Soile Oikkonen

ALIGNMENT OF CONTACT CENTER WORKFORCE MANAGEMENT IMPLEMENTATION WITH RESEARCH AND ITIL VERSION 3

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ABSTRACT

Oikkonen, Soile Maria

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The purpose of this research is to theoretically validate three contact center workforce management processes models against both the previous research and the ITIL framework version 3. The three models are about processes themselves, processes implementation, and processes and tools implementation together. The research has been conducted in a constructive way. First, the three models that have been used in real-life are described, the relevant ITIL and workforce management research are summarized, and the ITIL framework service lifecycle is explained on the level it is needed. Then, the models are first compared against the ITIL framework and then against the summarized research. The most important finding is that the three contact center workforce management processes models do follow ITIL guidelines. Also, the processes model is the most comprehensive contact center workforce management model available. Furthermore, although the research itself was not on focus, there were relative few pieces of research available about either ITIL version 3 or the contact center workforce management processes. In conclusion, the three contact center workforce management processes models can also be used in environments where ITIL has been implemented. Also, there needs to be more research done around the models presented here. Furthermore, there needs to be more research done on ITIL version 3 and on ITIL integrations. Finally, contact center workforce management field is also scarcely academically researched.

KEY WORDS: ITIL, workforce management, processes, architecture, strategic

planning, service desk

CONTENTS

1 INTRODUCTION

Today, organizations are trying to make their operations as efficient and effective as possible and to reduce costs whenever and wherever possible. They attempt to do this by both improving their business processes and by either purchasing or developing their own tools to support these processes. This also means that there is a large group of organizations that either provide processes and tools consulting or sell systems for these organizations driving for better efficiency and effectiveness.

One support method for process improvement is the Information Technology Infrastructure Library (ITIL). Its development started about thirty years ago by the British Government but it has been known as "ITIL" about the past twenty years. ITIL is a framework model of best practice for Information Technology (IT) service management. The latest version, version 3, was released in 2007. Jia, Reich and Pearson (2008, 294) studied IT service climate and according to them one measurement of IT effectiveness is service quality and one needs to look inside an IT function to identify those variables. It is important to identify a problem, find the causes for it and to take corrective actions (ibid.., 295). They created a framework for IT managers to identify the causes of service failures and noted that much of the previous research is based on retail banking and not on IT service (ibid.., 296). However, understanding the IT service is the key to improve customer service, increase customer satisfaction and achieve stronger business-IT alignment and they recommend using ITIL for this purpose (ibid.., 311).

However, ITIL is not the only support that is available. There is also IT Service Management (ITSM). Galup, Dattero, Quan and Conger (2007, 47), put it in a nice, compact way when they say that "ITSM is a set of processes that detail best practices based on ITIL standards to enable and optimize IT services in order to satisfy business requirements and manage the IT infrastructure both technically and strategically". Few years later Stuart, Galup, Dattero, Quan and Conger (2009, 124) continue with ITSM studies and note that it accounts for from 60 percent to 9 percent of total cost of IT ownership. Approximately 80 percent of the cost of an infrastructure comes from service support and delivery and according to Stuart, Galup, Dattero, Quan and Conger ISO / IEC 20000 is the first international standard

for ITSM (ibid.., 125). They also expect up to 48 percent cost reduction by applying ITSM (ibid.., 126). Furthermore, companies are getting their people ITIL certified and more and more companies are joining the IT Service Management Forum (itSMF). Their last two notable observations are that several vendors are using ITIL as their foundation and that university pedagogy is changing and it is including ITSM as one of the new topics to the IT curriculum.

Yet another way to boost operations efficiency and effectiveness, and to reduce the costs, is to improve workforce management processes. According to An, Jeng, Lee and Ren (2007, 2187) workforce management is

> the strategic alignment of human capital with business direction. It is a methodical process of analyzing the current workforce, determining future workforce needs, identifying the gap between the present and the future, and implementing solutions so that the organization can accomplish its mission, goals and objectives.

This definition covers the whole workforce management area very nicely. They continue that "The target of an effective workforce management is to recruit, develop and deploy the right people at the right places at the right times to fulfill both organizational and individual objectives". Sauerbach, Mathis and Nilges (2009, 1) have a similar definition of "appropriate resources with the required qualifications in due course at the right location". It is very evident that the organizations are in need for an organized workforce management. Johnson, Kraus and Blood (2010, 1) investigated the critical capabilities for contact center infrastructure and concluded that companies prefer solutions that cover everything a contact center or a service desk needs, including workforce management. It is known that about 85 percent of the total costs in 2008 are personnel costs Tracey, Guevara and Stegman (2008, 6). They performed an analysis on spending, staffing and performance inside a help desk.

ITIL and workforce management need tools to support the processes. Both Silliman (2010) and Potter, Smith, Guevara, Hall and Stegman (2010) are observing that the IT spending is declining mostly because of the 2009 recession. Sillman (2010) continues by saying that the enterprise equipment services are suffering less than the other fields and Potter, Smith, Guevara, Hall and Stegman (2010, 40) say that staffing is still one third of overall IT investment. Also, both Coyle and Brittain (2009) and Kraus, Blood and Johnson (2010) note that the IT contact center and

service desk market is already mature. According to Coyle and Brittain vendors are selected because of their licensing models, ease of implementation and the breadth of the tool functionalities not because of incident management functionality (ibid.., 1). The organizations are looking for tools to manage incidents, problems, changes, knowledge, self-service and SLAs and reducing service and support costs, increasing productivity and satisfaction and integrating IT and business are on focus as well (ibid.., 2). Other service desk market trends include saturated vendor landscape with little tool differentiation, limited business case knowledge, modest support service maturity gains, and confusing pricing, packaging and licensing (ibid.., 3-7).

