

## Investigating how HR development policies in a Telecom Call-Center may affect company performance: a System Dynamics approach

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### Abstract

*In the present economy a growing number of businesses, and in particular those operating in the service industry, are often able to be successful in the market arena on the basis of continuous investments in intangibles assets, rather than only in tangible resources. Tangible resources are those that are typically displayed on the balance sheet of a company such as machinery, buildings and inventory. On the contrary, intangibles refer to people and their experiences, business processes and routines, company reputations and image. Although intangibles assets may constitute the source of competitive advantage, businesses do not often understand their nature (Collins, 1996). In fact, it has been remarked in literature (Bontis, 2002) that managers do not know how organisation key-resources and related acquisition and depletion processes over time are likely to affect a success of a business strategy. This phenomenon may be due to a lack of methods and tools to use which would enable managers to analyse organisation intellectual capital stocks and organisational learning flows (Bontis, 2002). In order to overcome such difficulties, a conceptual framework has been developed and proposed to a Telecom company to investigate – through the lens of the System Dynamics methodology – in particular, how human resources (temporary vs permanent workers) development policies in a Call Centers are likely to affect Customer Satisfaction Index and indirectly the overall company performance. Main key-issues underlying the feedback structure and the System Dynamics model are discussed in the paper, and most significant outcomes from scenarios analysis are commented.*

### 1. Call center management issues

In the last decades customer care strategies of many service businesses and, in particular, of telecom companies have received a growing attention. In order to effectively offer to clients a reliable and effective customer service over time, organisations very often decide to provide it directly, through an own call center, or to outsource it. Today most of the companies mentioned in Fortune 500 list have at least one call center and more that \$300 billion is spent annually on this service around the world (Gilson and Khandelwal, 2005).

The decision to start a call center aims to be successful in implementing a customer care strategy that can balance costs, generate revenues and provide to clients a stable level of service. By achieving such goals a call center can become a primary company strategic asset (Kogut and Zander, 1992; Mahoney and Pandian, 1992; Amit and Schoemaker 1993;) able to provide a competitive advantage and fuel future business growth.

However, it has been shown that most of these initiatives have not contributed to keep low costs and to provide to customers a reliable service (Gilson and Khandelwal, 2005). On the last concern, an analysis of US mobile-telecommunications industry (Braff and Leogue, 2004) has shown an extraordinary number of dissatisfied customers. In particular, it has been reported that one of the main reasons of customers complains very seldom arises from any significant problem with phone

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service, such as poor coverage or limited handset choices, or with customer access to the service channel, but instead from company's response to problems. The most common complain emphasised by the mobile-telecommunications industry analysis is that the company repeatedly failed to fix a problem, despite the many calls the customer had made about it. Customers complain that very often call center agents provide inconsistent advices, instructions or clarifications from one call to the next. Furthermore, it has been also remarked that agents from time to time do not refer call to their supervisor, and they and their supervisors are sometimes rude. In addition, critics are also directed at an inability to provide the help requested due to, for instance, systems limitations and lack of technical available resources.

The above difficulties very often generate an increase in the number of company customer lost.

In order to prevent an increase in the number of dissatisfied customers and, as a consequence, a decline in sales revenues and market share, it has been suggested that companies must act on three main "imperatives" (Gilson and Khandelwal, 2005). First of all, companies have to define a proper customer service strategy, rather than aiming to simply provide to their clients good service at low cost. To correctly implement their strategy, companies have to build a technological advanced infrastructure correctly dimensioned with the expected volume of service that call center agents have to handle.

Moreover, to ensure the best possible interaction between agents and clients, companies have also to invest in training programs for their employees that are coherent with the selected customer service strategy. In particular, it has been demonstrated that introducing targeted sales training and coaching programs are likely to raise the overall performance of call center agents to the levels of revenue per call that top competitors achieve. However, average handle time, that is the time employees spend on the telephone with customers, very often increase and, as a consequence, the perceived level of service provided to customers decreases.

Finally, it has been also observed that the introduction of performance-management systems may allow companies to timely monitor the level of service provided by agents through consistent metrics. Consequently, such systems may support decision makers to implement proper policies to achieve the desired targets. In fact, sometime performance-management programs can encourage the wrong kind of behaviour. For instance, it has been shown in a company (Gilson and Khandelwal, 2005) that using total sales revenue per month as a performance indicator can generate "call churning", with the result that employees are not able to extract the maximum add value from customers. In order to overcome such unexpected outcomes, the performance-management system must be based on correct metrics that are able to take into account costs, revenues, and quality, depending on company goals. Furthermore, such system must also be simple and easy to

understand, and linked to financial incentives that encourage consistent employees behaviours. However, to find the right balance between metrics and incentives can be very difficult. A North American telecom company recorded unexpected results from its performance-management system which was set on independent metrics on costs, quality, and revenues. The system was designed in a way that if an agent exceeded his target in one indicator, the targets for the rest remained unaffected. As a consequence, agents – who hit their revenue target for the period – very often stopped their sell effort, in order to bring down their average handle time. To properly manage this trade-off, the company introduced a conversion rates system, between the different metrics set. The new scorecard was very effective in avoiding the above commented phenomenon as it was perceived by agents to be fairer.

Gilson and Khandelwal (2005) recognised in agents turnover another key aspect to effectively manage a call center. In particular, in their analysis they documented that the high turnover registered in most call center is considered normal, as well as its associated costs (in terms of recruitment, training and development programs, agents experiences lost). Call centers often record an average yearly attrition of 33 percent and an annual cost of hiring and training of a new person of \$ 15.000. Even though it has been widely accepted in the industry that a turnover is to be expected, due to the nature of the job and the demographics of the workforce, effectively managing such phenomenon may yield not only costs saving but also higher agent productivity and employees knowledge level. Empirical evidences support the thesis that there is no quick and unique way to create these conditions (Gilson and Khandelwal 2005). However, some of the best practices adopted by companies in effectively managing agent turnover can be identified in activities related to recruitment, training and development, incentives and career advancement (Pfeffer, 1994). It is worth remarking that all the previous mentioned practices are likely to be affected by organisation culture.

As it is possible to observe from the above analysis to be successful in managing a call center a company has to properly define a customer service strategy, and it is necessary that the identified strategy must be coherent with corporate goals.

In the next section of the paper, on basis of the analysis reported above, the author proposes a framework through which to investigate and assess how investment policies related to human resources and organisation subsystems directly affect call center performance and indirectly company results. The framework has been customised on a mobile telecom company through the help of internal personnel. In a first step, main policy levers related to human resources and organisation investments affecting company strategic assets, performance drivers and indicators have been identified. On the basis of such analysis, a second step has been oriented to make explicit

main feedback loops which represent the structure of key-variables relationships affecting call center performance indicators. On this concern, several group model building sessions have been devoted to analyse Customer Satisfaction Index (CSI) and its drivers, as it represents one of the main indicators that are likely to directly influence business results. Finally, a System Dynamics simulation model has been built to assess the effect of different investment policies on call center and company performance indicators.

## **2. Introduction to the case-study**

The Company is a leader in providing mobile telecom (GSM and UMTS standards) and internet services in the domestic market. In the last three years, company market share decreased from 50% to 48,5%. The other three operators hold a lower market share. Only one of them, through a very aggressive marketing campaign, reached last year the 30% of the market.

In order to build a sustainable competitive advantage, the company has always paid particular attention on the most up-to-date technological broadcasting stations on a side, and on advanced training and development human resources programs on the other side. In fact, the company has been able to build its strong image on the market due to the ability to provide to customers:

- a reliable coverage;
- a proper plan flexibility and
- a timely customer service.

The case-study analysis has been focused on the call center activities and, in particular, how investment policies related to human resources and organisation subsystems directly affect call center performance and indirectly company results.

