the basis of the Net Promoter Score (NPS), detecting key drivers of customer satisfaction. The NPS is based on a scale ranging from 0 to 10 where the clients are classified as:

- A) Promoters (score 9-10) are loyal enthusiasts who will keep buying and refer others, fueling growth.
- B) Passives (score 7-8) are satisfied but unenthusiastic customers who are vulnerable to competitive offerings.
- C) Detractors (score 0-6) are unhappy customers who can damage your brand and impede growth through negative word-of-mouth.

The initial questions in the CSAT are designed to improve the company perception about the motivation that push the client to buy the company services and to provide a framework to identify the customer profile.

A) What factor(s) have caused you to select Welocalize for your translation needs? (Select all that apply).

{Quality, Relationship with my point(s) of contact, Subject matter expertise, Responsiveness to Communication, Instructed to do so/Corporate Preferred Vendor, Technology/Client Portal, Pricing, Turnaround time, Other (please specify)}

B) Which of the following apply to you, if any? (Select all that apply).

{I am ultimately responsible for my organization's choice of Language Service Provider; I interact with a Language Service Provider at least once a week, on average; I work with more than one Language Service Provider; I am directly involved in my organization's choice of Language Service Provider; My organization

selects Language Service Providers on a project-by-project basis; My organization closely monitors its translation spend}

Other types of questions are meant to help WLS better understand Biopharm's and CRO's key decision-taking drivers in their relationship with Service Providers and LSPs.

C) Which of the following are factors when your organization is choosing an LSP to provide translations for a new clinical trial? (Please select all that apply)

{We prefer to use the same LSP for trials with the same sponsor; We tend to choose the LSP with the lowest overall cost estimate for each study; We prefer different LSPs for specific therapeutic areas; We prefer different LSPs for specific foreign languages; Other (Please Specify)}

D) Which of the following factors does your organization consider in choosing a Language Service Provider (LSP) to provide translations for a new clinical trial, regulatory process or product launch?

{Buyers choose from our approved LSP list on a project-by-project basis; We prefer to use the same LSP throughout the whole development and marketing process for a given product; We prefer different LSPs for specific stages of the drug development process; We defer to our third-party collaborators (CROs, Regulatory and Marketing agencies) in selecting LSPs; We prefer different LSPs for specific foreign languages; We prefer different LSPs for specific Therapeutic areas; None of the above are factors in our choice of LSP}

E) Rank the following in order of importance to you when selecting an LSP:

{Work Product Quality; Speed; Price; Flexibility & Ease of Use; Technology & System}

On the basis of the importance given by the client to a certain factor a follow-up question is proposed to increase the level of details and try to identify the area for improvement.

F) If "Speed" – *How can we best improve our speed of service (select all that apply)?*

{Faster email response time; Faster translation turnaround; Faster quote turnaround; More flexibility to accommodate urgent requests; Be quicker to learn from mistakes and action off of feedback; Implement Better Technology; Other (please specify)}

The last section of the CSAT is made of questions that aim to gain a more granular understanding of what, specifically, drives customer satisfaction, utilizing the Likert Scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). In addition, a text field is provided to the client to freely provides feedbacks.

G) Indicate the extent to which you agree or disagree with the following statements:

{Welocalize LS has the flexibility we expect from a Language Service Provider; Working with Welocalize LS is easy; Welocalize LS delivers outstanding work product quality; I am confident that Welocalize LS can handle

changes in my organization's needs and goals; I consider Welocalize LS to be an extension of my team; I am happy with the speed of service I receive from Welocalize LS; I trust Welocalize LS to deliver quality work across all languages and therapeutic areas}

