Modeling Dynamics of gaining expertise in a call center

Abstract

Knowledge and expertise are the most precious assets of a call canter, which enables the staff to serve the customers on high quality. As call centers have a tense working condition, staff are likely to leave this job to a better position in the company or outside, so a real challenge for the managers of these centers is first to moderate the working condition , and then to cope with the high rate of turnovers. This article aims to the last, by modeling the cycle of training a new staff and building experiences, which helps him to serve the customers. By entering the risk of leaving job, this model is objected to find scenarios to reduce the costs of turnover.

Keywords: call centers, knowledge Management, expertise

1. Introduction

One of the most important elements of CRM (Customer Relationship Management) concept is call-center, as customer contact point (or touch point). (Fickel, 1999)Usually IT-related technologies (such as fax, telephone, Email or automatic dispatching and response systems) are used to provide appropriate response (or support) for the customers. CRM aims to provide this service by integration of all other support and contact channels.

In most CRM models, KM (Knowledge Management) has been pinpointed as one of the most important critical success factors in the long term.(Eckerson and Watson, 2000) Infact KM tools and strategies could be used to enrich the CRM practices in most cases. Many efforts have been concentrated on implementation of KM principles in CRAm, especially Call Centers.(rasooli and albadvi,2007) but as these centers are really various, approaches have been diversified. In this article, author has concentrated on KM view of a call center, which includes the experience and knowledge building for staff during working period in call center. This has been done by building a dynamic model, to capture the current situation of a real call center, which is aimed to support the customers of a software company in Iran. This

model has been used to test some of desired solutions, and then has been used to propose a better policy.

2. Literature Review

In this session, two concepts are examined more carefully. One is about the nature of knowledge and experience, and the other is the nature of call centers, discussing the necessity of knowledge management.

2.1. Knowledge and Experience Management

Although there is no agreement about the meaning of knowledge, during years of knowledge management appearance, delegates of different philosophies, has added their own definition of knowledge to this field. Knowledge as a structure or an atom is defined as "systematical or intelligent understanding that is used for doing effective actions in direction of system objectives" and in contrast definitions such as "justified correct idea" (Nonaka and Takeuchi,1995) and "complete usage of data and information together with skills, eligibilities, beliefs, cognitions and motives of organization's manpower"(Kalseth, 1999), have used other points of view for defining knowledge. Without any doubt, there is a close relation between experiences and knowledge. For instance we can consider experiences as what refines knowledge, or as a special (purified) kind of knowledge. Knowledge and experience both are considered as spiritual assets (Sun and Finnie,2005), although they are treated differently.

Davenport and Prusak define knowledge as: "Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information." (Davenport et al, 2000) According to them, Experience is a part of knowledge that is in close relation with the function of human's mind.

Although each kind of research in context of knowledge without considering experiences appears to be meaningless, giving exact definition of experience is extremely difficult. Generally, experience can be defined as previous knowledge or as skills one can attain in his

or her own daily life.(Bergmann and Schaaf,2003) Experience is previous knowledge which is obtained by solving faced problems for which successful solution has been provided.

Knowledge processing is only a fundamental prerequisite for solving problems and having experience is also necessary for repelling actual difficulties. Storing knowledge is a necessary condition for storing experiences. Knowledge and experience both are abstractions at different level. Experience is more abstract than knowledge, because it is often in the form of meta-knowledge. Transferring people's experiences and turning them into knowledge for other people was always an important problem. Storage and analysis of knowledge can be reduced in creating new experiences (Bergmann and Schaaf,2003).

2.2.Call centers and their functionality

Most organization are using call centers as the main channel for interaction with their customers. This centers have many benefits such as increasing efficiency, increasing working/serving hours, minimizing costs while increasing flexibility which caused expansion of business. The main challenge of these centers is to provide timely and accurate information(Robertson,2002)

Call center association (Call Center Association,2008) defines call centers as "managed physical or virtual operations in organization which a group of people are mostly working with telephone, fax or computer. Sometimes staffs have not special skills, which have to prepare suitable response in a short period. However most call centers use high skilled workers which work under special service level agreements (SLA). (Rasooli and Albadvi,2007)

Robertson (Robertson,2002) believes that high turnover and tensed working environment are the most challenging factors for call centers. The turnover is about 26% for full time personnel and about 33% for part time staff.