It has been selected one call center that deals with customer requests received from two geographic areas, which count for about 6.250 millions of customers. In such areas, both company market share and Average Revenue Per Unit (ARPU) are very similar to those hold by the company in all domestic market. The analysis has been restricted to a particular segment of customers that are defined as “Gold” customers, i.e., those clients that generate a high level of revenues. Such a customer segment includes almost the 40% of the total customer base in the selected areas.

In order to manage the requests coming from the so called Gold customers, in the call center operate about 410 persons. The company uses to have the 80% constitutes by permanent employees that are both full-time and part-time. The other 20%, about 90 human resources, are constituted by temporary workers. However, in the last three years the number of permanent employees has slowly decline to favour temporary workers. At the end of such a period of time, permanent call center agents dropped to 260 and temporary workers raised up to 150 agents.

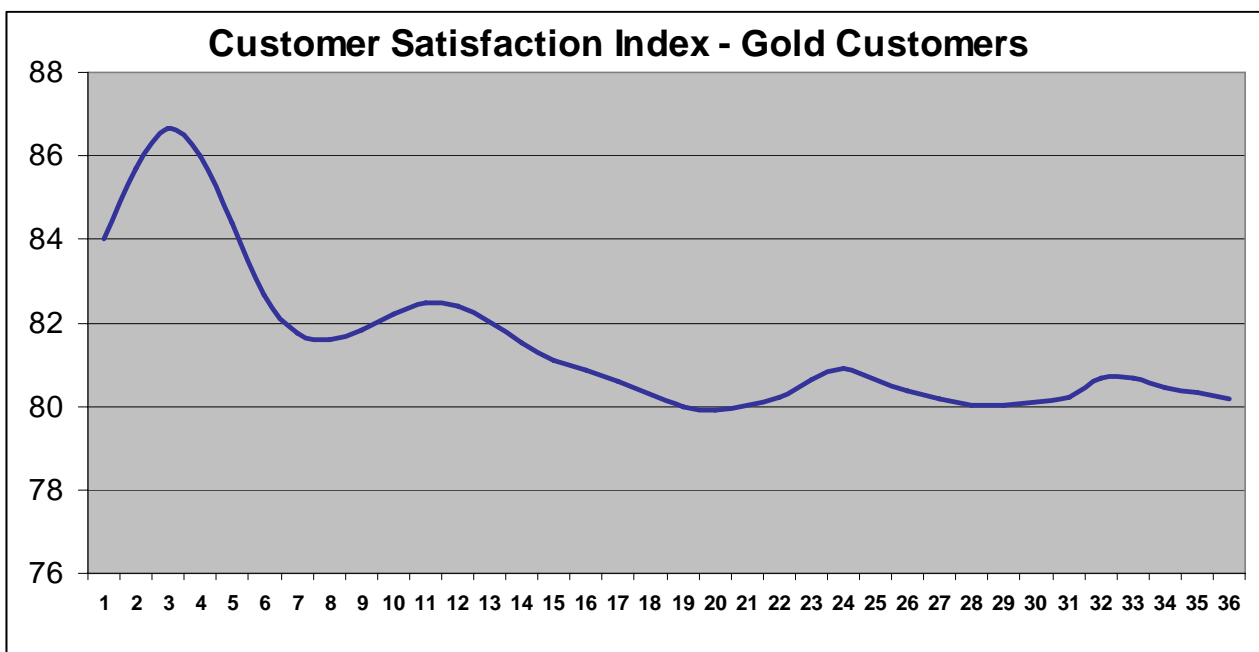
## 2.1. The company Customer Satisfaction Index

One of the main reasons that favoured the involvement of company in this research project was due to the possibility to explore in an innovative way the potential causes underlined customer satisfaction index oscillations, which periodically occurred in the last three years. In particular, the project aimed to make explicit and test potential cause-and-effect relationships between investments policies adopted by the company in the last years and the erratic behaviour of the customer satisfaction index.

The customer satisfaction index is considered by the company one of the main strategic drivers that is likely to affect business results.

In the last five years, the company implemented different methods to gather and analyse the level of service perceived by the customer base. In particular, the company assesses the customer satisfaction index based not only on internal surveys, but also on external analysis done by specialised companies.

The customer satisfaction index is analysed on the basis of the data collected every day. In particular, a sample of 500 customers, that called the day before the call center, is selected and contacted to verify their level of satisfaction about the service provided. As result of such analysis, on a monthly basis, a report is produced <sup>1</sup>. It includes not only the customer satisfaction index, but also the main reasons of the calls done by clients (e.g., request of information vs complains).



**Figure 1 – Customer Satisfaction Index of Gold customers**

As it is possible to observe from figure 1, in the last three years the customer satisfaction index related to “Gold” customers shows a slight decline characterised by several oscillations. Some of

<sup>1</sup> The customer satisfaction index is an index measure that goes from 0 (Min) to 100 (Max).

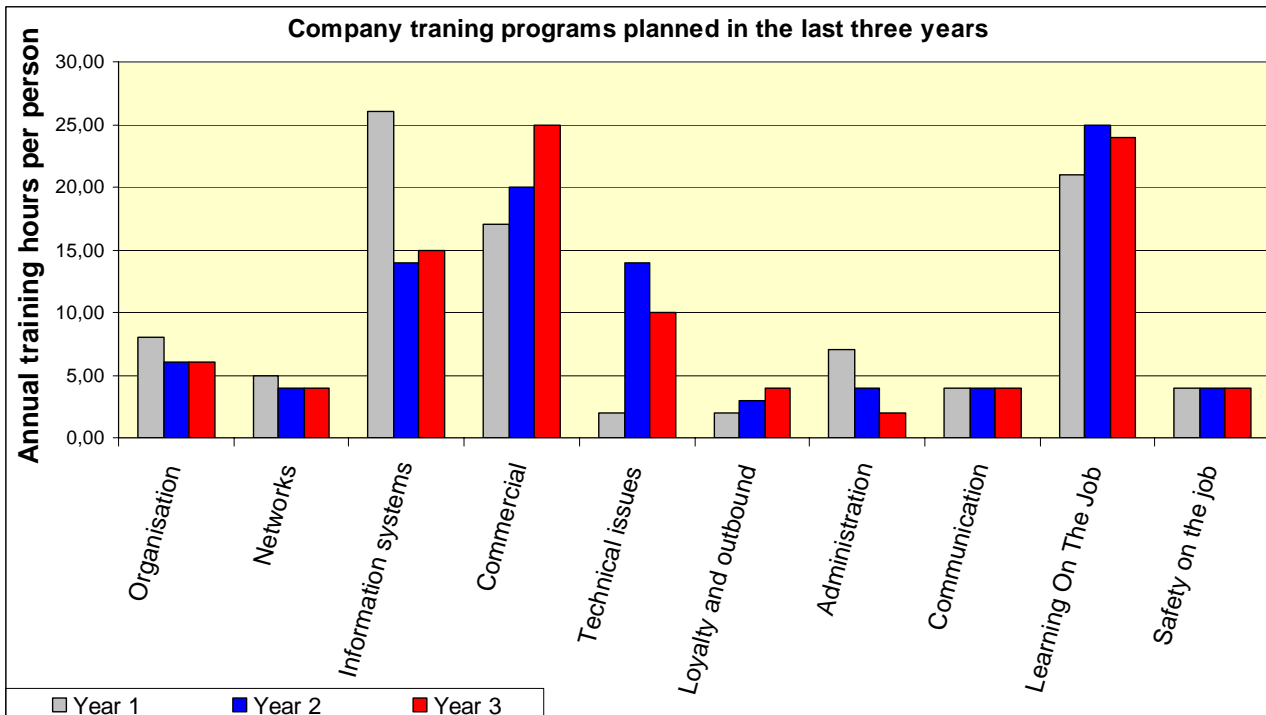
these peaks have been justified by the company due to temporary failure of the information systems. However, there wasn't a full consensus among company personnel involved in the project about the real phenomena that caused both oscillations and decline recorded by the customer satisfaction index in the last three years. Another repeated cause referred to competitors' commercial policies.