However, this strong focus on improved efficiency and effectiveness through ITIL, ITSM and workforce management is less evident on the recent graduates that have entered to their first or even second job. It has become very evident that these people cannot comprehend the “big picture” because they have troubles even understanding the terminology yet they are supposed to be involved in the implementation. No wonder all consulting firms are seeking “experienced” or “senior” consultants only. They know that new graduates cannot deliver. These personal observations are very well supported by the recent research. According to Cunningham (2008, 1) “research suggests technical communication graduates are not adequately grounded in basic business applications, business planning, project management and problem-solving skills”.

As early as 2006 Sperl recognized the importance of training and especially training based on the contact center demand. Hundley, Jacobs and Drizin (2006) were thinking on similar way and they observed that recruiting the properly skilled employees is a definite advantage and Wasem (2008) added that people have different learning styles and different ways of learning should be provided. Benamati and Mahaney (2007) studied the business demand for new hires and they concluded that the skills needed at work varies from an organization to another but that project management, business and business process knowledge, methodologies, communication skills as well as mainframe and architecture are required. Bullen, Abraham, Gallagher, Simon and Zwieg (2009) did a similar study. They investigated the company requirements for new employees and what should be taught at the universities as a consequence. The conclusion was that the students should learn both technical and non-technical skills. Especially business management and project management skills are missing as well as team work and

communication but IT service management should be included as well. They also observed that many programs are now adding ITIL because of this demand. Furthermore, Galup, Conger, Dattero, Orr, Palmer, Probst and Kontogiorgis (2007) talked about ITSM programs becoming globalized and noted that IT Service Management is important to business-school IT and MIS curricula but that "most business school IT programs ignore IT Support Services" (ibid.., 54). According to them IS graduates must be comfortable with business processes and software-based services.

Another important study came from Zhao, Goul, Purao, Vitharana and Wang (2008). They noted that "service-centric computing is one of the new IT paradigms that are transforming the way corporations organize their information resources" and that both research and teaching activities in the Information Systems (IS) community have fallen behind (ibid., 295). Service-centric computing helps to better align IT with business strategies and improve the quality of IT services (ibid., 296) IS curriculum must change to respond the development because new tools are needed for both service-oriented architectures and business process modeling. Zhao, Goul, Purao, Vitharana and Wang (2008, 296) called for new computational and managerial frameworks. According to them the IS graduates must be comfortable with business processes and software-based services. Jiang and Kamali (2008) demanded for configuration management as one of the topics to study and they proposed as the possible course design: configuration management fundamentals, processes, techniques, tools and application packaging. Finally, Wright (2010, 126) says that the modern computer science students should not focus on programming applications since it is only one of the core practices. They need programming, systems thinking, modeling and innovation skills. According to him, students should learn ITIL and learn it by doing the following things: service desks, change management, programming, networking, problem control and service level management.

Therefore, it can well be assumed that if there are no students trained on these vital areas of ITIL, ITSM, and workforce management in the areas of related processes and tools, there is likely less academic research available about these topics. Moura, Sauve and Bartolini (2007, 19-20) observed that business-driven IT management is facing research challenges because there is only little research conducted so far and that this research should eventually cover all management processes of ITIL. There are also other topics than ITIL, ITSM and workforce

management relevant to this study but they are on minor role and they are also well researched areas. They are Quality Management (QM) and Service Level Agreements (SLAs). As Davies already noted 2006, the QM market is mature although it is still growing. Dutta and Roy (2006) and Kajko-Mattsson (2009) studied SLA and both created a model of their own to support the SLA management processes.

However, there are also two other areas evolving in business, WFO and SaaS that need to be mentioned here. Both of these concepts have only been mentioned and a short review of the studies given later because they are not in the core of either ITIL or workforce management, they form new areas that have been scarcely researched, and including them with workforce models would expand the scope of this paper considerably. WFO comes from "workforce optimization" and the focus is slowly moving from workforce management alone to workforce optimization that would also include areas like quality management and performance management. Guo and Wang (2009) and Munch and Wills (2010) have studied Software as Service (SaaS) and according to Guo and Wang SaaS is a "new style mode of software deployment whereby a provider licenses an application to customers for use as a service on demand" (ibid., 137). They also note that ITIL version 3 does not support SaaS. Wills says that because IT departments are cautious in their spending, new voice and unified communication systems are going for SaaS (ibid., 2).

The approach of this paper is as practical as it can possibly be in an academic research. The writer has been working with ITIL for almost the past 20 years and with the workforce management for the past ten years. The writer is considered as an expert especially on Genesys workforce management tool by the vendor itself and by the colleagues in Europe. The work includes both workforce management processes consulting and the workforce management tools implementation and consulting. One very important reason to write this paper is based on the observation that the recent graduates, indeed, are lost what comes the processes improvement and implementation, and related concepts, and this is a problem with many companies in many countries in Europe. Maybe this paper, if read, would give the future graduates and the recent hires an idea what really is import in the IT services. Another important reason is the fact that the customers have started asking on how well does workforce management fit into ITIL framework and the best practice processes. They have been especially interested in 1) how the

workforce management processes and tools should be implemented according to ITIL to fit already existing ITIL based processes and tools and 2) why the implementation of the processes themselves and the tools take time and money if they are done properly.

