

# **An Innovative System of Control, Verification and Creation of Both the Spaces Commercial through APP Software**

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## **Abstract**

Ops is a leading company in managing and installing billboards in public and private areas; with the raise of its structure the company has defined a process of research and development to computerize and aggregate many processes, data and flows in a managed and efficient system. The study of a new technical and managerial tool has been developed to organize in an architecture and a system several variables and fields studied in the company reality. Thus, the main target of this project is to incorporate completely the management of the installations within the operation Ad Hoc Revolution, with no need of external applications, in order to keep under control, the whole flux of information management.

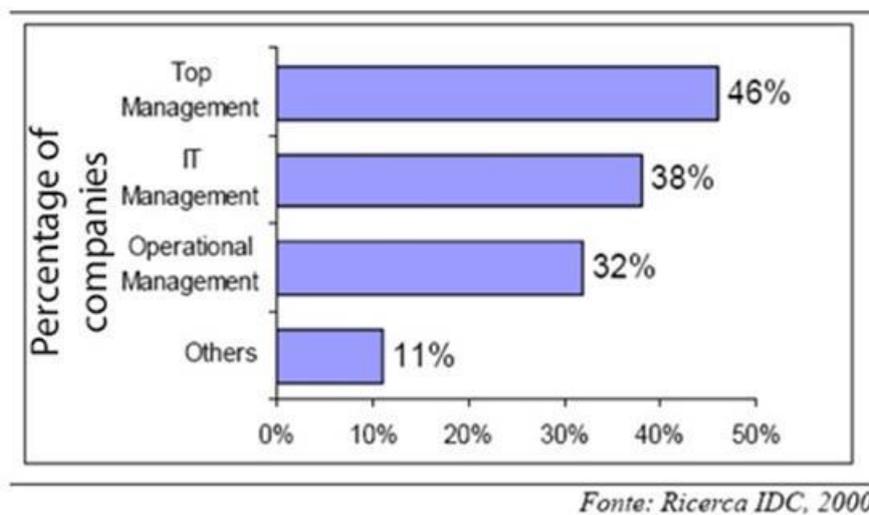
**Keywords:** Flow and process analysis, data management, data computerization

## **1 Introduction**

The procedural macro stages needed for the conception and the implementation of a CRM (Customer Relationship Management) system consider three relevant perspe-

ctives (i) the strategic aspect; (ii) the organizing aspect; and (iii) the technological aspect.

The strategic aspect concerns the Top Management intervention during the early stages of the project, to explain the improvements requirements of the own business, considering the opportunities and the menaces detected in the competitive environment in which the company works. This intervention is also intended to define the limits of the project, in accordance with potential future lines of development, in order to concentrate the expectations on certain key parameters, to evaluate the measure of success of the project. Often a holistic approach of the CRM projects has led the companies to a waste of resources, without focus on crucial variables to be observed in order to evaluate the results obtained and to involve the organization into a revolution of the processes and procedures that ignores the absorption time and the resistance to the change. The Top Management intervention is also required during the decisional stages after the start of the project: as a guide in the strategic stages and as the last decision-maker in the most crucial issues. For instance, the decision about the economic viability of the project is entrusted to the top management, though it is based on the analyses of the summary submitted from the responsible involved in the project team (1). Considering the Top Management in the early stage of a CRM project doesn't mean that it always represents the promoter of the initiative within the company. In fact, sometimes, the middle management or the directors feel the need and promote the intervention from the top.



**Figure 1.** Promoters of the projects of research and development Crm

The final point about the strategic aspect is the intervention by external consulting companies. Being a wide-ranging business process, that involves the entire organization and requires specific skills sometimes difficult to find among the internal staff, is used the cooperation with consulting companies, with the role, on one hand, of external observer, capable of evaluating with fairness the strong and

weak points of the action, in respect of the requirements explained at first, but also with role of integrator and facilitator of the concrete realization of the project, within the planned timeline. The intervention by external consultants is particularly useful in the early stages when establishing the requirements and the strategical targets of the CRM project. With specific check lists, outcome of the experience made in other companies and in several fields, the consultants ask the questions needed to promote the change of perspective about established ideas in the management and, based on the successful models already implemented, can provide the methodological system which leads the research of a specific solution for the individual case of the company. The consultants team can also use its specific skills in some or all of these stages: (i) definition of the technological architecture, (ii) mapping the existent architecture, (iii) analysis of gaps and the technical and organizational viability, (iv) definition of the Return On Investment model and economic viability, (v) analysis and selection of software and partners more appropriate for the specific select technological architecture, (vi) management of the multiple dealings between the company and several providers, in order to promote the consistent and smooth change of the individual parts regarding the overall system.

The size of the role carried out by the external consultants depends on the company degree of autonomy in the realization of these projects and on the presence of internal specific skills. Still, being a pioneering strand in which there are not established and tested models of development, an external intervention, in this case, is inevitable and can be on all the project stages, from the top management mentorship in strategical decisions to the active cooperation with the project team in the more operative stages; or it can perform at an “higher” stage, in terms of definition of strategical options and guidelines, leaving to the company the task of concrete implementing the system. This decision can partially depend on the mentioned facts, or on the approach of the consultant companies involved.