## **2.2. The company human resources development policy**

The management of company pays particular attention to human resources investments, as personnel has been recognised as one the most important strategic asset to be successful in the mobile-telecom industry.

The human resources policy is differentiated for temporary or permanent call center agents. In fact, temporary workers receive an initial training and a period of training on the job, but they do not periodically participate, as their colleagues do, to other continuous training initiatives. In the last three years, although the company decided to hire a growing number of temporary workers, the training policy didn't change.

In the last three years, the planned annual length of human resources training programs has been set around 98 hours per each call center agent. These programs cover different areas, such as Organisation, Networks, Information systems, Commercial and Technical issues, Loyalty and outbound, Administration, Communication, Learning On The Job and Safety on the job. Most of these programs referred only to full and part time permanent employees. It is possible to observe from figure 2 that training hours devoted to information systems have been strongly reduced and commercial skill development programs have been increased.



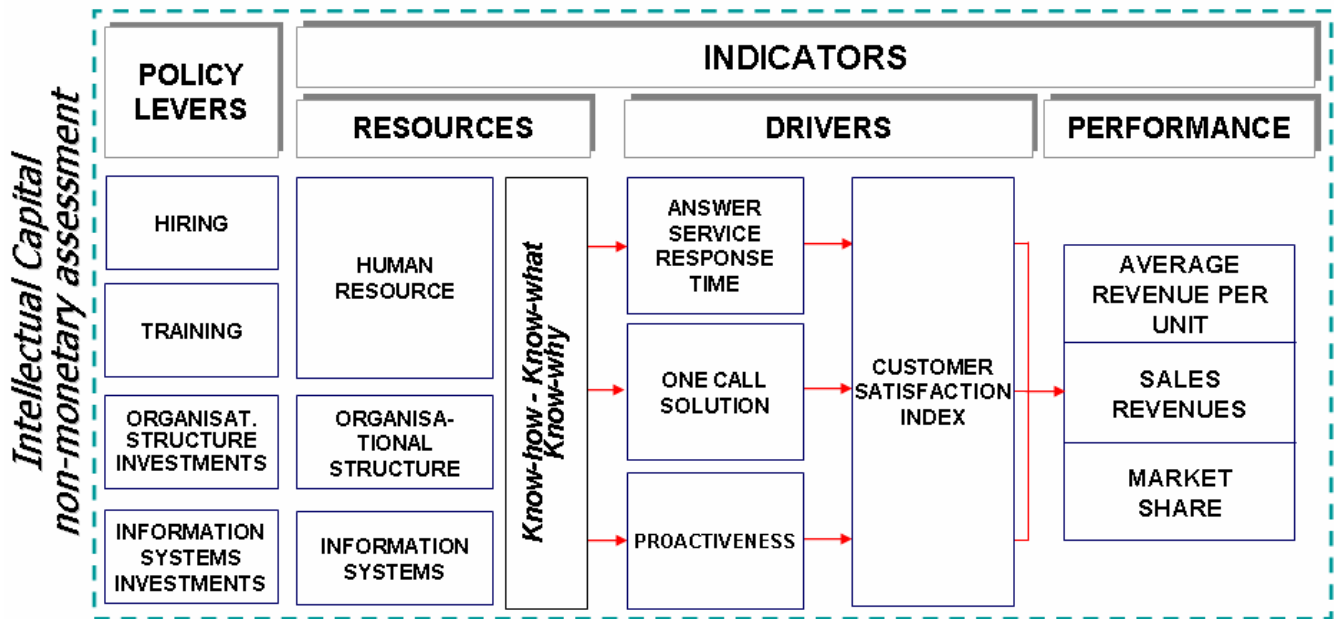
**Figure 2 – Human resources training programs planned by the company in the last three years**

In fact, in the last three years, to favour the ability of the call center agents to sell add value products, the company decided to promote training programs oriented to increase agents' commercial and sales competences rather than technical and administrative knowledge.

### **3. A suggested framework to investigate human resources and organisational investment policies impact on customer satisfaction index and company performance**

The method here adopted to investigate how human resources and organisational investment policies directly impact on customer satisfaction index and indirectly on company performance is the result of applied researches previous done (Bianchi and Bivona, 2001; 2005). The suggested framework tries to distinguish the impact of investment policies (human resources and information and organisations systems) on those strategic resources, which in turn affect drivers and outcome performance indicators.

The framework for such analysis is provided in figure 3.



**Figure 3 - A conceptual framework for Intellectual Capital non-monetary assessment**

Figure 3 shows how different primary strategic assets embodying business knowledge are built as an effect of hiring, training, organisational and information systems investments.

On the basis of the analysis conducted with the personnel of the company, it has been remarked that investments in human resources (hiring and training), organisation and information sub-systems may enable the organisation to build up strategic resources related to business knowledge, i.e., human resources knowledge and competences, and information and organisation systems quality. Such resources are also indicated in literature as *know-how*, *know-what* and *know-why*. In fact, the concept of knowledge is not only referred to individuals' or business' *know-how*, i.e., the attitude to find proper means to achieve pursued goals. It can also be related to other two dimensions: the *what* and *why*. The concept of *know-what* refers to the attitude to detect specific subjects or issues on which to be focused (Kogut and Zander 1992). The concept of *know-why* is, instead, referred to the understanding of cause and effect relationships between issues and events related to business performance, as a result of a learning process which shapes the way of thinking of individuals and the company (Quinn *et al.* 1996; Nonaka 1991).

Business knowledge (or *know-how*, *know-what* and *know-why*) is likely to affect performance drivers, such as *Answer Service Response Index*, the so called *One Call Solution* and *Proactiveness indexes* which in turn can influence *Customer Satisfaction index*.

The first driver (*Answer Service Response Index*) refers to the percentage of calls answered compared to the volume of call received in a call center, in a given period of time.



The second driver (*One Call Solution*) is related to the ability of call center agents to solve customers' problems just during the same call. It has been remarked by company personnel that the success of the *One Call Solution* is strongly related not only to the level of agents' knowledge and competences, but also to: a) procedures adopted in the call center; b) information systems efficiency and, finally, c) level of customer's problems complexity.

The third driver (*Proactiveness*) shows the ability of the agents to be successful in proposing and selling new services that may be helpful for the customers. Such activity is likely to produce benefits for both customers, who are informed about new services, and company, as it may increase the average revenue per unit.

An increase in the above three performance drivers encourages a growth in customer satisfaction, as company customers may perceive a high level of service and a high level of attention about their needs. *Customer Satisfaction index* in turn is likely to influence three synthetic outcome measures, such as *Average Revenue Per Unit*, *Sales Revenues* and *Company Market Share*.

This preliminary framework helped making explicit decision maker mental models about their perceived relationships between policy levers, resources, performance drivers and financial indicators. Once the frame commented above was clearly shared with all company people involved in the research, the next step aimed to explore their perceptions about causal and effect relationships related to human resources, information and organisations subsystems investments, customer satisfaction index and company performance indicators.

#### **4. A tentative feedback analysis of the relationships between strategic resources, performance drivers and performance indicators**

The framework provided in figure 3 shows the relationships between policy levers (human resources, information and organisational investments), strategic business resources (Intellectual capital resources), performance drivers (Answer Service Response Time, Once Call Solution, Proactiveness and Customers Satisfaction Index) and indicators (Average Revenue per Unit, Sales Revenues and Market Share) that enables company decision makers to understand and learn how their decisions are likely to affect company results (Morecroft 1994).