1.1 Research questions and the aim of the research

This research is an attempt to obtain a theoretical validation for three different contact center workforce management processes models. These models have evolved throughout the past several years in real life environments, and the contents of the models are fully based on experiences and learned "best practices" of the writer. This is the first time any of them is presented in an academic paper.

There are five different research questions developed for these three models. The actual questions are the following:

1. *How well is the contact center workforce management processes model presented in this paper aligned with the previous workforce management research?*
2. *How well is the contact center workforce management processes implementation model presented in this paper aligned with the previous ITIL research?*
3. *How well does the contact center workforce management processes implementation model presented in this paper fit into ITIL version 3?*
4. *How well is the contact center workforce management process and tools implementation model presented in this paper aligned with the previous ITIL research?*
5. *How well does the contact center workforce management processes and tools implementation model presented in this paper fit into ITIL version 3?*

The overall challenge with fully developed and comprehensive contact center workforce management processes models is that they are hard to find. The fundamental reason for this is that the processes models are usually developed inside various consulting companies and they are then kept confidential. The validation comes with the experiences over a length of time and the implementation processes models have the same faith.

There is a similar challenge with the workforce management tools implementation models. The vendors do give checklists of specific tool-related tasks and they even give detailed step-by-step instructions on how to install the products. However, the writer has never seen any formal attempts from vendors to share their knowledge of how the whole implementation process should be run through. In fact, two of such vendors have been really interested on learning how the writer has proceeded with their products and this task of uniting processes and products seamlessly together. The writer is now willing to share the hard work with the academic community in order to start the possible academic validation of the models sometime in the future.

This research is also seeking the relative level of fitting together the theoretical framework of ITIL and the two contact center workforce management implementation models. The purpose is to investigate whether the models would fit into an organizational environment with an implementation of ITIL version 3 in their current form. In case they do not fit as they are, the models need to be modified to prepare for possible models implementation in such a specific environments.

This research is limited on contact centers and the referenced research is also limited to contact center area for the most part due to the special requirements that the contact centers have. The two specific sub-categories, help desks and service desks, are also included in the review. The ITIL processes framework focuses specifically on service desks only and although the models have been used with all three types of customer service, the work related to ITIL is service desk specific.

In addition to ITIL, the review of the actual academic research is narrowed to workforce management only. This means that the broader and somewhat unrelated work regarding human capital management and employee performance management have been excluded. Also, since the work in contact centers, and especially in help desks and service desks, is organized in service layers, only the layers in direct contact with the end users, layers one and two, have been included. The research work of the layers beyond these two levels have been excluded because their work is somewhat specific and could introduce unnecessary complexity into this work in progress.

Finally, the focus here is in the ITIL version 3. Although the current version is based on the earlier ones, the change from the version 2 to 3 is so profound that the

versions would need to be observed separately anyway. However, the earlier academic research has been included when applicable. The processes of version 2 are still valid but they have been totally reorganized in version 3, and as long as the research has not been specifically on the whole version 2 and its interrelations, the work has been included.

1.2 Research method

This research has been conducted in a constructive way. In this case the focus is on a contact center specific workforce management process model and two contact center workforce management implementation process models. The other implementation process model is about the processes only and the other one has both the processes and tools put together. All three process models need to be validated against relevant existing research. The two implementation process models need also to be viewed against the ITIL process framework and their suitability noted for environments where ITIL process framework version 3 has been implemented. Prior to this research the usability of the workforce management process model and the two implementation process models have been developed and tested in practice, in real business environments. Overall, the organizations involved and the employees have been content with the results.

Now the focus is first on reviewing the relevant research, mainly on work done with ITIL process framework and especially with the version 3 and the research conducted in the field of workforce management and there especially on work related to contact centers. The ITIL process framework is also investigated and explained on the level of detail necessary for this research. Then, the existing contact center workforce process model and the implementation process models are introduced and explained in more detail. Then, the three models are viewed against the research and the ITIL process framework version 3. In case there are any changes needed based on the research or the ITIL process framework, those changes are made to the existing models and the updated models are shortly presented again. Finally, the conclusions based on the investigation are drawn and the possible next steps derived from the result.

1.3 The results and their meaning for the future

All three contact center workforce management models have been developed over time and in real-life situations. They are not implicitly developed to be based on either the research conducted in the field or on the ITIL framework. The first model, contact center workforce management processes model introduces fourteen different processes that are related to workforce management. There are two processes, business strategy and documentation, in the center because they have an impact on the other processes. These two guide the rest. The second model, contact center workforce management processes implementation model, has seven steps to follow when implementing the workforce management processes into a contact center alone. The third model, contact center workforce management processes and tools implementation model, has ten steps and is basically an extended processes model with the tools implementation. However, even though these models have been developed without theoretical background i.e. academic research and without the explicit guidance of the ITIL, they do follow both of them rather well. There is no need to change any of the models based on the research findings.

One very important point about the findings is that there is a real challenge to find relevant research. Several researchers have noted that these topics, workforce management processes and ITIL, are not widely taught at the higher education institutions and therefore, it can be well assumed that this is also the reason why the related research is so scarce.