Some significant considerations can be submitted about the model organizational dimension, partly anticipating the organizational aspects of a CRM project, largely faced in an independent paper for the degree of criticality which characterizes them. In the model, in fact, is stressed, for each stage, the organizational level involved and the specific modality of interaction between the different organizational units present. Every organization, however, is characterized by a different level of complexity in terms of:

- number of people;
- hierarchical levels in which it is organized;
- referential cultural model, especially about the development of strategies and decision making (top-down, bottom-up and mixed types).

The organizational model considered is that of a company with a medium-high level of complexity, with a top management leading several Business Units and functional areas more or less centralized and a top-down decisional model. This decision is prompted by the fact of understanding the largest and most critical case, with respect to the inclusion in the change process, to the work in cross-functional teams and to the creation of complex facilities. In the simple cases,

the model is still a referential standard that simplifies the number/level of people involved and the interaction modality and the decision making.

## **2 Materials and methods**

### **2.1 Analysis of the individual stages of the project abstract and operative aspects**

A) definition of business requirements and preventive analysis of economic and viability factors

This is a critical stage when the Top Management determines the strategic lines for the development of its own business in terms of problem solving and opportunities to be seized. In the case of a CRM project, often, companies are led to reflect upon by the competitive high pressure that affects the loss of customers, the offer not in line with the new requirements of the customers and with the communication and sales channels as the l'e-commerce. These threats give rise in the companies to an even stronger need to control the information about their customers, about the trend of their sales channels, about the efficiency of marketing campaign. All fundamental requirements for a CRM project. However, every case must be evaluated considering the real need for the development of the company. Often CRM systems are confused with the need of improving its own sales force, for which can be sufficient the use of a Sales Force Automation. In this stage, the definition of management needs and even more the consideration about concrete targets (in terms of increase in turnover, increase in rate of retention, decrease of commercial and marketing costs and so on) by which the success of the project will be evaluated, helps to define the limits of the intervention, so the need for an investment in a CRM project, in terms of the practical principle "Think global - Start Small". This stage is also defined by an intense brainstorming activity in which are involved the Top Management, the area responsible or operational and the external consultants to define the real informatics which allow to control the target.

B) creation of the project team and model for the implementation of the project

Even if part of the responsible are involved in the previous stage too, this is the official moment of creation of the inter functional team which will monitor the process of design and development of the system. The creation of the project team is an essential step in the very starting stages, to build support, information and participation of all the people in the transformation process and especially all those who operate in the market and face the immediate impact of the new system, decreasing meanwhile the resistance to change. In particular, the project team creation is intended to achieve many concrete and immediate targets in organizational terms:

- ensure that the work is constantly calibrated on particular needs of the system users;

- ensure that people who will have to keep managing the activities share the analytical models adopted and the resulting conclusions;
- take possession and make company heritage the approach, methodologies and information sources used by consultants;
- reduce costs, performing internally several activities. This project team has to integrate different specialist skills and interpersonal skills needed for a project of this size. The characteristics of a proper team are:
  - having a coordinator and a sponsor in the top management;
  - being multitasking;
  - understanding firstly key people in contact and in the interface with the market;
  - understanding people with a good knowledge of the market;
  - understanding people with an excellent knowledge of the informative and informatics system of the company;
  - understanding people with keen analytical skills and quantitative methods mastery;
  - understanding people with keen leadership skills, problem solving skills, open-mindedness, communication skills, facilitator and promoters of change;
  - understanding people able to spend a great part of their time in the realization of the project.

Sometimes is possible to predict the formation of a team on two levels: a mixed working group responsible for the analysis and the development of the suggestions; people to be included in the team will have to represent the different tasks involved and be selected in line with their specific knowledge of the business, of the organization and of the different operational processes, with their analytical and proactive skills and with the objective possibility of dedicating an important part of their time to this project. The advisors monitor and guide the activities of this team; and a project committee, with the task of monitoring the setting and the realization of the intervention, via regular meetings where to present and discuss the progress of work and, when required, to make the necessary changes to the programme; normally the Project Sponsor and the Project Leader form part of the committee, and also prominent decisional figures and potential external advisors involved. Operationally, there's an alternation between stages of analytical activity and meetings to share the emergent evidence and to make decisions, proceeding with subsequent focus and spreading the information and the decisions made by all people involved. The proposals for activities from the Working Group need to be properly detailed in terms of motivation, targets, expected results, activities and positions and (in case of approbation by the Project Committee) are organized as sub-projects, with a working plan and an estimate budget.