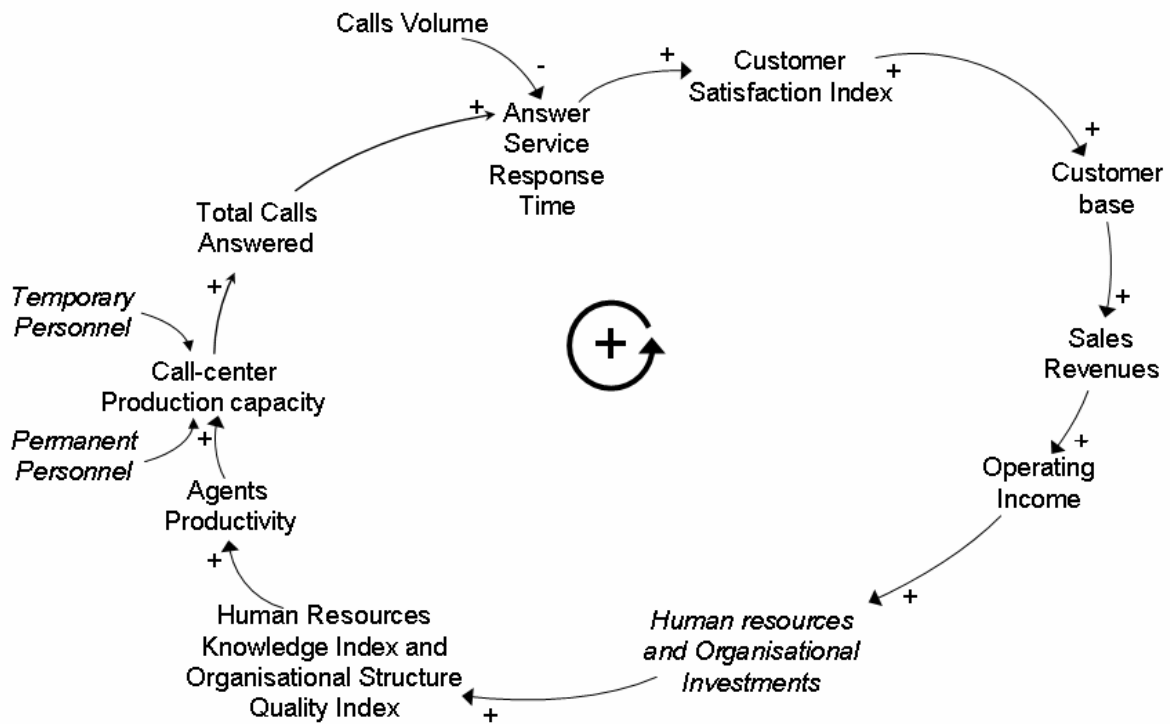
However such a scheme does not capture virtuous or vicious circles that may fuel or tackle business growth on one side, and potential limits to growth that may affect company development over time on the other side. Furthermore, it does not take into account delays that may occur between decisions and related effects. As a consequence, decision maker may misunderstand unexpected short term effects originated by their applied policies (perceived as ineffective in a bounded period

of time, but successful in a longer time horizon) and erroneously decide to change their current decisions.

In order to make also explicit the main feedbacks structure affecting *Customer Satisfaction Index* perceived by decision makers, several group model building sessions have been conducted with the involvement of company personnel. Most of the people involved in the sessions agreed on the fact that – due to the peculiarity of the industry – investments in human resources and information and organisation systems may increase the level of agents' competences and their productivity in dealing with customer requests. These phenomena can be expressed through the use of two synthetic index variables, such as *Human Resources Knowledge Index* and *Organisational Structure Quality Index*. Both investments are able to foster agents' competences development and to increase agents' productivity <sup>2</sup>. A raise in such indexes is likely to positively affect call center production capacity, which can be expressed in terms of call answered. Such production capacity can be also increased through new hired employees. A higher level of production capacity enables the call center to increase the number of total calls answered in a given period of time and consequently, all conditions being equal, the answer response time (i.e., number of calls answered divided by number of calls received in a given time frame). A high answer service response time also implies a growth in customer satisfaction index, which in turn may generate a positive word of mouth and a raise in company customers. A larger customer base implies a high volume of sales revenues and, all conditions being equal, a growing operating income. Such financial resources may enable the company to fuel such a positive phenomenon by making further human resources and organisational investments (see positive feedback loop in figure 4).

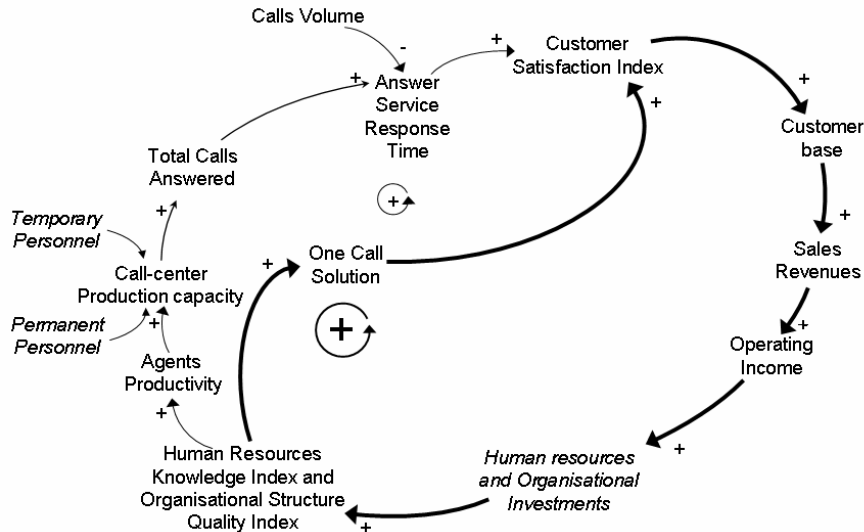
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<sup>2</sup> It is worth remarking that the average training programme length affects agents' productivity. In fact, a too short training programme length (if compared to the industry standards) could not be sufficient to adequately support agents' knowledge level development. As a consequence agents' productivity will tend to reduce as well as customer service.



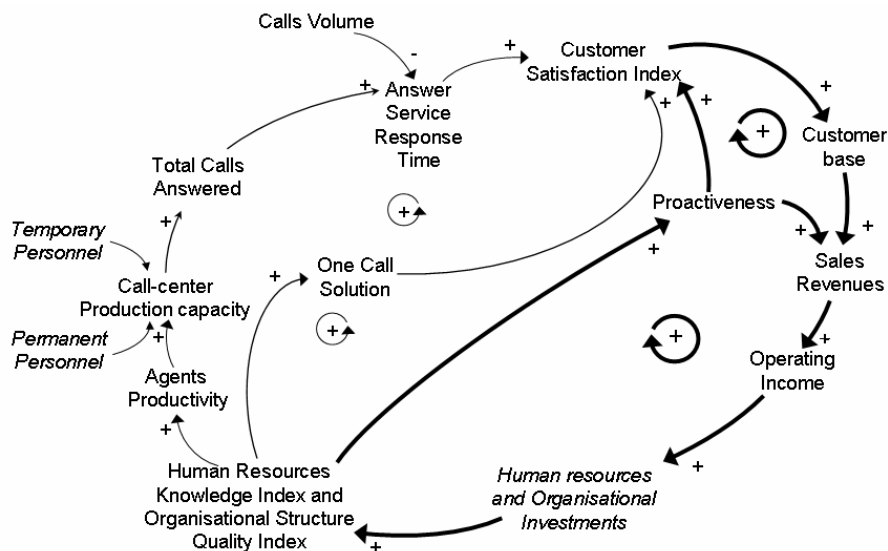
**Figure 4 – Positive feedback loop related to the effects of human resources and organisational investments on Agents Productivity and Customer Satisfaction Index**

These investments in human resources and information and organisation systems can also contribute to give rise agents ability to solve customers’ problems in just one call. Such phenomenon is indicated as *One Call Solution*. In other words, as human resources knowledge level and information and organisation quality index improve, call center agents can be more effective in solving customers’ claims. As a consequence, an increase in one call solution can enhance customer satisfaction index and amplify company customer base. An increase in the number of clients is likely to augment – through a raise in sales revenues and operating income – financial resources that can be invested in human resources and information and organisation systems and boost further business growth (see “bold” positive feedback loop in figure 5).