This research differs from other research conducted with the topics of the workforce management and ITIL. First, the three models are revealed for the first time outside the actual implementation projects. Second, the contact center workforce management processes model seem to include the most comprehensive list of workforce management processes there is so far in the academic research. Third, the three processes models are validated in theory against both the previous research and against the ITIL framework version 3. Finally, this is the first time workforce management implementation, either processes or tools, is reflected against ITIL.

1.4 The structure of the paper

The purpose of the introduction was to set up the scope of this specific research, define the relevant special terminology, reveal the actual research questions and the goal of the research, and explain the research method used. Next, the relevant research conducted regarding both ITIL and workforce management is presented. The focus on ITIL related research is on the latest version, version 3, but some older work is also presented if it is relevant. The workforce management research is divided into studies related to processes themselves and into various aspects related to workforce management tools. Then, the latest version of ITIL is introduced in more detail. There is a short description of the content of all the five major books with focus on topics that are relevant to the implementation models. Then, the existing contact center workforce management process model together with the contact center workforce management process implementation model are presented in detail. These presentations are followed by a similar description of the contact center workforce management process and tools implementation model with a short introduction to three workforce management tools in the market. Then, the comparison of the models against ITIL is made and on the following chapter, the possible impact regarding the prior research and ITIL into the models is noted and possible modifications made to the process models presented earlier. Finally, the current research is shortly reviewed, the importance of the findings discussed and possible future research topics suggested.

2 ITIL AND WORKFORCE MANAGEMENT RESEARCH

The purpose of this chapter is to provide a good overview to the relevant academic research done related to topics of ITIL and workforce management. The work done with ITIL relates to the past ten years with versions 2 and 3 and the work with workforce management covers investigation conducted those topics related to contact center environment. Overall, Berman (2003) recognized that motivating staff is critical and that any change tends to create anxiety. Therefore, it is important to remember to plan well any ITIL and workforce management related projects and to take into account this findings and the findings presented under this chapter. ITIL is divided further into sub topics of processes and integrations. Workforce management also has sub topic of processes but the other topic is about the workforce management tools.

2.1 ITIL

This topic deals with the academic research that has been done specifically around the ITIL framework model. It is very important to understand ITIL: what is the academic opinion, what are the benefits and challenges with its implementation and what kinds of environmental situations it has been, and can be, used. In addition to these topics, the two sub topics deal with the research conducted on ITIL processes, ITIL implementation with other processes and, in some cases, with tools.

ITIL is widely recognized around the world. This becomes evident when reading various documents dealing with parts of ITIL framework or the concept as a whole. However, as also Galup, Dattero, Quan and Conger (2007, 50) observed, there is only limited amount of actual research that is explicitly ITIL related. They concluded that reason for this situation is that the Information Technology Research and the pedagogy have both been ignoring areas related to information technology operations.

However, Rychkova, Regev and Wegmann (2010) think that the role of a generic framework model like ITIL is important and Ramnath and Ramanathan (2008, 553)

consider ITIL as a best practice model for IT services delivery. ITIL is not a process model (Hochstein, Zarnekow and Brenner 2005, 80) but it is used as a reference model for ITSM (Hochstein, Zarnekow and Brenner 2004) because service organizations rely heavily on information technology (Ramnath and Ramanathan 2008, 535). It is also acknowledged by both Wegman, Regev, Garret and Marcchal (2008) and Donko and Traljic (2009) that the main goal of ITIL is to act as an interface and to align business processes and needs with IT services and service providers. It should be noted here though that this focus on integration is specifically a goal associated with ITIL version 3. Previously the goal was an alignment, not an integration.

Ramnath and Ramanathan (2008) investigated ITIL as a whole. They think that ITIL is a collection of well documented processes for the support and delivery of IT services (ibid., 553), although Hochstein, Zarnekow and Brenner (2005, 80) disagree on this one. One reason for this contradiction might be that the latter ones are talking about ITIL version 3 and the former ones version 2. This assumption is based only on the years both papers are published. ITIL version 3 did not exist prior the year 2007. Furthermore, Ramnath and Ramanathan also note that ITIL tells the readers what to do but not really how to do it. They conclude that each organization is different and that ITIL needs to be adapted every time. This view is also supported by Helbig, Hrdinova and Canestraro (2009) and McLaughlin and Damiano (2007, 251). Ramnath and Ramanathan (2008, 535) also made a very important observation that is generally relevant to this paper as well. They said that the technology does not automatically improve the services and that it is a "mix of organizational goals, processes, organizations, applications and enabling IT components".

There are many benefits observed from ITIL implementation. Holub (2009) investigated the benefits and noted, rather an obvious thing, that the benefits depend on what is implemented, the level of management support received and the amount of various resources used. Some specific benefits he mentioned were quality improvement from 50 percent to 70 percent deduction in unplanted downtime, efficiency from 10 percent to 25 percent labor productivity increase, and customer satisfaction. The improvement on customer satisfaction was also observed by McLaughlin and Damiano (2007, 251) and by Zhang, Ding and Zong (2008, 682). Other benefits that MCLaughlin and Damiano (2007) observed when they implemented ITIL to their college service desk were reduced costs, improved

customer satisfaction, improved productivity and improved use of skills and experience. Also, Zhang, Ding and Zong (2008) got cost reduction benefits as well as did Bailey, Kandogan, Haber and Maglio (2007). Zhang, Ding and Zong (2008, 682) list of benefits included increased revenue, less disruption, and improved public relations, productivity and use of skills and experience. Hochstein, Zarnekow and Brenner (2005, 82) state that the three most advantages are "client/service orientation and the quality of IT services, efficiency due to standardization, optimizing of processes and process automation, and transparency and comparability through process documentation and process monitoring". Finally, Morales (2008, 221) implemented ITIL into his university service desk. ITIL had a positive impact on staff recruitment, documentation, training and now they have formal agreements in place like SLAs and OLAs.