In most CRM models, KM has been involved in order of decreasing cost and improving the quality of service for customer. (Demerest, 1997). In fact for developing a reliable relationship with customer, support should be customized by having the knowledge of his own needs. Most CRM methods not only mention the transactions' data, but also stores these data in databases and repositories, so they could be used to harvest knowledge. CRM

processes are almost mentioned as Knowledge intensive processes (Eppler et al., 1999) which knowledge flow management (- to the customer, and also –from the customer) is really crucial.

In call centers, it may happen that one staff is serving customer, or customers are using self service support. On each situation, some knowledge users should have access to the appropriate data , information and knowledge to provide instant correct and consistent answers. Not only collecting, quality issues and structuring efforts are necessary for converting information to the knowledge, but also human expertise is a vital element for making it usable. Therefore in call centers, staffs have a crucial role, and the role of IT tools for supporting their knowledge and expertise can not be ignored.

This article focuses on the human expertise, and building it through the working time of a call center staff as an instant.

3. Model

This model is built to demonstrate the state of Staff's experience during working period in the company. Model is started by hiring staff, and ends when he quits, which would take about 3 years. the assumption is that he'd quit when the anxiety is more than his threshold.

The main part of the model is a state variable which demonstrates the expertise of a sample support staff(who is called the "agent" in the model). This variable shows a mix of experience, data and information which are consistent with the davenport's definition of knowledge. This pool could be filled either by formal training programs provided by the company (the rate variable named "training") or by serving the customer, which is consistent with this fact that experiences are generated by real problem solving, which in this case refers to customer service function. Sometimes company hires more professional guys (educated in the related academic fields) which makes the initial value of this stock to be higher, otherwise it is supposed to be 0 when a new staff is recruited. There is also a decreasing rate variable which is forgetting, which works always as a decreasing factor for the stock of knowledge, and its effects are prominent when the agent does not work as service provider (for instance on a working break)

When a new staff is recruited, he should be trained in order to get ready to serve to the customers. These trainings are demonstrated as a learning package in the model, as it is done in the company for the new staff. Other trainings are also provided during the work, as needed. The need is identified by comparing the agent expertise with the needed expertise (a balancing loop)

The expertise of the agent defines the level of service that he could provide for the customers. Basically there are 3 levels of expertise for the technical staff, which are assumed to be gained by a technician in 3 years. These levels are set to the variable named "desired quality of service" which indicates the expectations of the company. This makes the staff need to work and get updated, either by serving more challenging customers (learning by doing and learning from their peers during the job) or taking training courses offered by the training department of the company.

There is another stock variable assumed in the model as customers. It shows the customer assigned to the staff. This should be increased during the working age of the employee. If this number increases, the tension of employee increases, and he may leave the company. By serving them better, they got more satisfied, and bringing more customers for serving (the assignment of customers to the staff is done by a line manager, who balances the workload as well as assuming quality of service) as staff serve more customer, they have more chance of learning by doing , so they become more expert.

The whole model could be seen in figure1.