### C) analysis of the existing architecture and initial state of the art

This stage allows to have a complete and clear overview to the whole team, about the current status of the informatics system. It includes the following sub-phases:

- Inventory of ongoing activities, in order to avoid to replicate other initiatives, ongoing, already made and/or started, then interrupted, about the project topics.
- Inventory of the information collected and of the active information sources. Information held by the company are mapped, revealing where and how are managed, evaluating their adequacy in terms of completeness, reliability and update. The searched information refers to different aspects of the business and other selling and marketing activities, and to the customer service. This information can proceed from the site, from people committed to the area, from business partners or from external sources.
- Analysis of the current technological set-up: IT solutions currently used or already planned are pointed out to manage the different components of the CRM system. The decision to start from the existing implies the idea of taking an incremental approach (not seeking to immediately find a complete and definitive solution). Operatively this implies:
  - Managing the existing – Make consistent and organically managing the information, and the knowledge already present in the company.
  - Improving the existing – Complete the current information framework and develop the current analytical approach.
  - Developing the new – Identify and structure new information, analysis and knowledge to support the decisional and managerial process of the business. The idea is that a good analytical starting baseline should be composed of data and information already held by the company. In case of inadequacy or insufficiency of the available database new readings and researches are activated. Furthermore, this approach allows to yield results in the short term too, and to develop people and procedures together with the progress of the project. The risk, in the other case, is to demotivate the organization which doesn't see the results of its work and ends with the abandon of the initiative.

#### D) outline architecture design

Once evaluated and explored the existing state an outline architecture is designed for the different CRM components and their interdependency. In this stage, the business requirements identified in the first part are led to functional and technical specifications which the developed system must perform and from which depends the proposal of cooperation of the partners involved in the design and realization of the system. This analysis represents also a project baseline to perform a first technical, organizational and financial evaluation of the project. The position that stands out in this stage is the analyst who has to be able to understand the customer needs, to turn them into functional and technical specifications, to listen and communicate with users in order to identify the issues detected in the existent

informatics system. One of the findings in the design of new informatics system, in fact, is the very incommunicability between users and IT experts due to:

- users inability;
- preventive attitude, in fear of losing privileged positions or not being able to adapt to new working procedures;
- lack of knowledge of the company background;
- too personal management style: leading to the definition of needs connected to people more than the role which they play. There are a few ways to limit the impact of these issues, as shown in the early stages of the project:
  - creating cross-functional team since the early analysis activities and defining the problem;
  - leading group debates and individual interviews (open and guided) that bring out all the needs and issues related to personal elements and to the work organization;
  - creating within the team (task of the coordinator and sponsor of the project) a climate of confidence and cooperation towards the common goal;
  - facing an analysis of the existing architecture, in order to increase the confidence of the less experienced users with the company information system;
  - Communicating, debating and sharing with the users all the relevant decisions made during the system design; the activities performed in this stage are:
    - Proposal of the informative contents and system features: the informative contents/outputs are defined in order to meet the strategical and operational needs of the different positions, specifying which primary data to manage (typology, detail, format, frequency, source, modality of retrieval);
    - Proposal of the system architecture technology: the specifications for the choice/verify of the different technological components of the system are identified, with cost and technological specs:
      - o on what reasoning organize the data (data bases structures and characteristics, or data standardization algorithms, links between archives, intermediate tables, calculation schemes, etc.);
      - o Which features must be granted by the system (queries, analysis typology, reporting, delivery, etc.);
      - o Which software, hardware and infrastructure choices (Data Warehouse, query and reporting systems, geographical applications, statistical applications, data mining, etc.).

#### E) gap analysis and technical-organizational viability

The gap analysis evaluates the gap between current and future situation for the two relevant dimensions of the CRM system:

- Evaluation of the informative gap compared to the existing situation: for the different functions and for the different themes, the gap between existing and wanted

informative heritage is analyzed, detecting the sources and the modalities to bridge the gap and evaluating costs and benefits from the extension/examination of the data base.

- Evaluation of the technological gap compared to the existing situation: on the technological side too shall be verified how much consistent is the current and planned situation with the requirements and the needed features or vice-versa changes shall be considered.

The analysis gap produces the guidelines on which the incremental process of implementation of the System is implanted. So is possible to make many assessments about the technical viability of the project and about the organizational impact. This kind of analysis follows a process defined by two macro-stages: analysis of the technical viability; and analysis of the organizational interventions which will enable the informatics solution to be used properly in the company.

For the first point, the considerations to make come directly from the results of the gap analysis and they shall comply to four main components of an informative system:

- procedures
- data base to be made
- technical resources
- professional resources.

For the organizational impact it is necessary to create a check list of all the areas of the organization which will suffer changes with the introduction of the new system and prepare the necessary actions in order to make the informatics solution coherent with these changes. Normally the impact areas considered are:

- the base structures of the company which materialize through the analysis of the job description and of the organization chart. The realization of a CRM project can cause the need to modify certain company procedures, to centralize common and interdependent activities, to include new professional figures;
- operational mechanisms, especially about systems of programming and supervision staff management system, including, particularly, trainings, di promotion and career system. If the CRM affects the company culture and the way the company interfaces with the market it is necessary that also the performance measures to evaluate people are coherent with the new management target of the customer relation.
- the organization arrangements, namely the structures and the modes of connection between companies with a strong interaction (companies network). Concerning the CRM, this impact area become crucial when designing an integrated system at the beginning and at the end of the Supply Chain to guide the production chain to the customer satisfaction (Extended Enterprise or Virtual Supply Chain). It is an evolving field of study along with the spread of e-business integrated environments, of which the CRM forms a kind of precursor.