In addition to benefits, there are also many challenges identified either with ITIL implementation or ITIL itself. Hochstein, Zarnekow and Brenner (2005, 82-83) noted that in addition to all the benefits, there are some considerable costs involved with ITIL implementation as well. These costs were due to project planning and coordination, system development and tool customization, contracting and training of people, project marketing, quality control, consultation and costs related to processes. There were many other implementation experiences that had similar findings. One of them listed also many other challenging experiences that they had pulled together from other sources (Sharifi, Ayat, Rahman and Sahibudin 2008). These included things like lack of management commitment, too much time spent on complicated process diagrams, missing working instructions, process owners not assigned, too much concentration on performance and other solutions than ITIL were ignored. Latif, Din and Ismail (2010, 85) also noticed some additional challenges on implementing ITIL due to the behavior of the organization itself. They noticed that the units involved did not understand their job responsibilities and the ITIL standard terminology was not used. In the research of Latif, Din and Ismail, the failure is not because of ITIL. It sounds more like it happened regardless of ITIL and the company would have benefitted from agreeing about the job descriptions and having a common vocabulary before starting to implement ITIL in the first place. Finally, Holub (2009) delivered criticism towards ITIL version 3 itself. According to him, many organizations feel that the increased scope of ITIL is overwhelming (ibid., 1), the volumes of Service Strategy and Service design are very academic and theoretical

and the change from version 2 to 3 was so big and advanced that the organizations cannot make the change (ibid., 3).

Finally, there are thousands of organizations using ITIL with various scope of implementation and various versions of it. Greiner (2007) identified some of the well known companies in the world that use ITIL. She listed Procter & Gamble, Microsoft and HP and then added the "governments around the world" (ibid., 9). In addition to this, there would be hundreds of companies found in the internet claiming having implemented ITIL but they rarely go into details of what exactly was implemented and how it was done. Some well known Finnish companies that can be found from the internet associated with a personal ITIL implementation are Fortum, Nokia and Tieto, banks like Suomen Pankki, Nordea and Sampo, insurance companies like Fennia, If, Ilmarinen and Pohjola, and the University of Helsinki.

2.1.1 ITIL processes

It is always possible to study the whole ITIL but it is equally possible to select only one or some of the processes, one part of the lifecycle (meaning one book) or something that is related to ITIL in another way. Many have done just that. Brenner (2006) is one of those people who attempts to classify ITIL processes themselves. He says that ITIL processes should be supported by proper IT tools and he explain what this means because, according to him, ITIL does not explain this in a very detailed way. It should be noted, however, that Brenner talks about version 2 of ITIL and not version 3. Also, the process research is focusing on version 2 so that most of the results would not work directly with the version 3. However, his statement of needing both technological approach and an organizational approach with ITIL (ibid., 21) is still very much valid point. Hochstein, Zarnekow and Brenner (2005) evaluated service oriented IT management but they also worked with the version 2. However, Nabiollahi and Sahibuddin (2008) did a comparative study between the two ITIL versions and investigated the suitability of the ITIL Service Strategy as a framework for IT governance. They found out that ITIL version 2 is not but version 3 actually is suitable for that purpose. Finally, the study of Ayat, Sharifi and Sahibudin (2009) is an example of those studies that focus on configuration management database

implementation. This configuration management database is to record, update and trace all assessed activities and information in the organization.

There is relatively little research found on ITIL processes and little becomes even less when the work is divided according to the ITIL versions 2 and 3 in the market. Hanemann, Sailer and Schmitz (2004) investigated the management of service quality by improved fault management and they noted that the paradigm shift from device focus to service-oriented focus was in its way at that time. Their work included service-oriented event correlation in order to identify problems earlier and that way reduce the SLA violation costs. The same year, Dietel (2004) talked about IT change management and incident management in service desks. He also first created his version of the change management process flow, tested it and improved it based on the findings. Then he went on and implemented this process flow. Later, DeNoia, Carper and Hanczaryk (2009) investigated the service desk incidents and they also used the incident management and IT change management as the base for their study. First they noted that incident management is only a part of problem management. The tickets they investigated were first divided according to their priority and then by origin, symptoms and cause (ibid., 190). Then the causes were taken a closer look and the processes and practices where changed to reduce the incidents or lower their severity (ibid., 191). Finally, they concluded that this kind of analysis should be added into IT academic programs (ibid., 194). Their research is notable because they have realized incident management and especially incident analysis skills are lacking on new graduates. This is very evident if one walks into an organization and asks about the possibility to reduce the customer contacts. The younger people do not seem to make the connection between reducing the costs and analyzing the causes for higher costs through the content of the contacts.