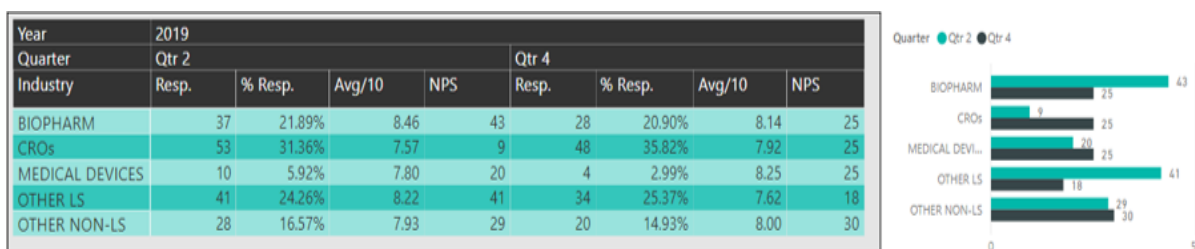


Fig. 22, CSAT NPS BY INDUSTRY, Source: WLS internal material

Fig. 22 illustrates the results of the CSAT in term of cumulative NPS by Industry classification. To calculate the cumulative NPS the company uses the following method. All the response belonging to one of the three categories Detractors, Passives, Promoters, are summed up. Then the percentage of Detractors are subtracted from the percentage of Promoters. The result is an indicator that assume values ranging from -100 to +100 with the former reflecting the worst case scenario made of all Detractors and the latter the best case scenario with all the respondent belonging to the Promoters category. As it is possible to note in fig. 22 there have been a drop in the NPS of Biopharm companies that went from 43 to 25 points while the respondents decrease from 37 to 28.

Year	2019							
Quarter	Qtr 2				Qtr 4			
Consolidate Improvement Area	Respondents	% of Respondents	NPS	Avg NPS/...	Respondents	% of Respondents	NPS	Avg NPS/10
None of these	52	35.37%	67	9.08	33	30.00%	48	8.79
Work Product Quality	27	18.37%	-30	6.56	31	28.18%	3	7.26
Price	31	21.09%	35	8.03	15	13.64%	27	8.13
Speed (prev. TAT or Responsiveness)	20	13.61%	10	7.80	16	14.55%	50	8.50
Flexibility & Ease of Use	9	6.12%	-33	5.78	10	9.09%	-20	6.40
Technology	8	5.44%	38	8.25	5	4.55%	40	8.20
Total	147	100.00%	27	7.97	110	100.00%	26	7.98

Fig. 23, CSAT AREAS FOR IMPROVEMENT RESULTS, Source: WLS internal material

The results presented in fig. 23 are associated to the main areas of improvements. As it is possible to note “none of these” remain by far the most popular answer and along with “price” can be considered areas that the clients perceive as positive. Important to note a great increase in “work product quality” that shift from a cumulated NPS of -30 to 3 indicating that, although the company should take into consideration ways to improve the quality of the translations, the efforts done until now have been appreciated by the clients. Although only the 9% of the respondents mentioned “flexibility & ease of use” the associated NPS declined

alarmingly, meaning that who mention that area of improvement faced major problems in that regard.