F) analysis of the economic viability

It is a stage often neglected by the management because it is hard to determinate and with a few models to refer. However, the economic evaluation of the project, along with the starting definition of the concrete targets expected from the CRM implementation, are essential to monitor the degree of success of the action, not only before-after but also during the project execution, separating expected short-term, medium-term and long-term results. If these points are valid for all the company investments, especially, for those technological and infrastructural, in case of CRM projects, there are many specificities which make the economic-financial evaluation even harder.

G) software and partner selection

The software solution market is characterized by a strong fragmentation, together with a prominent role in acquisitions, alliances and commercial partnership. Reasons for these alliances, which can be weak or strong, national or international, are normally of two types:

- accomplishment of the offer
- competitive repositioning, to provide complete solutions for the Business Intelligence, for the Data Warehouse and for the Customer Interactive System. In the fragmented market of the vendors and their partner we can identify two differences:
  - of technical or consulting form; with a focus on market segments or as regards industries; small or medium-large; with mono-bi-multi-representative types of contracts; with an integrated or specialized offer on individual components. In the face of such a fragmented offer, the choice of vendors and partners is essential, because:
    - following software adjustments are contained;
    - after the choice of the partner, bargaining power is reduced, so it is necessary to invest time to formalize the selection process. The selection process consists of eight stages. The offer analysis is based on a reasoned evaluation of 4 relevant aspects:
      - Functional aspects of the solution
      - Technical aspects of the solution
      - Vendor properties
    - The first two variables identify the pure software selection, but the other two variables are more random and the criteria of choice is based on two key factors of the vendor and of the partner:
      - the ability of Sight, meaning the possibility to incorporate different components on the vendor/partner hub;
      - the ability of Implementation, meaning the concrete integration of the different components. Through this evaluation grid it is possible to produce a ranking for each vendor and partner and making the choice in line with the economic proposal made by everyone.

#### H) design of the ultimate architecture

After the choice of the partners it is necessary to operate, also given the intervention of these, the check and the refinement of the outline architecture designed in the fourth stage (TO BE model).

#### I) schedule of the operating times

For the purpose of a successful implementation, in terms of time of the project it is necessary identify the activities, the deadlines and the internal and external responsible of each stage or subtask identified, in order to monitor the progress of the project and to proceed with a specific took of responsibility by those involved. The preliminary needed activities for this stage are the Definition of the priorities of the intervention. The priorities are proposed by the Working Group and decided by the Project Committee, considering together, or the strategy of managerial activities which can benefit from improvements, developing the system: role of people/tasks with increasing needs inadequately met; possibility to benefit of the structures and the facilities already available; possibility to bridge the gap within a reasonable time and with reasonable efforts and costs; resources (financial and human) made available by the company to deal with these themes.

### **2.2. Test and research targets**

The purpose of this study and research is to track in detail the flow and the procedures for the plant management (inventory) using the implementation of specific features within the Ad Hoc Revolution management. Starting from the current situation efforts will be made maximize the standard features of the management and to optimize the needed customizations.

The main target of this project is to totally incorporate the plant management within the Ad Hoc Revolution management, without needing external applications, in order to get under control, the complete management flux of the information.

An innovation can be generated by different sources. First of all, it can be designed in the mind of an individual person, as occurs in the cases of individual inventors or buyers of particular products and technologies. The latter identify personally some ways to satisfy their needs better than the products produced in the market by the companies, or designing certain features of a product, or a new product in full. The innovation secondly, can come from efforts on research by public authorities of research, universities, private foundations and business incubators. A very relevant source of innovation is made up of companies, which are helped in the conduct of activities related to innovative processes because, normally, they own a higher amount of financial resources than individuals, and they own a management able to use these resources for the achievement of a certain common target.

Companies, in addition, are very inclined and motivated to generate innovations in their range of products, in order to differ from other competitors: this incentive to innovate make companies more advantaged to take innovative processes compared to all others potential subjects source of innovation.

There is, finally, another innovations source, more relevant in terms of innovation production capacity, that is not one of the presented before, but it consists of interactions and relations established between the different innovation sources. The innovators network, using knowledges and resources from several subjects, they represent the most effective and strongest innovation in relation with the ability to generate technological innovations and progress.