Donko and Traljic (2009) did also do an analysis on ITIL incident management process but they focused only on this process and in one telecom service provider company. Since the main goal of ITIL is to integrate IT services with business needs and processes, they identified two main interfaces uniting these two: service level requirements and user incident reports (ibid., 284). They also noted that incidents should be stored in an incident knowledge base so that they can be reused (ibid., 286), statistics and analysis will help to improve business processes (ibid., 287). The approach of Scholtz (2009) was a bit different. He focused on a specific user group, security officers, and his research identified best practices for

them to use from ITIL version 3. He had also noted that the planned and actual ITIL version 3 implementation rates are increasing and the ITIL v3 supports strongly the work of security officers.

There is actually more research to be found from ITSM than there is from ITIL. As early as 2004 Hochstein, Zarnekow and Brenner considered ITIL as a reference model for ITSM for both formal assessment and for implications in practice. Later, Holub (2009, 2) added that ITIL has become the best-practice guidance for ITSM. Furthermore, according to Galup, Dattero, Quan and Conger (2007, 47), "ITSM is a set of processes that detail best practices based on ITIL standards to enable and optimize IT services in order to satisfy business requirements and manage the IT infrastructure both technically and strategically". They also defined service as people, processes and technology put together. When reviewing the modern methods and standards of ITSM and the alternative research approaches they noted that there is not much academic work around and they identified three reasons for this: 1) newness of the area, 2) ITSM considered only for IT operations and not for software development, and 3) the mainstream methods of conducting research are not suited for this research area (ibid., 50). Another reason might be that there is still a gap between business planning of services and the management of IT services (Jin and Ray 2008, 1).

The research done around ITSM seems to go all over the place since the area is so large. Bartolini, Stefanelli and Tortonesi (2009, 15) did a business impact analysis and simulation of critical incidents in ITSM. They presented a decision support tool and they also noticed the scarcity of research around their immediate interest by stating: "Only recently have research interests on the people and processes dimensions of IT management emerged, and thus there are relatively few works in the academic literature." Another study was about creating a methodology for ITSM automation (Ayachitula, Buco, Diao, Maheswaran, Pavuluri, Scwartz and Ward 2007). They talk about people, processes, technology and information as building blocks for successful IT infrastructure. Also, they made several observations that are relevant for workforce management tool implementation in ITIL based environment. They said that people use systems like emails, messaging systems, word documents and spreadsheets to coordinate their work (ibid., 3). There is also a need for a system that collects sharing, monitoring, communicating, coordinating and collaborating together into one place (ibid., 3). Time awareness and calendars are essential (ibid., 4). Finally, Ayachitula, Buco, Diao, Maheswaran,

Pavuluri, Scwartz and Ward (2007) talk about IT process management processes and operational management processes. Management processes correspond to ITIL service support processes and the other process is about infrastructure resources (ibid., 8).

There is also some ITSM research related specific models like ITSM knowledge management model by Liang and Baozhang (2009). They concluded that the model they had created did fully fit with the original ITIL v3 knowledge management model. Then there is the research of ITSM knowledge support structure by Wan and Wang (2007) about operation and maintenance management. Finally, there is a recent study by Graves (2010) who tried to figure out how IT service inventory for ITSM should look like. He concluded that the IT service inventory is not complete: it has a list of services but it does not describe them. It also has exclusions and translations that are debatable (ibid., 7). Many companies still have function-based computing infrastructures instead of service based. The IT service inventory "should be useful for industry to plan skills, divest themselves of services more efficiently performed by others, and better understand the ramification to other IT services and the business doing so" (ibid., 8).

In addition, there are two studies related to ITIL that basically have nothing in common with the other research related to ITIL. Gacek, Giese and Hadar (2004) investigated self-adaptation of software and created a conceptual model and processes for it based on ITIL. Then there is the very recent study of Rychkova, Regev and Wegmann (2010, 1) who "declarative specification and alignment verification of services in ITIL". Basically, their work was about a formal method for specifying service level agreements and operational level agreements.

Finally, there is a very interesting study of Alter (2010). He is viewing systems as services in the field of information systems. This work differs from all of the above in a sense that the point of view and the focus comes from the information systems and not from the information technology. Alter recommends that the IS academic research would be extended into concepts like ITIL (ibid., 196). According to him, over 50 percent of the revenue of software companies comes from services. Also, there is inadequate user engagement and inadequate alignment between business and information technology (ibid., 196). Systems should be viewed as service systems and he introduces five steps to support this point of view (ibid., 201).

1. Think of systems as service systems.

2. Recognize that the value from services tends to be coproduced by providers and customers.
3. Recognize the significance of service-related design dimensions.
4. Recognize how service systems change and evolve.
5. Incorporate service-related concepts and tools into the evaluation, analysis, and design of systems.

He concludes that viewing systems as services is "potentially fruitful but generally unexplored approach". Alter also identifies some advantages of doing this: improved communication with business professionals, a common denominator for talking about services and a synergy between different ways of looking at systems (ibid., 219).