**Figure 5 – Positive feedback loop related to the effects of human resources and organisation investments on One Call Solution and Customer Satisfaction Index**

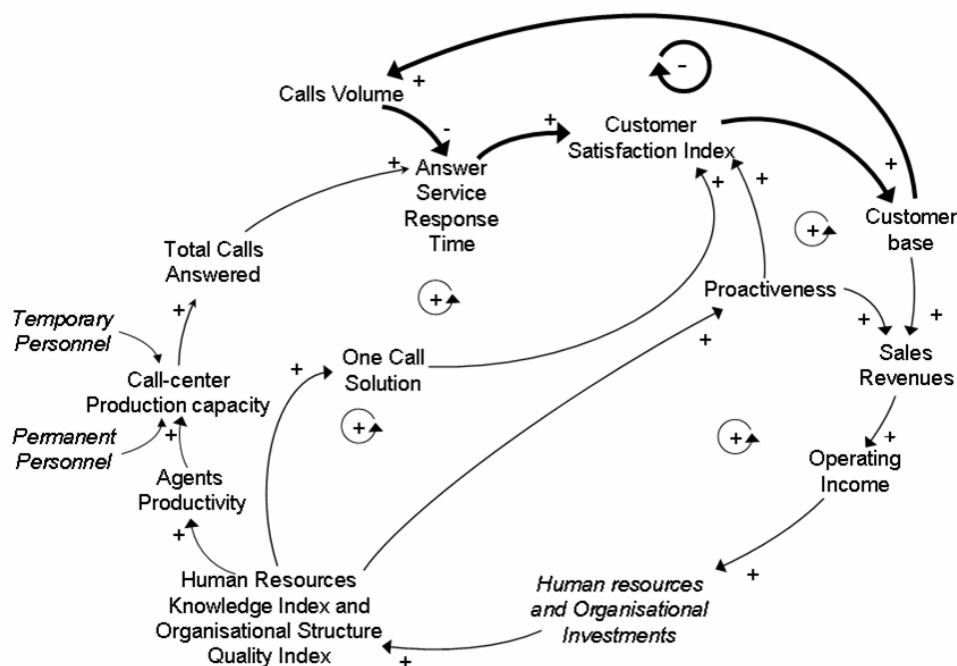
Finally, investments in human resources and information and organisation sub systems can also contribute to fuel two positive loops. In fact, these investments may foster agents *Proactiveness*, i.e., the ability of an agent to be successful in proposing and selling new services perceived by customers as helpful to satisfy their needs, which in turn is likely to disclose two phenomena. On one side, agents’ proactiveness may improve the customer satisfaction index and a development of company customer base. On the other side, it increases the average revenue per unit. In both cases, it favours two positive feedback loops that may foster business growth (see bold positive feedback loops in figure 6).



**Figure 6 – Positive feedback loops related to the effects of human resources and organisation investments on Proactiveness and Customer Satisfaction Index**

The above commented positive feedback loops may encounter some obstacles to company development.

In fact, as the customer base grows up calls volume also tends to increase. As a consequence, the answer service response time decreases, customer satisfaction index worsens and company customer base falls down. A reduction in company customer base generates a lower calls volume that in turn improves the answer service response time (see bold negative feedback loop in figure 7). However, a better answer service response time gives rise to customer satisfaction index. This negative feedback loop may also contribute to explain the oscillation recorded in customer satisfaction index.

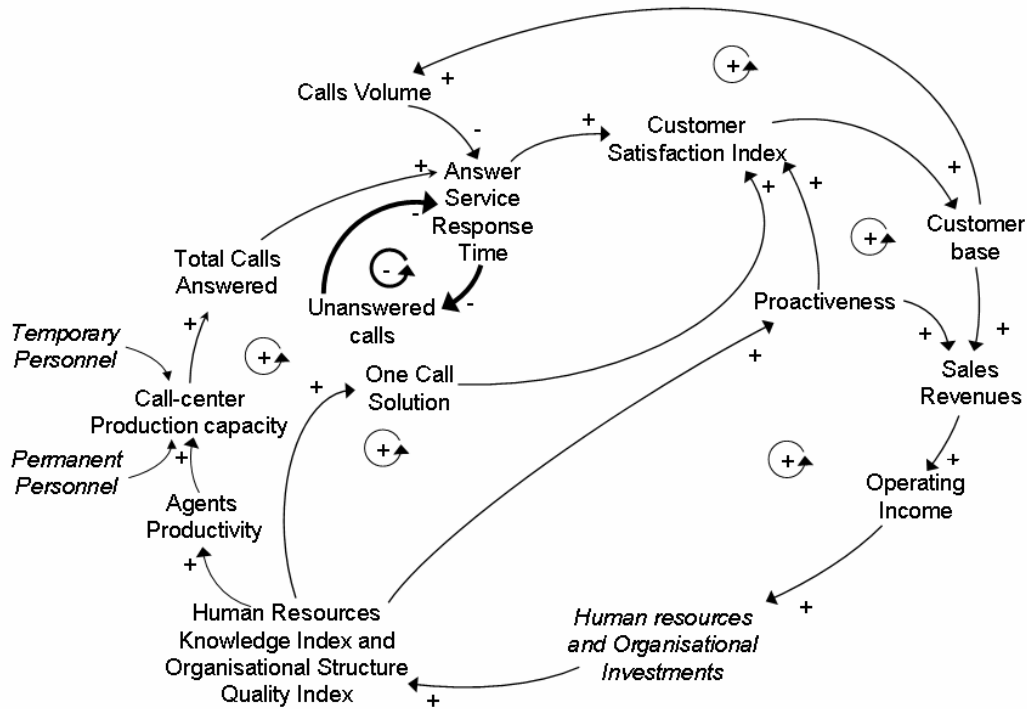


**Figure 7 – Negative feedback loop related to the effect of Calls volume increase on Customer Satisfaction Index**

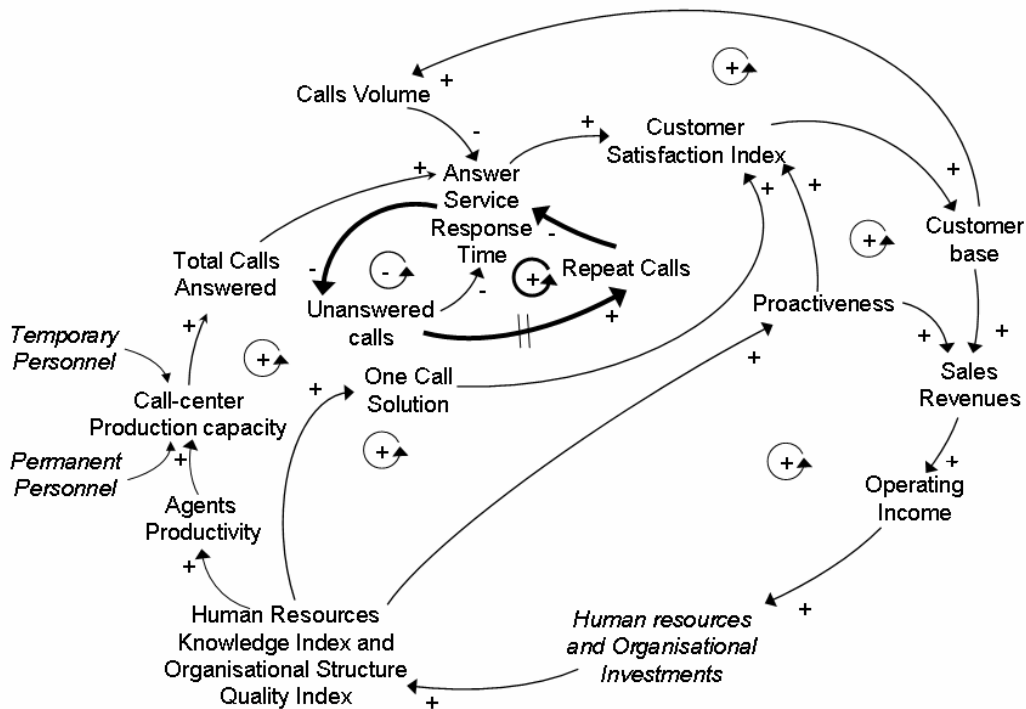
Furthermore, an increase in calls volume decreases the answer service response time and gives raise the number of unanswered calls or first calls abandoned (i.e., customers who abandon the call), which in turn – in the short term – generates a positive effect on the answer service response time (see bold negative feedback loop in figure 8).