So, it can be observed that the innovation sources make part of a complex system, within which every innovative product can be designed by one or more subjects belonging to it, or even more of links and relationships between different subjects which belong to the system to network of innovation sources. To design an innovation in necessary the creation of new ideas, and this ability is called creativity. Creativity can be defined as the ability to design a product which provides a value and it is new, so it has to be different from other products of the same kind already produced, but also unique and impressive, because it doesn't have to present a level of innovation too much insignificant. The latter has to be relevant, meaning it doesn't have to be just a small step forward in the technological evolution of the product, which simply adds to a progressive series of solutions already known. The level of innovation of a product depends on its diversity from other already existing products (change or evolution of the product sometimes can be minor, insignificant and incremental, in other cases more drastic and evident), and on consumer experiences made in the past by individuals in the market.

An innovative product shall seem new to its makers and designers, but it shall be already known by other individuals (this is the reinvention case), or it could seem innovative in the local market, but already known in other geographic areas in the world. The most innovative products, the most creative works and solutions are new both to the designer and the producer, both to the market or to the community of potential purchaser to which they are addressed, but also to the whole company. Creative skills of people depend on their intellectual skills, on the knowledge they own, on their *forma mentis*, on the personality, on motivations and incentives in doing certain activities, and lastly on the environment where they live. The most relevant intellectual skills which stimulate an individual's creativity are the ability to analyze problems in a non-conventional way, to detect and choose promising ideas which should be developed, and to present and communicate these ideas to the others to convince them of their value. The knowledge affects the creative skills of an individual in two ways. First of all, the very low knowledge of a discipline doesn't allow a sufficient comprehension of the problems to face, in order to solve them in an efficient way. On the contrary, a strong and deep knowledge about a scientific field could keep bound to the logic patterns and to schools of thought, hinging the identification of ideas and solutions of issues which require a different approach. For this reason, sometimes an individual with just a small specialist knowledge of a discipline or a field, can design more creative solutions for a particular problem rather than a solution by an expert, although the latter has very advanced skills in a particular field of research.

As regards the *forma mentis*, more creative people prefer to make their decisions in original ways, and they appear to be very able in distinguish between crucial problems and secondary problems. The personality attributes considered more relevant to feed the creative thought, generally are the confidence in their own skills and qualities, the tolerance of the ambiguity, the determination and the pledge to win difficulties and problems, and lastly the intention to take reasonable risks when needed. The inner motivation is also a very important element to promote the creativity of an individual. Indeed, it is possible to promote the creativity of someone if he/she dedicates to an interesting and passionating activity. At last to make an individual free to express all his/her creative potential, often it is necessary to develop and feed it in an environment, or in a context where creative ideas are approved, supported and to develop into innovative products. In the company the businessman is the center of the project initiative.



**Figure 2.** Structure and configuration of project model

The inventor figure 2, in the common imaginary has the traits of an eccentric and weird scientist, but at the same time stubborn and obstinate. Out of the clichés, in the reality, according to the cognitive psychology studies, the analysis of the traits of inventors' personality stresses that they shall be more attracted by theoretical and abstract arguments, feeling a significant and uncommon excitement to solve problems. These subjects tend to be introverted, that can make them more able to deal with abstract ideas or making reasoning, rather than relate and face other people in the company. This presentation of the most relevant characteristics of inventors' personality, suggests that these abilities come from innate skills. But, there are other researchers and experts which don't agree with the latter idea and they state that inventors don't come out with these innate qualities but they achieve them by the time. Inventors achieve qualities and skills which make them creative and innovative by the time, thanks to their own personal skills and to environments factors, such as the cultural environment where they lived and thanks to

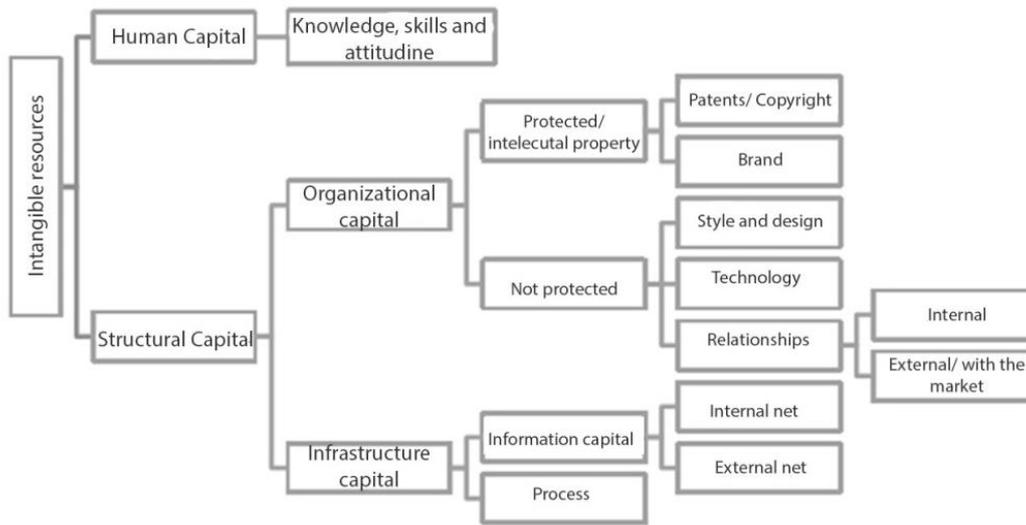
the knowledges they acquired by the time. A 10-years lasting research, stressed that most successful inventors present these traits of personality: an important knowledge and familiarity with tools and production processes most relevant in the area they work in, that is not the only field they are specialized in. An inventor, indeed, generally tends to operate in at least 2 fields of activity, and it seems that this very cross-disciplinary nature, the flexibility and ductility, allow him/her to operate in every area taking innovative and alternative perspectives; curiosity and attraction more for problem than for solutions; ability to delegitimize and criticize actual assumptions and prevalent schemes or ideas; conception of knowledge as an integrated knowledge, that is to say assumption of a cross-disciplinary and lateral approach. Identification of combined solutions rather than individual, adopting a "holistic" perspective. All these gateways are part of the specific skills of the project team.