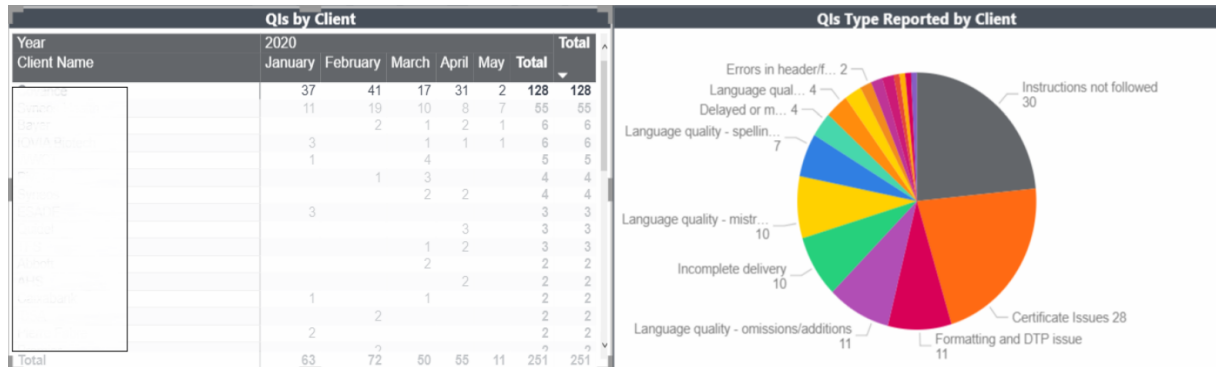


Fig. 24, QUALITY ISSUES ANALYSIS BY CLIENT, Source: WLS internal material

Another important part of the analysis of the customers feedbacks is related to the identification of the quality issues of the translations. As already mentioned, the life sciences sector is extremely regulated and the translations must be compliant with the laws in force in the different countries and of that enforced by transnational entities. Thus, the company propose to their clients a survey in which to indicate which have been the major issue concerning quality. As shown in fig. 24 the results are analysed in PowerBI with a simple Pie-chart. In the example in fig. 24 a click on the client at the top of the list in the table located on the left provides the correspondent Pie-chart with the cumulated year-to-date quality issue encountered. It is possible to note that instruction not followed, certificate issues are the major sources of complaints by this specific client. This indication can be transferred to the team in charge of the management of the translations for this client to avoid further issues concerning these categories.

5) INFORMATION FOR THE CUSTOMER

With the use of BI tools like PowerBI, which makes available an online service application to share results, it has become relatively easy to get access to the relevant information contained in the dashboards and reports populating the application. It works as a knowledge repository in which the management can find information of/by/for the customers. Information for the customer deals with the tracking of relevant KPIs established contextually with the stipulation of the Master Service Agreement. The capability to track the performance as per the client specifications is one of the major positive characteristics of the company, influencing the preference of the clients with respect to competitors. For example, WLS have been asked by one of the major clients to track the performance on a series of KPIs like, on-time delivery, translation memory savings and the amount spent on a language and country basis. The

tracking of the information is, at the moment of the writing, completely performed manually by means of excel spreadsheets that are then connected to PowerBI to create meaningful visualization. The objective of the company would be to completely eliminate the utilization of excel based information trackers, as part of the digital transformation path envisioned by the management.

Although the PowerBI online application could guarantee direct access to the reports to external clients the company right now prefer to discuss the information face-to-face with the clients involving the BD in charge of managing the client in question. This choice even if takes up the BD time is influenced by questions related to the confidentiality of the information published in PowerBI online. Indeed, restricting the access on the online application only to that information related to a specific client is costly in term of licenses to be paid to Microsoft and require a careful judgement about the data that could be shown. Consequently, WLS decided to not give access to any clients to the online application not exploiting this relevant PowerBI characteristic.



Fig. 25, CLIENT TRACKED AND SHARED INFORMATION, Source: WLS internal material

In fig. 25 are represented graphs providing relevant information for the customer. Among the KPIs in fig. 25 can be seen the amount spent per month, the number of requests per month and the amount spent split by service category. This client for example shows an incredible increase of the transaction volume with WLS as it is possible to note by the year comparison. The expenses can be easily compared with the budgets of the clients' purchasing departments and with the amounts tracked internally by the clients. As far as the client depicted in the figure is concerned WLS has been able to conquer its loyalty by presenting reliable and

correct figures that over time have always match the ones coming from the client’s internal tracking system. With the introduction of the new client portal, “Junction”, the company move a step forward furnishing to the clients a new way to track the amounts spent, the number of requests that have been sent and so on. This process innovation contributed to the entry of WLS into the clients’ internal tracking process substituting their old process and increasing by far the chance to be involved in a long-lasting relationship.