However, company customers who decided to do not wait holding the line for a long period of time – in the medium-long term – will repeat the phone calls and, as a consequence of the increase in the incoming calls volume, the answer service response time goes down. It follows that other customers may abandon the call as the waiting time increases. Subsequently, they will repeat the call again. The effects of such vicious cycle (see bold positive feedback loop in figure 9) decline only when a

reduction of the answer service response time generates a significant decrease in the customer satisfaction index and a reduction in the company customer base.

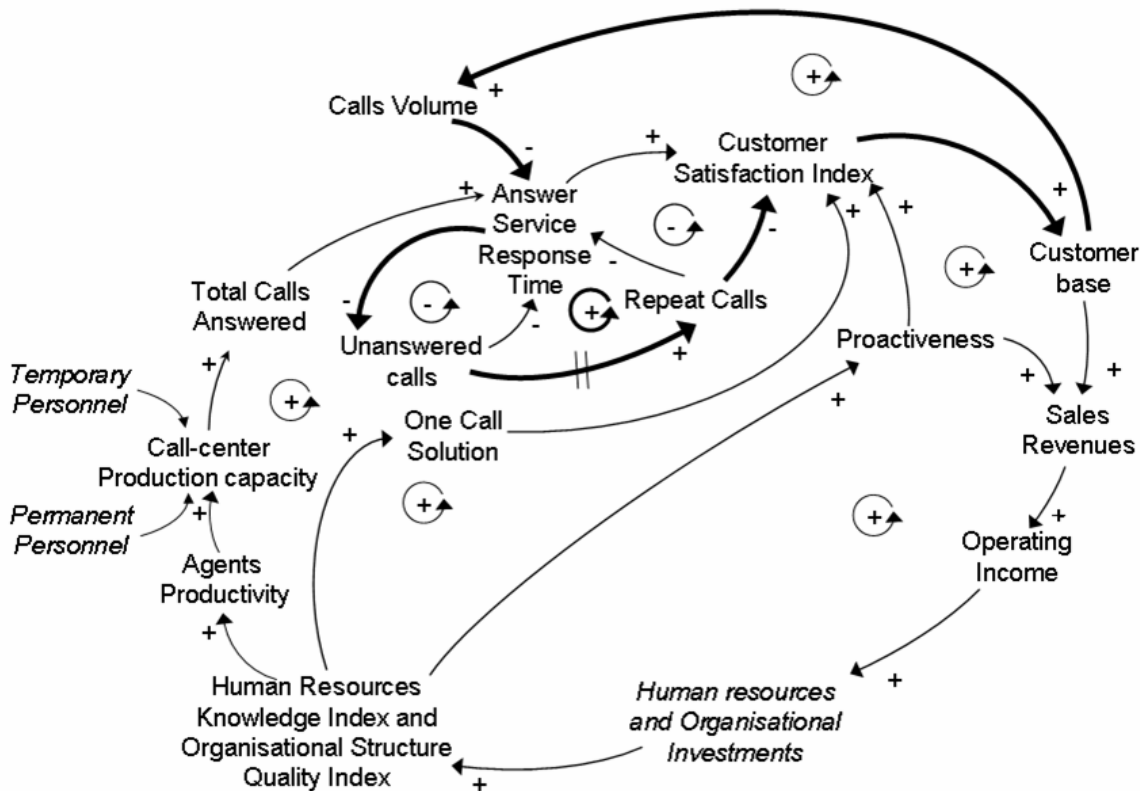


**Figure 8 – Negative feedback loop related to the effect of unanswer service response time and Customer Satisfaction Index**



**Figure 9 – Positive feedback loop related to the effect of unanswer service response time and Customer Satisfaction Index**

Finally, an increase in the number of repeated calls produces in a client a perception of a poor customer service. As a consequence, the company customer base falls down and the volume of calls received can restore the answer service response time to a sustainable level (see bold negative feedback loop in figure 10).



**Figure 10 – Negative feedback loop related to the effect of repeats calls on Customer Satisfaction Index**

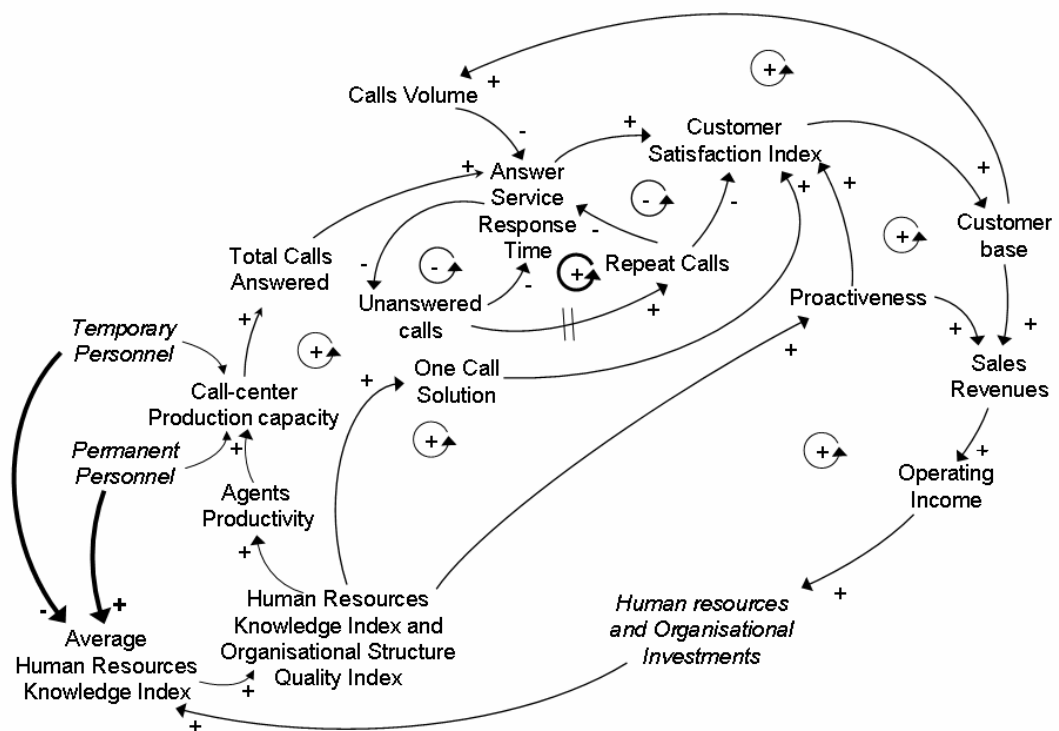
In order to properly manage the incoming calls volume and to provide to customers a satisfactory level of service, the company may tackle the above commented phenomena through both human resources and organisational investments, but also by hiring new call center agents.

On this last concern, it is worth remarking that in the last three years the company has dimensioned the call center personnel sufficiently enough to deal with the calls volume generated by the current customer base. However, it is worth to note that in this period of time, a growing number of permanent agents – who decided to resign – have been replaced by temporary workers. This was also due to the financial benefits perceived by the company, in terms of the low salary and training costs of temporary agents.

On the basis of the feedback loops structure outlined in figures 10, although the decision to replace permanent with temporary agents allowed the company to also increase call center production capacity, in terms of calls answered, it produces an unperceived effect on the average human

resources knowledge index. In fact, even though temporary agents can provide a high level of productivity in dealing with customers calls, they have a low level of knowledge that reduces the average human resources knowledge index (see figure 11). This phenomenon also occurred because the company provided temporary workers – due to their very short period of work – only an initial training.