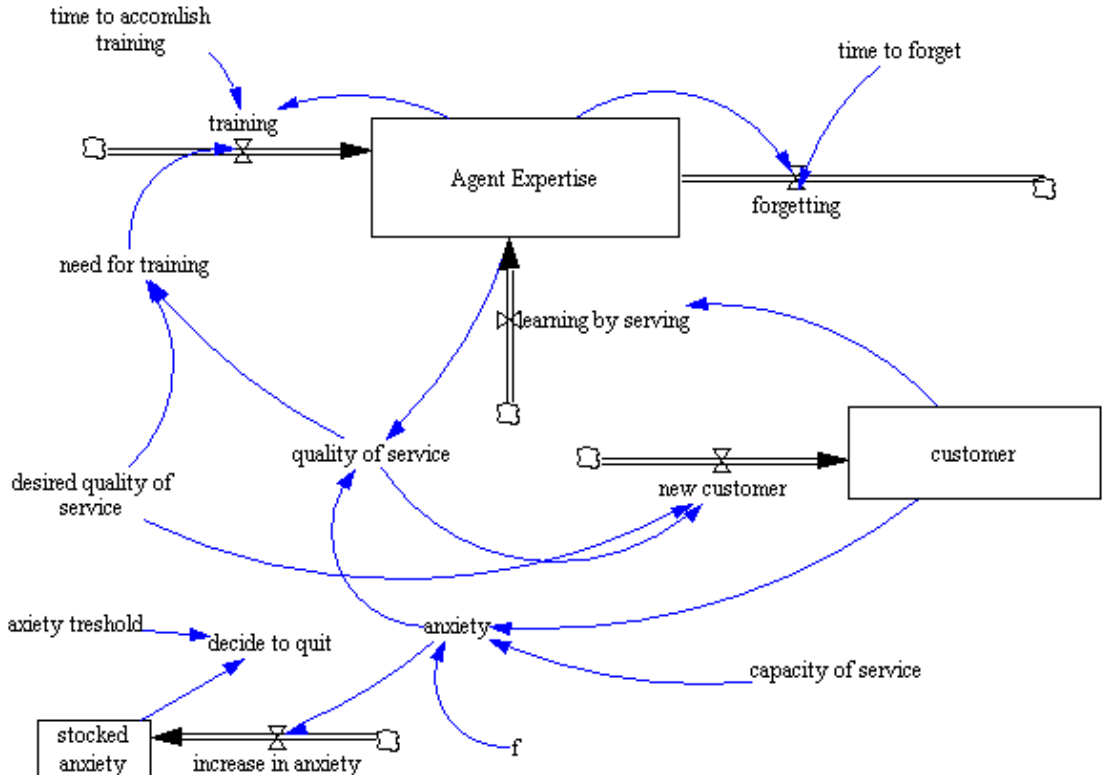


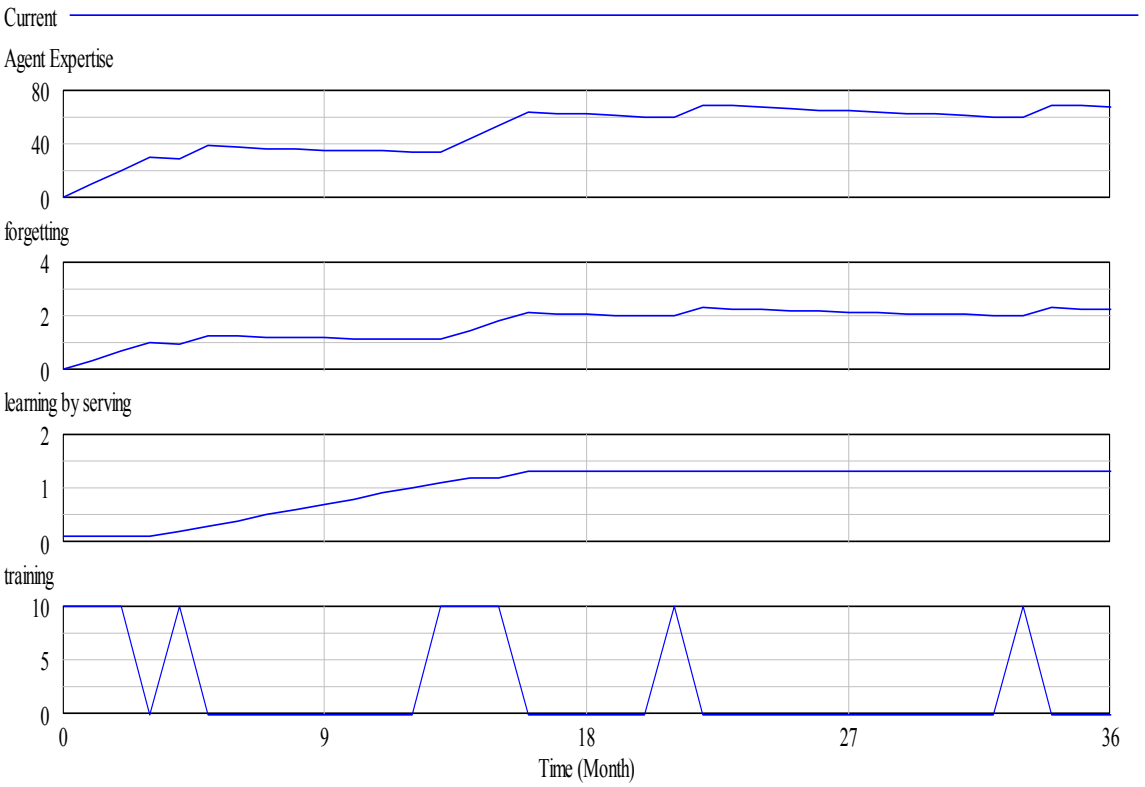
Figure 1- structure of model

4. Simulation and scenario testing

Some tests show that the model is consistent with the reality. First of all, Model has been built and tested partially. This included building the expertise stock and it's related rates first, and then adding the training loop (making all the other rates as constant variables set to zero) the second phase was making forgetting rate work. Then adding the customer assignment to work, makes the learning rate active. And at last, quitting the job has been added by considering the anxiety to the working condition. The results show that:

- The expertise of the agent is increasing gradually, at first the main reason is training, then it is completed by learning by doing, which is a result of increasing the quality of his work.