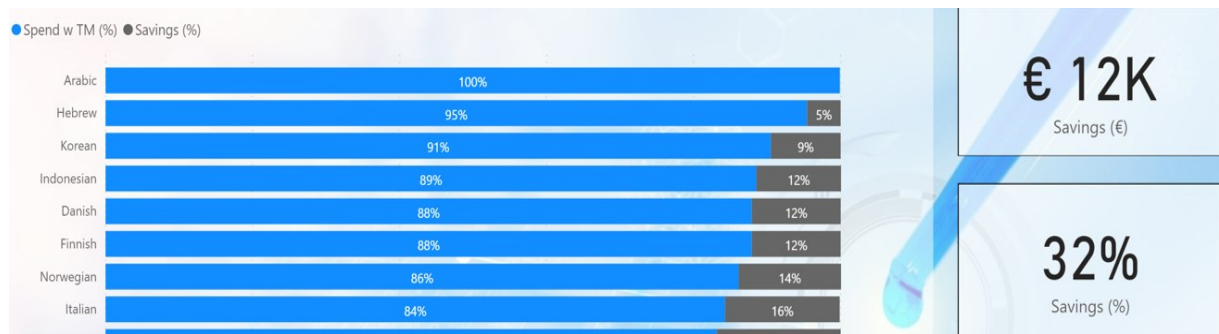


Fig. 26, CLIENT LANGUAGE SPENDING BY LANGUAGE, Source: WLS internal material

Another important piece of information for the client, as shown in fig. 26, are the savings by each language accruing from the utilization of the translation memory. In the period into consideration the savings count for the 32% of the total spent, but splitting them by languages can help the client to achieve important costs reduction by outsourcing the languages with lower savings percentages to other LSP and increasing at the same time the volumes of translation linked to languages with higher savings percentages. The information clearly influences the client perception of price, quality and convenience impacting positively the customer value equity.

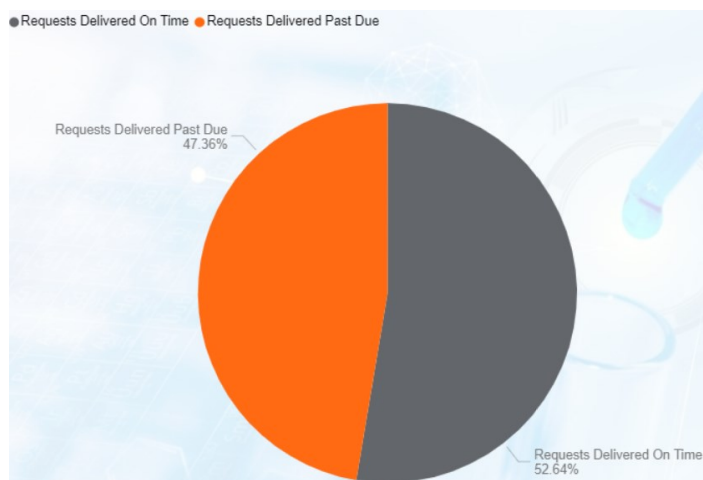


Fig. 27, CLIENT ON-TIME DELIVERIES, Source: WLS internal material

Fig. 27 provides the percentages of projects delivered on time following the client specifications explicitly demanding the tracking of this relevant KPI. As it is possible to note the client in question obtained an on-time delivery rate of about 52%. This information is relevant for the client since the regulations in force in the life sciences sector imply a much higher rate to be confident about not missing important deadlines. The trustfulness of the information and the transparency of the relationship have certainly a positive impact on the relationship equity dimension of customer equity influencing the capability of the company to keep a fruitful relationship with the client.

6) CUSTOMER SALES DATA ANALYSIS

The analysis of the customer sales data is carried out on a monthly basis by means of an excel spreadsheet that compare two Trailing Twelve Months (TTM) periods.