2.1.2 ITIL integrations

In addition to the research done on ITIL, its processes and some special relevant parts like ITSM, there are also some studies made regarding ITIL integrations. The integrations can be made with specific environments, tools and even other concept. One of those studies was made by Zhang, Ding and Zong (2008) and they investigated ITIL process integration with organization environment. They took the viewpoint of security, knowledge, information, control and semantics but they also noted that there is limited research done on any of them (ibid., 682). They concluded that the relationship of five viewpoints should be remembered with integrating ITIL and other systems and tools (ibid., 683). Graupner, Basu and Singhal (2009) made another study where they described a "knowledge-based collaboration environment for ITIL" for IT consultants for "planning, designing and implementing ITIL processes easier" (ibid., 44). They recommend using wikis (open collaboration environments on the web) and claim that the pre-operational stages (service strategy and service design) are not well supported by technology (ibid., 44). Their claim seems to be accurate even if only taking a look at the systems available for service desks. There is only limited amount of systems that any larger service desk can even consider and many companies still create the systems of their own. The claim of Graupner, Basu and Singhal (2009) is also

supported by the actions of Lahtela, Jäntti and Kaukola (2010). They created and implemented an ITIL based ITSM measurement system into a Finnish company. According to them the service support processes are very tool –oriented and ITSM standards and frameworks should provide more practical examples for measuring support processes.

Sahibudin, Sharifi and Ayat (2008) combined ITIL, COBIT and ISO/IEC 27002 in order to form a comprehensive IT framework. They found out that ITIL and COBIT correspond with each other really well and the security process should come from ISO because ITIL is not focused on that. Another study went on the same direction by suggesting that ITIL is not a comprehensive standard, an integrated approach with other process frameworks like Capability Maturity Model (CMMI) or Control Objectives for Information and Related technology (CobiT) is ideal (Brittain and Holub 2010). Finally, there are three studies that talked about integrating either ITL or ITSM with enterprise architecture (EA) and suggested that the integration would be a good idea. Braun and Winter (2007) propose an EA extension to do the integration. Robertson (2009) investigated the similarities and differences of EA and ITIL and how they could be linked to work together. He found out that ITIL is more detailed and narrow focused than EA but they have many similar strategies and goals (ibid., 2-3). According to Robertson EA and ITIL groups ignore each other (ibid., 1) but they could benefit from each other and together get better results than alone (ibid., 4). The last study is from Correia and Abreu (2009). They noted that there is a lack of empirical studies for the relationship of SLAs and the required IT support. EA does not talk about SLAs. Also, formal IT service definition and assessment are missing. The focus has been on best practices (ITIL, COBIT, CMMI), service oriented architecture (SOA) and web services instead (ibid., 553).

2.2 Workforce management

This topic collects together the academic research done on contact center workforce management. According to Liao, Delft, Koole, Dallery and Jouini (2009, 1) workforce management is a critical component of contact center operations. Furthermore, Guido, Roberto, Di Tria and Bisio (1998, 474) have noted that to

maximize efficiency and effectiveness one need organization, procedures and technology supported by various processes. Therefore, the research presented here is divided into two major workforce management areas: processes and tools. Each subtopic covers the respective area on the level that is needed to understand the three workforce management models that will be presented later in this paper.

2.2.1 Workforce management processes

In order to take a look at the academic research done in the field there should first be an agreement on what are the contact center workforce management processes. However, this is not as easy task as one might think. There is a widely spread agreement that at least forecasting, figuring out the staffing needs and scheduling are workforce management processes. According to Wasserkrug, Taub, Zeltyn, Gilat, Lipets, Feldman and Mandelbaum (2007) this is all that is needed. Liao, Delft, Koole, Dallery and Jouini (2009, 1) added intra-day performance management. They also noted that forecasting, figuring out staffing levels and scheduling have basically been the only focus of workforce management research and continued that the intra-day performance management has rarely been researched. Gupta and Parija (2009, 97) recognized that strategic planning is important, as did An, Jeng, Lee and Ren (2007). In fact, the most complete list of workforce management processes comes from An, Jeng, Lee and Ren. In addition to all other mentioned above, they also added turnover analysis, budgeting, hiring and training.

Since there is no single workforce management model to refer to and forecasting with scheduling are clearly only few workforce management processes needed on contact centers, there seems to be a trend that each researcher and a research group have defined their own set of processes and then created models that support at least one of them. Lu, Radovanovic and Squillante (2006, 1144) created a stochastic network model to keep the agreed service level while providing “optimal decisions for cost minimization”. Gupta and Parija (2009) created a mathematical model to calculate the maximal utilization of agent seats. They also recognized the limitation of their model. It works only if all agents can do the same work tasks (Gupta and Parija (2009, 98). However, this is often not the case. Some agents are specialized on certain tasks like written communication or training new agents. Liao, Delft, Koole,

Dallery and Jouini (2009) did a similar model but their focus was on how to optimize the agent headcount when the workload is random. Even An, Jeng, Lee and Ren (2007, 2187) focused on staffing costs. They created a system dynamics model. However, this was created for any company claiming to be service-oriented and it is not suitable for a contact center as it is. It focuses more on projects, hiring and proper skills. There is also a model made for the third level support (Wasserkrug, Taub, Zeltyn, Gilat, Lipets, Feldman and Mandelbaum 2007) but it focuses specifically on a service desk third level support and not on the first and second level support like this paper. Also, the researchers only recognize two workforce management processes: forecasting and scheduling.