Figure2- simulation of model- current situation

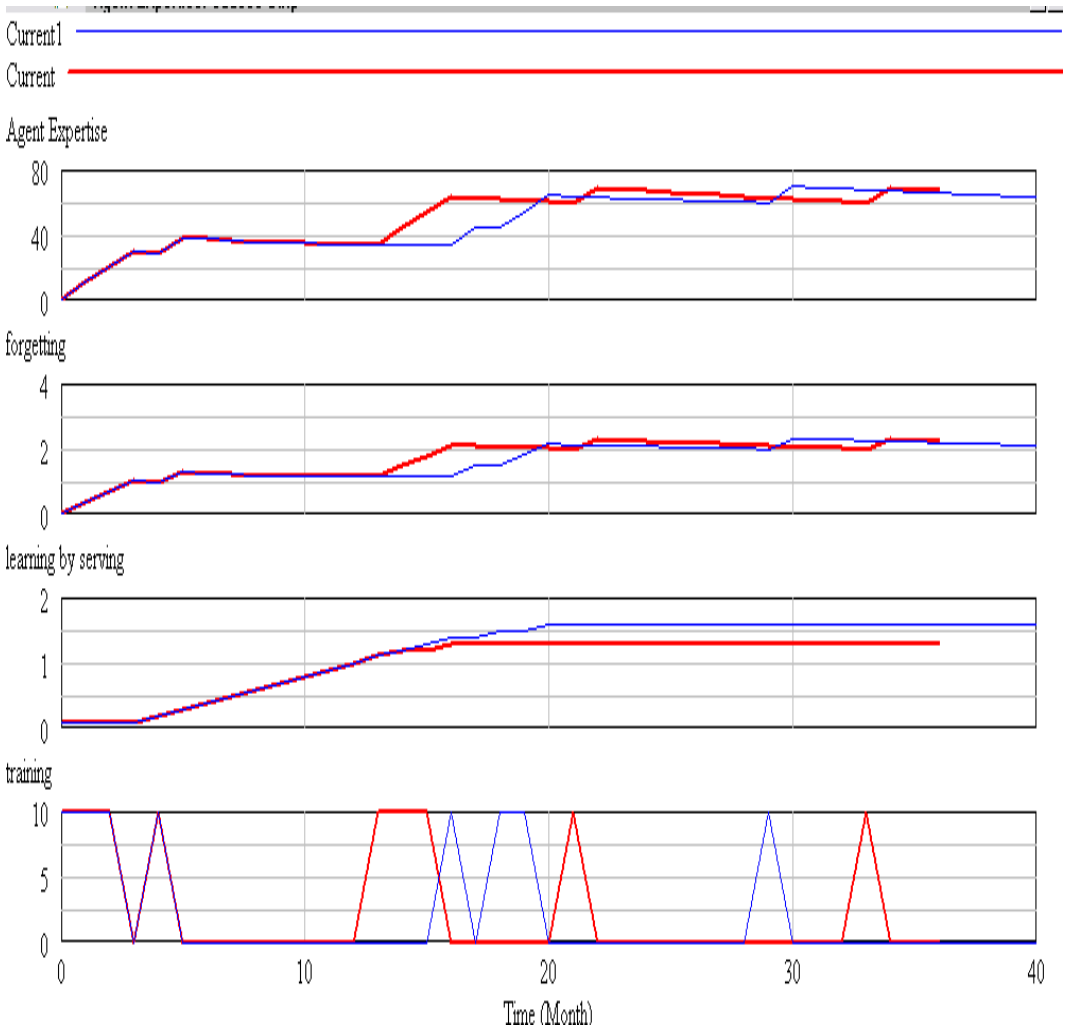


- Although training is considered to have positive effects, this model shows that the decision to quit is just occurs after a training (in month 34) it is consistent with the observations in the field. Because training usually is followed by the more customer assignment which results in increasing the anxiety.
- Quality of service decreases especially after year1, which logically should be the prosperous era of agent's work. This is mainly because of the anxiety, which is cause by assigning new customers to the staff. In the real situation this is known as the main reason of agents' quit.

By assuming that the model could regenerate the real trends, the boundary is set to be optimal, and the scenario testing started. The main solutions that seemed to be appropriate were:

- Training customers in order to make less errors, and then they'll have less need to support. This decreases the pressure on the agents by each customer (increases the capacity of each agent to serve) this may increase the working period of the agents (increases the quit time from 34 to 38). As it may seen in the model, this is just a temporary solution that does not change the patterns of variables. The problem that still forces line manager to assign more customers to the agents, still remains.

Figure 3- scenario of training customers



- Another solution that is proposed id using IT capabilities to provide solutions for the customer. This may include a wide range of solutions, from automatic (machine) responses to the providing a FAQ for the support staff. This is shown in the model by decreasing the training need of staff , decreasing the chance of learning by doing (providing standard solutions from a prepared repository) and as a result, the capacity of serving could be increased. This means that staff only learn by training courses (which occur on a regularly basis of 8 month) and the anxiety increases more slowly, so the staff remains more in the company (from 34 to 55 months)

5. Conclusion

By simulation of model, decision makers (CEO and support manager) found out that 2 of their main solutions have only short term effects on the tendency of personnel to leave. So

they became eager to find another solution for the long terms. By working with the model, it seems that there are 2 main points that could be considered for building the solution. One point is that the anxiety variable has no decreasing flow, which could work as a moderator for the staff. At the other hand, the root of support problem are the software (product) bugs , which is touched by the support staff but they could not do anything about it. This resulted to establish a feedback between the software development team and the support team. This means that the software bugs are reported to the R&D team. This changed the model, as it could be seen in figure 3.