### **3. Results**

#### **3.1 Study of the company placement after the realization of the research project**

The majority of the financial quantitative methods involves the introduction of assumptions and simplifications which seem very hard to implement in terms of application level: identifying the percentage of profits produced by an asset or its market value, predicting the possible profit from an asset, evaluating replacement costs (4-5-6).

Similarly, also non-financial quantitative models appear to be hard to apply: IC Audit model by Brooking and the Balanced Scorecard by Kaplan and Norton, for instance, need the identification of the ideal level of resources, but they don't indicate what the criteria for the definition of the ideal is. That means the introduction of a level of indispensable subjectivity and, eventually, reducible by the use of an evaluation team which can evaluate an ideal level based on the comparison of several analysts. Relying on models purely qualitative, due to simplification hypothesis which they introduce, can lead to low accurate evaluations and very far from reality as much as the complexity they tried to reduce; however, in these models there's is the chance to understand deeply the company trends and to evaluate, depending on the case, the effective need of a company to have certain strong intangibles. Then a qualitative analysis of the company will be performed.



**Table 1** Classification suggested for the analysis of intangible contents of organizations, OPS GTO case for impact area

Experimentations will help to understand what the company position is compared to certain aspects and will be used, as guideline, a list of aspects defined ex-ante which are considered appropriate factors to describe the company strength compared to the relevant assets for the field. So, it is possible to stress which are the intangibles on which is appropriate to focus the analysis. Assets to be analyzed will be: Human Resources and all the knowledges, skills and attitudes by which the company can realize its business; the secure Organization Capital, particularly the brand and the unsafe Organization Capital; and the infrastructural Capital perceived as the combination of processes and systems (7).

The presented analysis method is based on the principles at the base of evaluation using the Likert scale. These techniques, commonly used in management consultancy area, are the base of many evaluation methods of intangibles which don't appear in literature as essential tools for the core business of companies which realize them. It is also necessary to remember that these methods are generally designed ad hoc for a single company or for the field where they operate, so they shall not bring a concrete support to the subject study, but the analysis of the individual cases. So, the target of this study is to realize an analysis tool which allows to evaluate the strength of the intangibles within the strategical-operative company context.

The evaluation of the strength will be performed assigning to every considered aspect a value in Likert scale, according to the judgment which can be "low-medium-high" about the recovered match between the company situation and the considered factor. For example, if it is considered the territorial coverage with single-brand shops it can be defined low-medium-high based on the level of coverage of the competitors and on the needs detected by the company. The model used in this analysis, resumes largely the base ideas of the Brooking model.

All in all, the company presents intangibles medium strong and in particular, seems very strong as regards the technological area(8-9).

### **32 Analytic protocol and management study**

The practical management involves the numbering of the protocol, which will be the identification key of all the activities included in the management. To the practice will be linked all the documents about authorizations, conventions and generic document. The term paperwork in management corresponds to the term order: by activating the modality of correlation paperwork/orders every modification of the registration management of paper works reflects in the equivalent registration management of orders. A monitoring dashboard for paper works will be set up to check the assigned installations, the paper works without installations, the maturing paper works, the renewals of paper works. It is planned the registry of workforce activities, in which will be provide the order (paperwork). During the whole management period of activities relative to the new installation costs and charges are registered in analytical accounts specifying the order (paperwork). This management allows to upload into Ad Hoc the structure of the installation and its advertising slots in order to connect activities performed or planned to its installations/components or to define activities or periodic invoicing by the contracts management. An installation can be described by a free structure made of components with free description which can be connected to identify a tree structure. Components can also be simple grouping elements under which can be defined the real components that can be tracked in activities or where is possible to perform periodic activities/invoicing by the contract management. Every component of the installation can be described in details by the attribute management, useful to make researches.

For each installation will be assigned the relatives characteristics which will be defined in details; the management of the characteristics will be performed by the technique of attributes managing for each element of the installation (the advertisement space), so by the time will be possible to add freely more attributes. For each installation will be possible, by the Dk Office module, to link every kind of document: Authorizations; Conventions; Report to the institution; Environment bonds; Go-ahead; Pictures; Grounds.