LS		SET "Big/Small Client" Grouping Threshold:		\$122,000						
These Values Will Change Based on the Threshold you Set										
Move	Client Grouping	From (prev)	To (TTM)	Number of Clients	Previous TTM		TTM		TTM-Over-TTM Change	
					Total Value	Avg Value	Total Value	Avg Value	Total Value	Avg Value
Stayed in top 80%	Top 80% of Clients in	>\$122k	>\$122k	19	\$13,456,065	\$708,214	\$16,299,998	\$857,895	\$2,843,933	\$149,681
Dropped to Bottom 20%	Previous TTM Period	>\$122k	<\$122k	10	\$1,721,635	\$172,163	\$512,479	\$51,248	(\$1,209,155)	(\$120,916)
Top 80% to Zero	(>\$80k Bookings)	>\$122k	0	0	\$0	#DIV/0!	\$0	#DIV/0!	\$0	#DIV/0!
Moved up to top 80%	Bottom 20% of	<\$122k	>\$122k	5	\$307,302	\$61,460	\$1,402,614	\$280,523	\$1,095,312	\$219,062
Stayed in bottom 20%	Clients in Previous	<\$122k	<\$122k	152	\$2,117,693	\$13,932	\$2,045,167	\$13,455	(\$72,526)	(\$477)
Bottom 20% to Zero	TTM Period (<\$80k	<\$122k	0	102	\$612,731	\$6,007	-\$9,578	-\$94	(\$622,309)	(\$6,101)
Zero To Top 80%	New Clients Over	0	>\$122k	0	\$0	#DIV/0!	\$0	#DIV/0!	\$0	#DIV/0!
Zero to Bottom 20%	TTM	0	<\$122k	59	\$0	\$0	\$500,211	\$8,478	\$500,211	\$8,478
ALL CLIENT TOTALS					\$18,215,426	\$17,752	\$20,750,892	\$18,833	\$2,535,466	\$1,081

Fig. 28, 80% REVENUE CLIENT CLASSIFICATION AND MOVEMENTS TABLE, Source: WLS internal material

In fig. 28 are displayed the results of the analysis providing a classification of the clients based on the threshold, in this case 122k USD, calculated utilizing the 80% revenue rule also called the 80/20 Pareto rule. This analysis has been performed on January 2020, meaning that the previous TTM takes into consideration the period of time ranging from February 2018 to January 2019, while the current TTM period range from February 2019 to January 2020, in order to compare the results of 12 months period in the current and past year. The threshold indicates that at least 122k USD must be the result of the previous TTM in order to be classified in the 80% revenue group of clients. The most important information provided by the analysis can be seen in the "Number of Clients" columns whose number are associated to the movement of the clients shown on the left of the figure.

19 clients remained in the top 80% revenue group. 10 clients dropped to the bottom 20% group, these are called “demotions”, indicating that the business has undergone a consolidation in terms of revenue, given that an inferior number of clients now contribute to the 80% of revenue. It may be the case to detect those clients and carry out an analysis of the motivation that push them to decrease the purchases of the company services. 0 clients moved from the 80% revenue to zero revenues meaning that the company did not lose any significant client in the considered period. 5 clients moved from the bottom 20% revenue group to the 80% revenue group, while 152 clients stayed in the bottom 20% revenue group. 102 have been lost since their sales amounts dropped to zero, while 59 new clients have been acquired by the company. 0 clients moved from 0 to the 80% revenue group indicating that the company had not stipulated any big deal with a new client. These dynamics reveal the shift from the status of one-off customer to non-contractual or contractual customers. An analysis of the causes of those shifts is done by identifying the clients’ business model and the demand-offer match to search for potential customer with the same fit.

In the right column “TTM over TTM change” the management can count on a picture of the progress of the business categorized by the grouping of the clients. E.g. the clients in the 80% revenue group increased the purchase of the company services by 2.8 MM, while the client dropped from the 80% revenue group to the 20% revenue group decrease the purchase of about 1.2 MM. This information, along with the negative difference between new and lost clients and the fact that the business saw an increase of about 2.5 MM in revenues, reveal the consolidation of the business around the major clients. It can be an important piece of information that may expose whether the results shown congruency with the intended strategy. The excel spreadsheet contains two other tables, built in the same manner, that split the results by geographic region, Europe and United States, to detect from a geographic point of view the progress of the business.