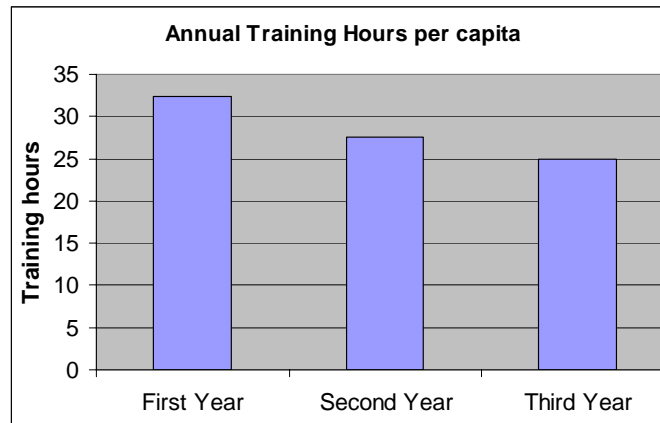
A lower human resources knowledge index produces negative effects on both one call solution and agents' proactiveness, which represent two fundamental drivers of customer satisfaction index and sales revenue increase.



**Figure 11 – Relationships between temporary and permanent agents on human resources knowledge index**

The current research also allowed in making explicit the real causes of the growing number of permanent agents who decided to resign. In particular, it emerged that such phenomenon was mainly due to the decision taken by the company, in the analysed period, to strongly reduce the training time period provided to permanent agents. As it is possible to observe from figure 12, in the last three years the average annual training hours per agents is around 30 hours, less than 1/3 of the planned hours (98).





**Figure 12 – Annual Training hours per capita provided by the company in the last three years**

The above commented feedback loops structure provided the conceptual framework for the development of an Interactive Learning Environment (ILE) (Sterman 1992; Maier and Grossler 2000; Davidsen 2000), based on System Dynamics (SD) and accounting models, aiming to support call center top management to better frame and manage business knowledge variables (Winch 2001) impacting on customer satisfaction index and business performance indicators.

Facilitated simulation sessions (Vennix 1996) with the involvement of company personnel have been run to support them to understand the interaction between the identified feedback loops and how their planned decisions may influence performance indicators, in the short and medium-long term.

Such an approach is intended to stimulate decision makers' capability to better frame cause-and-effect relationships underlying business knowledge and company performance indicators behaviours. It also aimed to match the SD view to the traditional static accounting perspective, according to which human and organisational investments are seen as discretionary costs on which to operate – when needed to come up with positive operating income – relevant reduction, without a proper functional analysis of such investments on business performance over time.

## **5. An Interactive Learning Environment: the structure of the simulator**

The simulator consists of four main sectors:

- an *input window*, which allows the user to customise the simulator, according to different issues, such as: the initial number of agents in each training stage (classroom vs. on-the-job training) or knowledge level (permanent vs. temporary workers), normal training programme length in the industry, normal organisational investments obsolescence time;
- a *control panel* embodying main policy levers (e.g. monthly permanent and temporary employees to be hired, new hired training programme length, information system and

organisational investments, permanent agents overtime) and scenario options (e.g. concerning market growth rate);

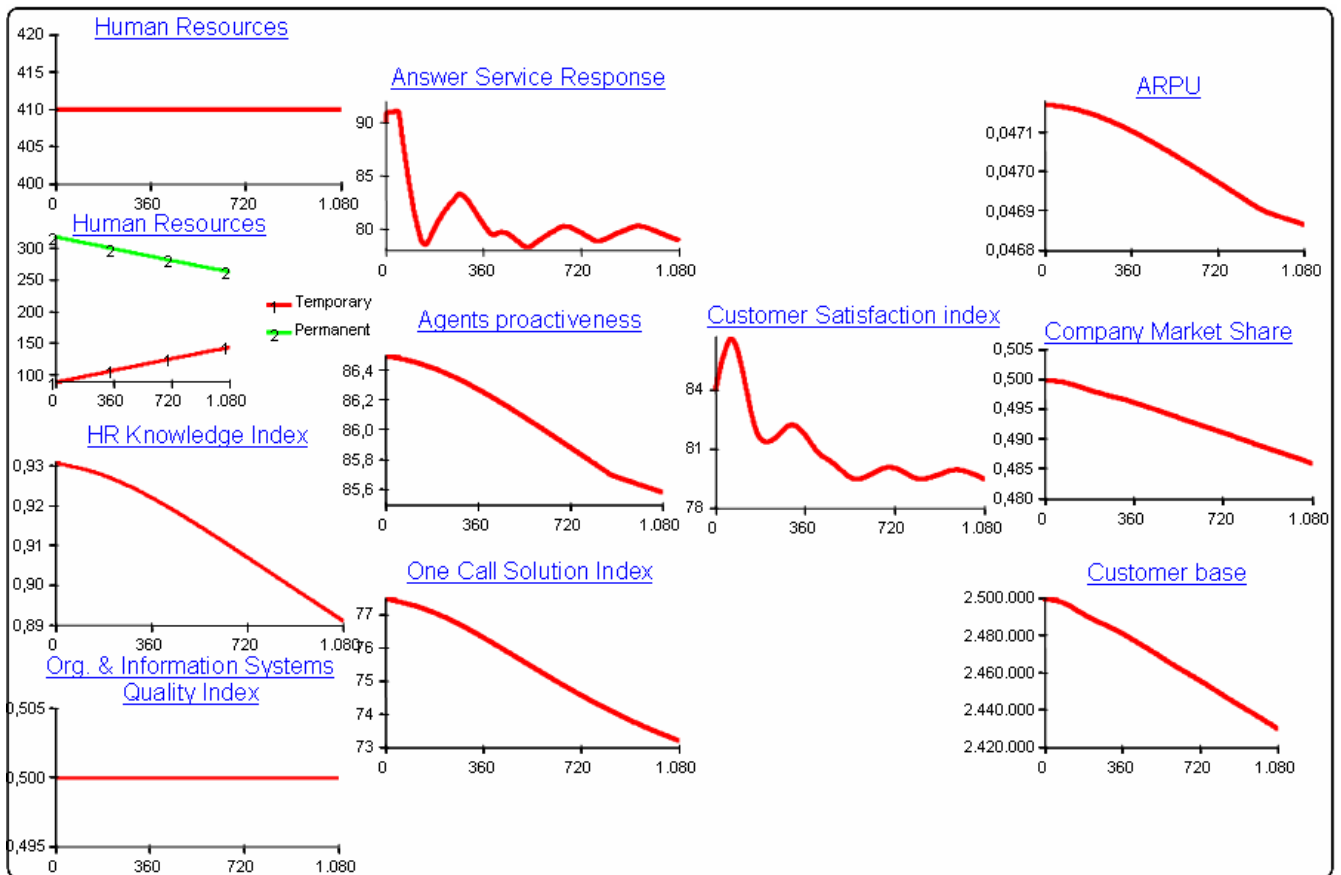
- *reports* including financial, income, and cash flow statements;
- *graphs* including main variables impacting on human capital, structural capital, company performance drivers and indicators.

### **5.1. An ILE (continued): an analysis of the past key-variables behaviours and two alternatives scenarios**

In order to validate the SD model developed, validation tests have been conducted on both the variables relationships underlined the structure of the model and the sensitivity of key-variables behaviour under different circumstances (Forrester and Senge, 1980). Furthermore, it has been also compared the behaviours of some business key-variables originated from the SD model and company past data. Even though the differences between simulated and actual results have not been verify in statistical terms, company actors proved to some extend to be confident on the ability of the SD model to replicate the analysed system.

In order to show how the simulator can try to support call center top management to better frame and manage variables impacting on customer satisfaction index and business performance indicators, the base run and two scenarios will be now commented.

Figure 13 shows the main variables resulting from the simulator aimed to capture past business results. In particular, the simulated period covers last three years (time is expressed in days).