For each installation will be possible to generate the costs of the installation by (i) Grid of connection to the registrations of the assets (custom management): For each installation will be possible to insert manually all the relative assets, thereby achieving the sum of historical costs; (ii) Registration of ordinary maintenance activities (Dk Office journal): if properly configured, the Dk Office journal allows to value the activities according to a standard general cost or to an individual standard cost. The registration of the dealers is necessary to identify the subjects which have to receive the payments of the ICP and relative communications. The repository of conventions is used for the management of authorizations and conventions needed for the activation of an installation. The contract management is that currently in use for. In this new project the contract

management will be integrated with the installations management: from an advertisement space of an installation will be generated the relative contract.

The registration management of spaces will be implemented as new custom table, because in the standard Ad Hoc management the elements of the installation (spaces) are only descriptive and they don't allow an autonomous management of them.

The coding of the spaces will result from the lines of the installation elements. For each space will be possible, by Dk Office, to connect every kind of documents (graphic table).

In the space registration will be provide the commercial and analytical data to be transmitted to the contract.

From the space management will be available the feature of customer allocation. The feature of allocation will allow to manage a history of allocations too, in order to consult the allocations of a space made in the past.

From the selected space (element of the installation) will be possible to create the contract. There is the possibility to modify the connections between elements and spaces. Selecting the sold spaces and giving to each of them the amounts (facilitated grid; managing retail amount and production amount; providing the other fields too to generate elements) elements of the contract are made (allocation of individual spaces to each customer by connection to a contract element). By inserting the retail price for every single space will be possible to generate the contract element already valuated. To make the management of numerous spaces easier (like bill-posting) will be a grid which will help the user in inserting the values (facilitated access grid; import from Excel). For each space of the installation is planned the charges management (ICP). From the space management will be available a feature to generate maintenance communications of the advertising spaces to send to the customers. The ICP repository contains the municipal tax fee for advertisement to pay to the dealer of the area where is activated an installation. The connection between the installations management and the warehouse management concern (i) The materials management and the logistic materials management occurs registering the warehouse activities, indicating the order (paperwork) and the reference installation (custom field); (ii) The installation, because the technician prepare the installation table with the sampling materials table, manually completed on paper (this process is not managed with Ad Hoc); (iii) The maintenance as registered activity on the installation by the procedure activity management of Activities and Services module; (iv) The removal as registered activity on the installation with the procedure activity management of Activities and Services module.

The connection between installation management and production management concerns the working sheets related to the workforce for installation, removal, maintenance. These activities will be registered on the installation through the procedure activity management of Activities and Services module.

### **3.3 Operational flux**

The agent or the company ask for information and documents for a new installa-

tion: opening of a new paperwork; numbering of protocol. The agent sells the free space of the installation and allocates the space to the customer, including the trade terms.

- The commercial creates the registration of the elements of the contract.
- The technician prepares the installation card with the collection of materials schedule (this operation is not performed with Ad Hoc).
- Logistic management of the materials, providing the order (paperwork) and the referring installation (in this step the warehouse isn't managed yet in unloading stage). With the installation the state of the space changes and it is communicated to the commercial in order to perform the contract (generation of documents plan).

At the end of the contract element the technician is notified for the possible removal of the advertising space (manual operation because it has to be verified). With the renewal of the contract data of the spaces need to be updated.

The linked managements involve: registration of costs and charges in analytical accounting giving the order (paperwork). The organization gives the authorization and all the documents are linked to the paperwork. It is necessary the management of the workforce hours. One paperwork can belong to several installations (e.g.: paperwork in province that allows all the sticks of a certain road); Encoding of a new installation: in the installation will be stated the center of income which will be transmitted to the spaces; Connection of the paperwork to the installation; Encoding of the spaces of the installation; in the registration of the space predicting the center of income to be transmitted to the contract element. Selecting the sold spaces and giving to each the amount (facilitated grid; management amount selling and amount production; predicting also the other fields to generate elements) are created the elements of the contract (allocation of individual spaces to every customer by the connection to a contract element). The connections between spaces and elements can be modified. Including the selling price for every single space will be possible to generate the contract element already valued. Keep in mind, in the selection of spaces, that in the case of bill-posting they can be very numerous, so it will be necessary to include a grid which helps the insertion of values (grid, import Excel, cut and paste). In the case of bill-posting invoicing will be appropriate to group together the lines.

### **3.4 Summary map**

Are listed here the mapped fields in the project management. In a different document are defined the matches between the fields of the previous management and the new fields managed in Ad Hoc.