Bottom 10 Accounts	TTM1	TTM2	Attrition
	\$ 98.021	\$ -	\$ (98.021)
	\$ 111.428	\$ 10.794	\$ (100.634)
	\$ 125.068	\$ 10.047	\$ (115.021)
	\$ 122.102	\$ 5.492	\$ (116.610)
	\$ 697.357	\$ 564.531	\$ (132.826)
	\$ 368.137	\$ 212.710	\$ (155.427)
	\$ 245.246	\$ 10.531	\$ (234.715)
	\$ 560.389	\$ 320.357	\$ (240.032)
	\$ 670.280	\$ 296.201	\$ (374.079)
	\$ 480.338	\$ 27.046	\$ (453.292)

TOP 10 Accounts	TTM1	TTM2	Attrition
	\$ 483.958	\$ 2.869.118	\$ 2.385.160
	\$ 593.344	\$ 1.238.686	\$ 645.342
	\$ 613.695	\$ 1.146.371	\$ 532.676
	\$ 49.193	\$ 478.553	\$ 429.360
	\$ 82.967	\$ 484.498	\$ 401.531
	\$ 3.923.160	\$ 4.231.238	\$ 308.078
	\$ 27.931	\$ 149.158	\$ 121.227
	\$ -	\$ 98.930	\$ 98.930
	\$ 3.046	\$ 94.080	\$ 91.034
	\$ 254.122	\$ 339.772	\$ 85.650

Fig. 29, ATTRITION ANALYSIS RESULTS TABLE, Source: WLS internal material

Fig. 29 shows the Attrition analysis to detect the Bottom and Top 10 accounts reflecting respectively the ones that have decreased or increased the most the level of purchases. It is obtained by simply calculating the difference between the two TTM periods of current and past year and subsequently sorting the results from the greatest to the smallest.

The analysis provides useful indications to the sales and to the marketing department as for the clients to be targeted for further analysis and investigation of the failure and success causes to meet the customer's needs.

7) CONCLUSIONS

The GSSO department efforts directed to support sales aim at giving the best visualization experience to the management, through the utilization of the BI tool PowerBI, and to provide real-time data for discussion without the requirement of any data input by the management, according to the concept of Self-Service Business Intelligence.

However, the digital transformation and the shift toward a complete data literacy are still to be completed, indeed the objective of the company would be that of abandoning the use of excel spreadsheets, as in the case of the Open Quotes report, to create only reports directly connected with the DW. Among the issues faced by the company following the path of digital transformation the most relevant one resides in the collaboration between the GSSO team and the IT department, enhanced by the fact that IT professionals are located in USA while the GSSO is located in Barcelona and Chester. IT professionals are responsible to develop the company DW and are in charge of building the company's reports outlining a "Corporate BI"

deployment model that foresee the ownership of the entire BI system in their hands. Although some of the reports are designed and built directly by the member of the GSSO department the majority of them still use an excel file as a base or face issues caused by the relations among the dimensions in the DW.

The GSSO department is responsible to provide useful information to the management based on sales and marketing data. Although, the GSSO department already focuses and provides for information about relevant deviations from sales quotas it can be easily observed what can be described as a bottleneck when the IT department is demanded to satisfy the reporting needs. The bottleneck is caused by the difficulties faced by the IT department in handling the different data sources and reporting requests coming from different departments such as GSSO, operations, talent management etc. In addition, multiple reporting requests arise from diverse hierarchical level carrying different purposes and different point of views of analysis. Consequently, the IT department is mandatorily forced to prioritize the requests coming from Vice Presidents or Executives and solve the issues that may accrue from missing data or missing connections into the DW linked to those requests. This often cause delays in fulfilling demands that originate from middle level managers.

The situation described seems to place the company in the “Foused” phase of the BI maturity model that outline a framework in which reporting requests arise from department managers and are not tied to broader corporate objectives causing delays and issues in accomplishing these requests. Even if the company surely starts seeing benefits associated with the use of BI tools the system is still in a development phase and a lack of data integration can be easily perceived.

The creation of a Business Intelligence Competency Center, as described in the literature, mixing diverse backgrounds to attain the same goal, that of quality information based on real-time data to support the decision-making process, seems to be incomplete. The GSSO department may become a BICC in the future and will hopefully take on the business intelligence function as far sales and marketing needs are concerned. The BICC could increase along with the development of data marts the results of the business intelligence efforts already put in place, saving the time that the elaboration of and the data input into the excel spreadsheets took up. Furthermore, the presence of IT professional could overcome issues accruing from the understanding of the DAX language used to build measures directly in PowerBI, that could potentially lead to perform the Attrition and other relevant clients’ analysis directly in PowerBI.