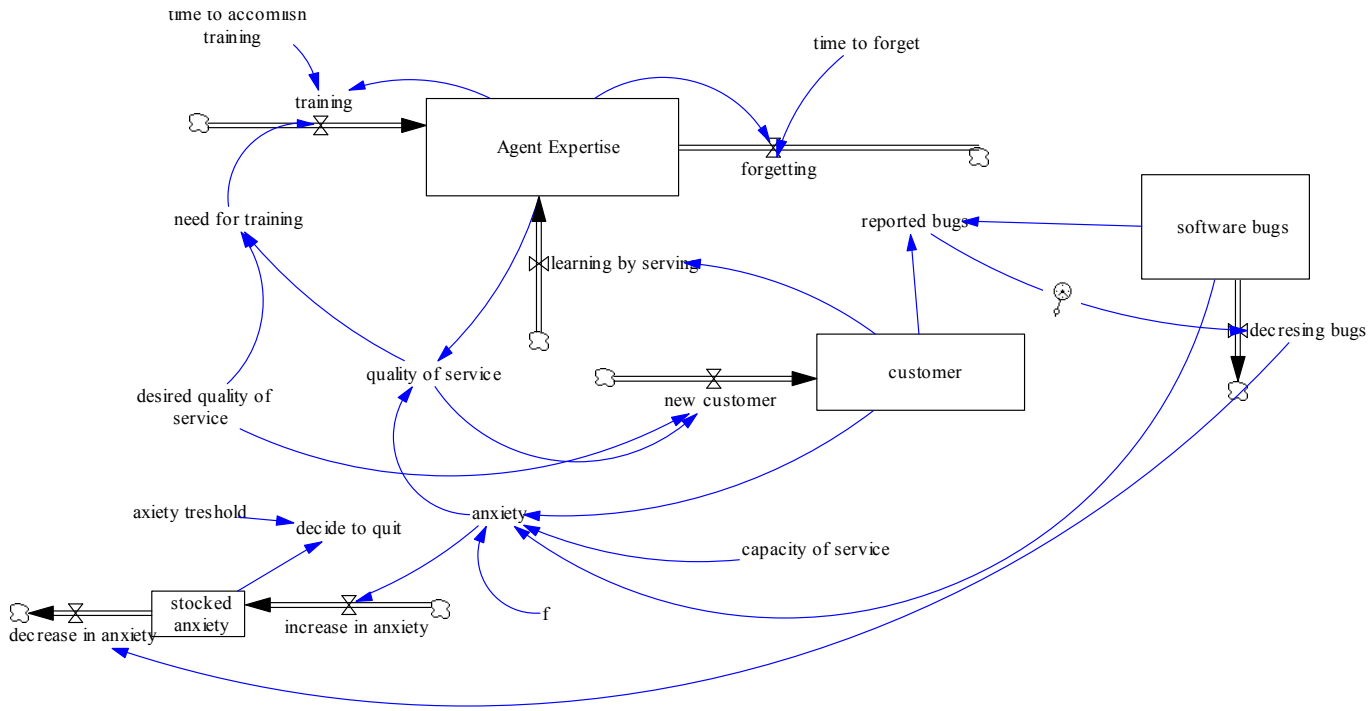


Figure 3- modified model by considering a feedback from support to the development (R&D) team.

In the modified model, a new stock has been added. This stock is related to the software bugs, which is a index to show the quality of software. Some times it does not mean that software crashes, it means that some modifications should be done to be suitable and customized for the customers. This is done by reporting bugs to the R&D team. This takes time for implementation, which is embedded by 4 months delay in the model. Also a decreasing flow has been added to the stocked anxiety model. As the reporting loop has been build, it could act as a empowerment factor for the support team which makes personnel more relaxed about their work.

As this model runs, we could see that agent expertise does not increase , and is steady at a certain level which is satisfactory for the customers. Also there is just one course of training needed (after hiring personnel) which cuts company costs, because these technical training are done by experienced staff of company. The other important factor is that the decision to quit is not taken in 5 years period (which by now is a target for the company) , and it would happen in month 70, which is far beyond the expectation.