## PAPERWORKS

• Authorizations	– Paperworks without installation	– archive
• Conventions		– binder
• Codex	– Maturing paperworks	– color
• Convention	– Renewals of paperworks	
• Report	• Placement	
– Assigned installations		

## INSTALLATIONS

• Practice	• Post Code	– State
• Registration	• Town	• Installed
– Codex	• Province	• Removed
– Typology	• Classification (street plan)	– ICP pile
– Installation date	• Category of road (ICP)	• Documents
Removal date	• Detailed description	– Pictures
– Family	• Cadastral code of the municipality	• Spaces allocations
• Prismatic	• Region	• Costs
• Stick	• Zone	– Assets connection
• Barriers	• GPS coordinates	– Ordinary maintenance
• Billboard	– Owner	• CHARGES
– Category	• Ops	• Land
• Street furniture	• Supplier	• Warehouse item
• Signage		• Master models definition
– Location		
• Address		

## LANDS

• Codex	– Classification (street plan)	• Chronological management
• State	– Category (ICP)	– Activation
• Contract date	Detailed description	– Renewal
• Lasting years	– Cadastral code of the municipality	– Cancellation
• Location	– Region	– Regeneration of annual licenses
– Address	– Zone	– Fee
Post Code	–GPS coordinates	• Generation Order to Supplier
– Town	• Owner (Supplier)	
– Province		

## AGREEMENT

• Codex	– Rental (supplier)	• Renewal date
• Typology	• Stipulation date	• Starting date
– Authorization	• Cancellation deadline	• Lasting years
– Convention	• Cancellation date	• Renewable

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Documents</li> <li>– Authorizations</li> <li>– Conventions</li> <li>– Go-ahead</li> <li>– Environment bonds</li> <li>– Statement to authority</li> </ul> | <ul style="list-style-type: none"> <li>• Chronological management</li> <li>– Activation</li> <li>– Renewal</li> <li>– Cancellation</li> </ul> | <ul style="list-style-type: none"> <li>– Regeneration of annual licenses</li> <li>– Fee</li> <li>• Generation Order to Supplier</li> <li>• Authority (supplier)</li> </ul> |
|---|---|--|

#### CONTRACTS

For the contracts management we refer to procedures currently in use with the Ad Hoc management; more info is here listed.

- Report
- New production
- Property
- Rental

#### SPACES

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Registration</li> <li>– State</li> <li>• Saleable</li> <li>• Ordered</li> <li>• Busy</li> <li>• Free</li> <li>– Pictures</li> <li>– Characteristics</li> <li>• Base</li> <li>• Height</li> <li>• Side</li> <li>• ICP code</li> <li>– Cadastral code of the municipality</li> <li>– Road category</li> <li>– Lighted</li> </ul> | <ul style="list-style-type: none"> <li>– Luminous</li> <li>• Contract allocation</li> <li>– customer code</li> <li>– Actual base</li> <li>– Actual height</li> <li>– ICP management</li> <li>• bump</li> <li>– customer approbation</li> <li>• Icp payment</li> <li>– Starting contract</li> <li>– Graphic schedule</li> <li>• Chronological management</li> <li>– Details of all allocations</li> <li>• Expiry date</li> </ul> | <ul style="list-style-type: none"> <li>• extension days</li> <li>• removal date</li> <li>• selling price</li> <li>• advertising message</li> <li>• Actual base</li> <li>• Actual height</li> <li>• ICP management</li> <li>• Contracts migration to another installation</li> <li>• Communication of maintenance installations to customers</li> </ul> |
|---|---|--|

#### ICP

- Year
- Cadastral code of the municipality
  - Road category
  - Lighted
  - Luminous
  - Group
  - Amount
  - Annual renewal fee procedure

Here are the work stages by which the project has been developed:

1. Data structure
  - 1.1. Configuration of new schedules which will have to contain managed data
  - 1.2. Sharing of the data structure draft
2. Fluxes management
  - 2.1. Development of custom procedures for the management of data fluxes
  - 2.2. Sharing of fluxes management draft
3. Data import
  - 3.1. Data import
  - 3.2. Recovery of connections between installations and contracts
  - 3.3. Sharing of import operation
4. Test stage
  - 4.1. Start-up and training
  - 4.2. Installation test environment
  - 4.3. Multitask management
  - 4.4. Project review
5. Go Live
  - 5.1. Installation actual environment
  - 5.2. Support and assistance

**Figure 3.** Summary map

## 4 Conclusions

The company in the experiment has developed an informative and informatics system able to elaborate a new architecture to:

- Maximize control processes
- decrease working times
- properly managing all the resources involved in the production process
- increase the competitive advantage in respect of the competitors
- simplify the procedures of practical and authorization management
- Geo-localization of products
- Correlation between the product and its management (pre-encoded maintenance stage)
- Development of the system for the integration with other informatics systems (before the start of the experimentation the company managed the production fluxes, the product and the orders in a non-organic and unbundled way)

The creation and the development of the new facility contributed to creating an informatics logic of all the production process, combining it with specific systems and technologies.

**Acknowledgements.** Research carried out in accordance with article 1, paragraph 35 of the Italian Law of 23 December 2014, n. 190 and Article 1, paragraphs 15 and 16 of the Law of 11 December 2016, n. 232.

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**Received: August 1, 2018; Published: August 18, 2018**