Other hurdles to overcome can be spotted in the technology adoption by the BDs that must have a sound understanding about the reports and how to interact with PowerBI and play a

crucial role when inserting data as for example in the opportunity fields in SF. It is quite normal to see incomplete data or opportunities that have a close date passed and have not been updated with the reasons why those opportunities have not been won or requiring a simple shift of the close date in the future because the clients demand for other information. In addition, it seems to be incomplete and not standardized the information dealing with the causes of rejection of the quotes provided to the clients whose tracking in Salesforce is limited to a label “Non-substantive activity” coupled with a free text description that often is left blank. If the company could count on standardized motivations about the rejections of the quotes it could perform an analysis by industry to shed light on the most recurrent motivations and take the necessary actions.

A deeper understanding of the customers’ buying cycle may accrue from an analysis on the requests originating by new clients, improving the comprehension about which titles inside the clients’ organization assume the role of the sponsors or decision maker. New clients that are looking for a LSP like WLS and whose requesters liaise with a BD must surely have a sound understanding of the business and of the LSP offering, along with a need to buy. The company should not consider the person that send RFP and RFI due to the fact that, at least in structured organizations, are present specific department that build and manage them. In turn a requester of this kind may act as a sponsor of the service to be purchased reporting to the decision maker. The data related to the requesters’ roles, whose information can be easily obtained with Sales Navigator, coupled with data about the new clients’ belonging industry, that can easily be obtained on the web, can be used to carry out analysis that may give relevant indications about the titles in certain industry assuming the sponsor role in the buying process.

The GSSO department seems to be well performing when considering the integration of customer data coming from all the touchpoints and the use of the company’s tools for sales and marketing activities, providing a solid, relevant and essential support to the business, justifying its implementation. The evolution in the utilization of the BI tools with real time data and the consequent displacing of the excel spreadsheets should hopefully shift the department role to a more proactive function of support, implying a closer collaboration with the BDs, that instead of analysing the reports by themselves will optimistically count on appropriate and detailed information directly provided by the department.

BIBLIOGRAPHIC REFERENCES

- Arnott D., Pervan G., "A critical analysis of decision support systems research", 2005
- Arndt A. D., Harkins J., "The Role of Technology in Enabling Sales Support", 2012
- Arndt D. A., Harkins J., "A framework for configuring sales support structure", 2013
- Athanasoulis, G., Chountalas, P., "Increasing business intelligence through a CRM approach: an implementation scheme and application framework", 2019
- Athanasoulis G., Chountalas P., "Managing customer relationships: a comprehensive literature review and future directions", 2017
- Baran J. R., Galka J. R., "Customer Relationship Management", Part II
- Bokhari Ubaidullah M., Shallal Makki Q., Tamandani Kord Y., "Cloud Computing Service Models: A comparative study", 2016
- Bose R., Sugumaran V., "Application of Knowledge management Technology in Customer Relationship Management", 2003
- Boujena O., Johnston J. Wesley, Merunka R. D., "The Benefits of Sales Force Automation: A Customer's Perspective", 2013
- Chou Yung S., Ramser C., "A multilevel model of organizational learning: Incorporating employee spontaneous workplace behaviors, leadership capital and knowledge management", 2018
- Demirkan H., Delen D., "Leveraging the capabilities of service-oriented decision support systems: Putting analytics and big data in cloud", 2012
- Elbashir Z. M., Collier A. P., Davern J. M., "Measuring the effects of business intelligence systems: The relationship between business process and organizational performance", 2008
- Galka Robert J., Baran Roger J., "Customer Relationship Management", (Part 1-2), 2017
- Gessner G., Scott A. R., "Using Business Intelligence Tools to Help Manage Costs and Effectiveness of Business-to-Business Inside-Sales Programs", 2009
- Guillén J., Coates M., "Power BI Governance and Deployment Approaches", 2016
- Jayanthi R., "Business justification with business intelligence", 2008
- Khan Ahmad R., Dr. Quadri K.M.S., "Business Intelligence: an integrated approach", 2012
- Khana A., Ehsanb N., Mirzac E., Sarward S. Z., "Integration between Customer Relationship Management (CRM) and Data Warehousing", 2011
- King R. W., "Strategies for Creating A Learning Organization", 2001
- Landry Timothy D., Arnold Todd J., Arndt A., "A Compendium of Sales-Related Literature in Customer Relationship Management: Processes and Technologies with Managerial Implications", 2005