**Figure 13 – Company resources, performance drivers and indicators related to the base run**

From figure 13 emerges a decline in permanent workers and a growth in the number of temporary call center agents. Such phenomenon has been already discussed in the case-study and it is a result of a company policy. In the observed period, human resources knowledge index also shows a reduction mainly due to a shorter personnel training program development compared to the industry standard. This also generates a high personnel turnover not only in temporary workers, but also in permanent employees.

As the total number of human resources does not change and the customer base declines, the answer service response in the first year falls down and then remains stable. Agents' proactiveness and one call solution indexes instead follows the same path of HR knowledge index over time. As a consequence, customer satisfaction index shows a decay and recurrent oscillations. On the basis of these results, business performance indicators, such as average revenue per unit, market share and customer base, turn down.

In order to validate the outcomes derived from alternative scenarios and compared them with the base run results, it has been hypothesised the same business variables initial conditions and a normal market growth rate. Furthermore, to better understand the effects generated by human resources hiring and training policies, investments in information and organisation are kept normal in both scenarios.

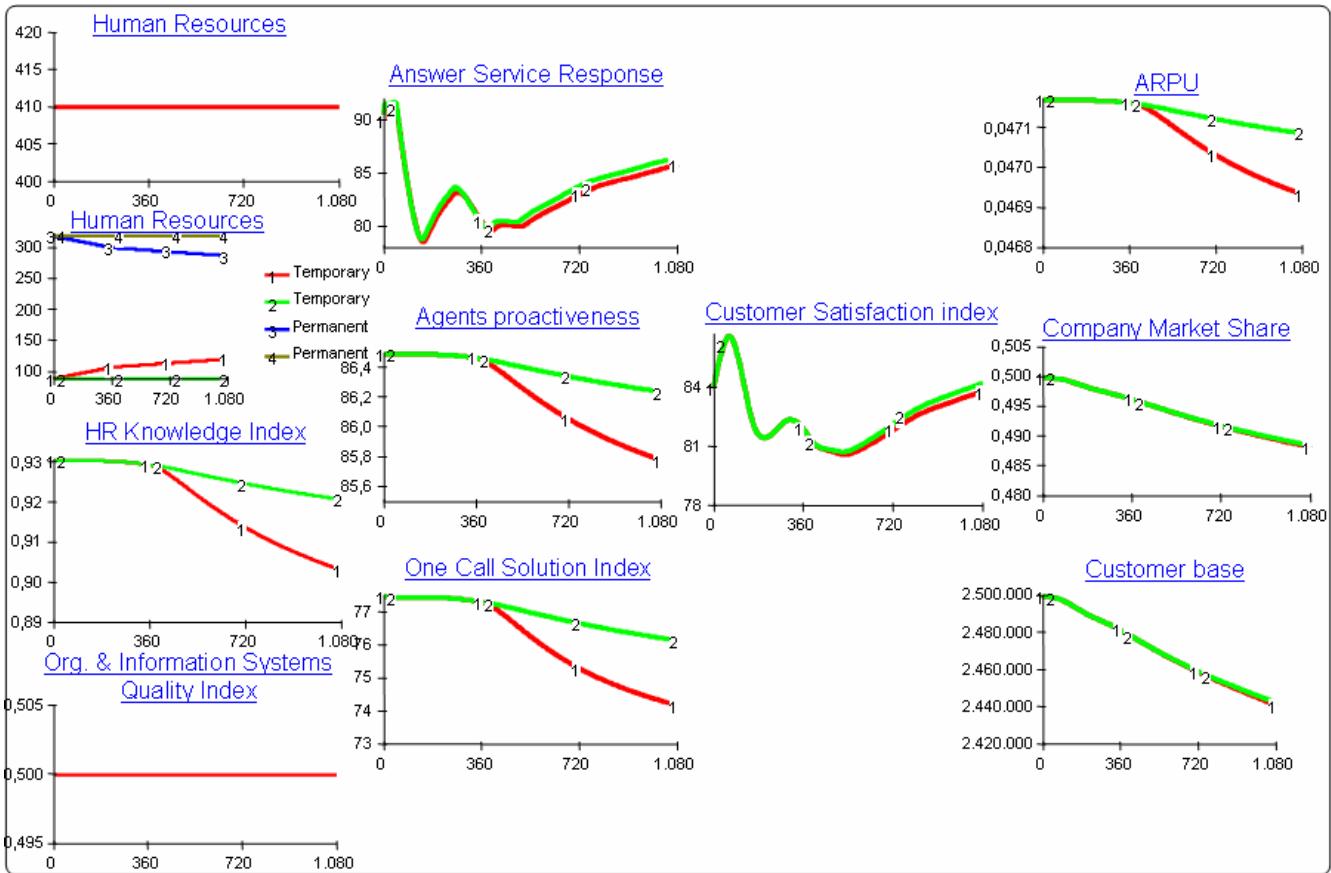
## **5.2. Scenario 1: a myopic human resources developments policy**

According to this scenario (see lines 1 in figure 14), the company adopts the hiring policy used in the past years. In other words, a number of permanent employees are replaced by temporary agents (see temporary and permanent human resources lines 1 and 3 in figure 14).

In order to distinguish the effects of the training policy, after the first year human resources training length is increased to the normal industry standard. Such a raise in training generates a slighter decline in HR knowledge index. In fact, if one compares HR knowledge index lines 1 reported in figure 14 with the dynamics portrayed in figure 13, it is possible to note in scenario one a higher values at the end of the three simulated years.

Company answer service response after the first year significantly improves and, as the number of calls answered growth up, customer satisfaction index also boosts. It is worth to note that scenario one generates better results than those produced by past company policies (base run). In fact, customer satisfaction index shows a growing trend rather than a decline and average revenue per unit, market share and company customer base portray higher vales compared to past results.

This scenario is titled as myopic policy because by recurring almost exclusively to new temporary workers, event thought the company is able to reduce operating costs on one side, and to provide clients a reasonable customer service on the other side, human resource knowledge level still declines. As a consequence, low agents proactiveness and ability to solve in one call customer problems do not allow the company to tackle profitability decline (i.e., the reduction in average revenue per unit).



**Figure 14 – Company resources, performance drivers and indicators related to scenario one (line 1) and scenario two (line 2)**

### 5.3. Scenario 2: a sustainable long-term oriented human resources developments policy

Scenario two implies market growth rate and organisational investments assumptions of the previous commented scenario.

In this case, it is hypothesised that the company hires a number of permanent and temporary agents equal to those that resign. As previously done in scenario one, after the first year, human resources training length is increased to the normal industry standard.

The adopted hiring policy allows the company to maintain the same number of permanent and temporary agents over the three analysed years. Further, a raise in HR training development programs stabilises the HR knowledge index. As a consequence, agents' proactiveness and one call solution indexes stopped their decline, likewise the average revenue per unit. In fact, agent ability to be successful in promoting and selling new services to customers strongly contribute to foster the average revenues per clients. This implies that the higher costs sustained by the company to hire and train permanent call center agents could not necessarily influence business profitability, as well qualified employees could stimulate clients to subscribe new services and to increase company sale revenues.

### **Concluding remarks and further researches**

This paper tries to show the potential impact of an ILE based on a System Dynamics model to support call center top management to better frame and manage variables impacting on customer satisfaction index and business performance indicators.

Human resource and organisational expenditures are often budgeted on an incremental basis, as discretionary costs. They are planned without a closer look on how the interaction between business knowledge and other strategic assets will allow the firm to improve its performance and achieve a sustainable growth in the long run.

Facilitated simulation sessions (Vennix 1996) with the involvement of company personnel have been run to support them to understand the interaction between the identified feedback loops and how their planned decisions may influence performance indicators, in the short and medium-long term. Such an approach is intended to stimulate decision makers' capability to better frame cause-and-effect relationships underlying business knowledge and company performance indicators behaviours.

Further empirical research will be necessary to experiment the contribution of the methodology adopted in the paper to top managers' learning processes, in both educational and planning contexts. Such analysis could generate more insights to be included in the developed ILE and to build new ILEs based on case-studies, aimed to foster decision makers' learning on other business problems related to intangibles assets management.

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