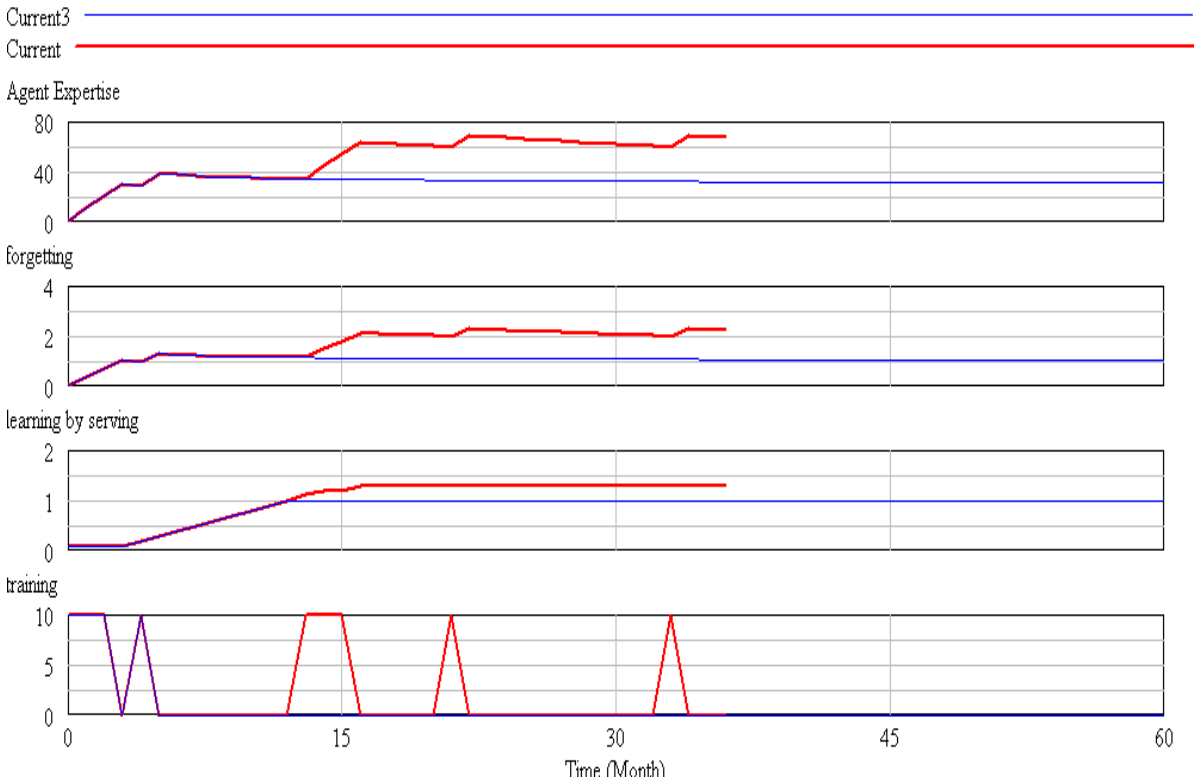


Figure 4- simulation of model with R&D feedback activated

The examination of other important variables (stocked anxiety, quality of service and need for training) shows that these variables have more desired patterns. Anxiety increases more slowly in the modified model, which makes the less decrease of quality of support. Also personnel could learn from their day to day experiences, which makes them feel their working environment as a learning atmosphere, and decreases their stress.

6. References

- Bergmann‹R.;Schaaf‹M.;2003; On the Relations between Structural Case-Based Reasoning and Ontology-based Knowledge Management; Proceedings German Workshop on Experience Management ‹April ‹2003 - informatik.rwth-aachen.de
- Bergmann‹R.;Schaaf‹M.;2003;Structural Case-Based Reasoning and Ontology-Based Knowledge Management: A Perfect Match?; Journal of Universal Computer Science ‹ vol. 9 ‹no. 7 ‹608-626
- Call Center Association;2008; 60 Ideas in 60 Minutes:2008 Session; available from http://www.nationalcallcenters.org/reports.php
- Davenport , Thomas; De long; david; Beers ; Micheal; 2000; successful knowledge management projects; in knowledge management yearbook 1999-2000; By James W. Cortada, John A. Woods; Butterworth-Heinemann.
- Demerest,Marc; 1997; Understanding knowledge management; Long Range Planning; Volume 30, Issue 3, June 1997, Pages 321-322, 374-384
- Eckerson, W. and Watson, H. (2000), Harnessing Customer Information for Strategic Advantage: Technical Challenges and Business Solutions, special report, The Data WarehousingInstitute, Chatsworth, CA.
- Eppler, M., Seifried, P. and Ro¨ pnack, A. (1999), ‘‘Improving knowledge intensive processes through an enterprise knowledge medium’’, Proceedings of the 1999 ACM SIGCPR Conference on Computer Personnel Research, ACM Press, New Orleans, pp. 222-30.
- Fickel, L. (1999), “Know your customer”, CIO Magazine, Vol. 12 No. 21, pp. 62-72.
- Kalseth, karl (1999) knowledge management from a business strategy perspective ; Journal of FID review. vol.1, No, 37-41.
- Nonaka ,I., Takeuchi,H.; 1995; The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation;
- Rasooli,p.,Albadvia.,2007;knowkedge management in call centers;electronic journal of knowledge management;vol 5, no 3,323-332.
- Robertson ,James; 2002; available from Step Two Designs website on www.steptwo.com.au; last accessed January 2010.

- Sun‹Z.; Finnie ‹G.;2005; *Experience Management In Knowledge Management*; Faculty of Commerce – Papers (University of Wollongong); available from http://ro.uow.edu.au/commpapers/33