Light B., "A review of the issues associated with customer relationship management systems", 2001

Lin Melissa C., "A Study of Mainstream Features of CRM System and Evaluation Criteria", 2003

Lönnqvist A., Pirttimäki V., "The Measurement of Business Intelligence", 2006

Magaireah I. A., Sulaiman H., Nor'ashikin A., "Theoretical Framework of Critical Success Factors (CSFs) for Business Intelligence (BI) System", 2017

Marco Lee H., "Oracle Business Intelligence for the Enterprise", 2014

Mark W. Johnston W. M., Marshall W. G., "Sales Force Management Leadership, Innovation, Technology", 2016, Chapter IV

Mithas S., Ramasubbu N., Sambamurthy V., "How information management capability influences firm Performance", 2011

Pilav-Velić A., Habul A., Kremic E., "Customer Relationship Management and Business Intelligence", 2012

Rajterič Hribar I., "Overview of business intelligence maturity models", 2010

Raman P., Wittmann C. M., Rauseo Nancy A., "Leveraging CRM for Sales: The Role of Organizational Capabilities in Successful CRM Implementation", 2006

Ranjan J., "Business Intelligence: concepts, components, techniques and benefits", 2009

Richard E. J., Thirkell C. P., Huff L. S., "The strategic value of CRM: a technology adoption perspective", 2007

Richards Keith A., Jones E., "Customer relationship management: Finding value drivers", 2005

Rodriguez Michael H., Earl D., "Customer Relationship Management (CRM)'s Impact on B to B Sales Professionals' Collaboration and Sales Performance", 2011

Rossomme J., "Customer satisfaction measurement in a business-to-business context: a conceptual framework", 2003

Sallam L. R., Howson C., Idoine J. C., Oestreich W. T., Richardson Laurence J., Tapadinhas J., "Magic Quadrant for Business Intelligence and Analytics Platforms", 2017

Stein D. A., Smith F. M., Lancioni A. R. "The development and diffusion of customer relationship management (CRM) intelligence in business-to-business environments", 2013

Sturdy, G., "Customer relationship management through business intelligence", 2013

Supriya S., Sunjita S., "Integration between Customer Relationship Management and Business Intelligence", 2018

Vercellis C., “Business Intelligence: Data Mining and Optimization for Decision Making”, (pp-21-62), 2009

Xu M., Walton J., “Gaining customer knowledge through analytical CRM”, 2005

WEBSITES

<https://www.rws.com/insights/rws-moravia-blog/how-localization-supply-chain-models-must-change/>

<https://belazy.cat/announcing-the-welocalize-junction-connection/>

<https://www.salesforce.com/hub/crm/benefits-of-crm/>

<https://www.salesforce.com/products/pardot/overview/>

<https://www.salesforce.com/products/sales-cloud/features/opportunity-pipeline-management/>

<https://www.business2community.com/sales-management/opportunity-management-manage-sales-deals-better-01408454>

<https://www.rolustech.com/blog/top-12-benefits-crm-salesperson>

<https://bi-survey.com/product/microsoft-power-bi>

<https://ebq.com/b2b-guide-pardot-lead-scoring>

<https://www.pardot.com/blog/4-lead-scoring-and-grading-scenarios-explained/>

<https://powerbi.microsoft.com/pt-pt/partner-showcase/cloud9-sales-management-analytics/>

<https://docs.microsoft.com/en-us/azure/architecture/data-guide/relational-data/online-analytical-processing>