There were also two relevant pieces of research that did not create a model. The first one was Koole (2004) who talks about performance analysis and workforce management optimization. On performance issues he recognizes the limitations of the Erlang C calculations with forecasting (ibid., 1). It is a known fact in workforce management forecasting that Erlang C calculates the workload to increase exponentially and this is not the case. Koole also includes service times, number of lines and abandonments calculations as part of the performance measurement. According to him, the optimization covers forecasting, agent requirement calculations, figuring out the shifts needed and scheduling and this approach is found in many software packages (ibid., 2). It should be noted here, though, that when he talked about optimization processes and tools, the term “optimization” with tools currently means totally different. However, he did point out the need for service level management, agent shrinkage, work blending and multiple contact channels. He concluded that all these methods increase the effectiveness and efficiency of agents and reduce training costs (ibid., 3).

The other research, that did not create a specific model, focused on finding the correct level of service desk staffing ratio (Coyle and Brittain 2009). They found out that the volume has the greatest effect in the staffing ratio, that there is no one staffing ratio that would be appropriate for all companies and that too often only the cost determines the staffing ratio, not the service quality. They also noted that service desks with less than ten employees are especially vulnerable to inefficiencies in staffing (ibid., 3). Furthermore, service level agreements have a great effect on staffing (ibid., 4), process maturity affects as well. Finally, average handling time, utilization rate, number of request in queue and service offering are also contributors when determining staffing level.

There is also lots of research done on workforce management fields that would be relevant to the workforce management field in general but would not really contribute on defining the set of workforce management processes topics themselves. This research includes studies like Erlang C versus simulation models, hiring, learning, training and motivation. Each one of these topics actually forms a whole research field of its own. Also, there is a research thread in human capital management that closely reflects workforce management. For example, Holincheck (2009) has listed the top five human capital management processes for 2009 to 2013: workforce planning, talent acquisition, paying for performance, workforce development and workforce management. It is very likely that the workforce management research and human capital management research would have a lot to give to each other.

2.2.2 Workforce management tools

There is a considerable amount of research done regarding workforce management tools. The tools need to be divided into categories depending on the user group. As Holincheck (2003, 2) says, there are no vendors that are or even can provide a single solution for all industries. However, since the focus of this paper is specifically the contact center workforce management tools, the number of research to be found drop dramatically. There are many reasons for this situation. First, the contact center workforce management tools are very special and complex tools. It is not easy to start from nothing and develop a new one. Second, the contact center workforce management tool market is already mature and the major vendors already control the market. Third, each tool has gone through a comprehensive research while being developed and even during implementation, but the research results are proprietary and confidential to the vendor, the implementing partner and the end customer only. If a vendor ever publishes such a research it does not fulfill the academic research standards. No vendor will publish results that are not overly positive. Fourth, the comparative studies between the contact center workforce management tools are either vendor internal for competitive purposes or they are performed by few key groups that are trusted to be mainly independent from a specific vendor. Two of the best known groups in

the contact center area that the organizations seek guidance for decision making are Forrester and Gartner.

However, there are some individual papers where attempts have been made to investigate workforce management tools in contact center environments. Lesaint, Voudouris, Azarmi and Laithwaite (1997) concluded that using a specific workforce management mobile tool has led to efficient and effective workforce. The tool helped on optimizing the schedule, making changes to the work tasks and detecting the availability of the people. Potila (2005, 7) talks about “improving operations efficiency by combining ICT solutions and workforce management”. Sauerbach, Mathis and Nilges (2009) investigated SAP as a tool and demonstrated one possible way of implementing a workforce management system. It should be noted that all these three studies mentioned focus on so called mobile workforce and are not directly relevant to the contact center processes and tools.

There are also three studies that focus on only one or two aspects of contact center workforce management tools. First, according to Manning, Garf and Sweeney (2006) market surveys indicate that the return of investment from using tools for operational planning and scheduling are considerable. Then, Rosenberg (2005) talks about the ways there are to get most out of the workforce management software. According to him the most important individual piece of an advice is that the tools need to be used properly. Also, he notes that the efficiency should not be taken too far because demanding occupancy rates of agents for over 85 percent to 90 percent could cause burnouts. Finally, there were two important observations made from two researches conducted. The first one was that scheduling should be done in no less than one hour intervals and the second one that the queuing should be separated into many channels and that multi-skilled teams are more effective (SenGupta 2009). According to him, queuing theories have so far thought a single queue to be more efficient. However, these two findings are somewhat surprising. Many companies do use the planning period of 15 minutes or a half an hour, especially if they are larger ones. Especially there is a need for shorter intervals when the agents first come to start the day or when they end the day if the contact center does not provide service for 24 hours and seven days a week. Also, shorter intervals, than an hour, are used when meal and coffee breaks are scheduled. The second finding is not surprising but the comment regarding queuing theories is. The writer has known at least for the past ten years that multi-skilled teams are more effective and that this is specifically the reason

why teams should never be formed by skills into singe-skill groups. Even all the contact center infrastructure vendors have broadcasted this same observation for years!

Maybe one of the most valuable pieces of research was conducted by the Gartner Group and presented by Davies (2009 b). Overall, it was found out that the companies seeking and using contact center workforce management tools increasingly value ease of use and full utilization of the software over functionality. Also, the workforce management market is mature and the accuracy on planning, forecasting and scheduling has a great impact on operational efficiency. Furthermore, existing contact center workforce management tools are rather well suited for Software as a Service (SaaS). Therefore, Gartner Group recommends that any contact center with over 100 agents should invest for a proper workforce management tool because of the economic benefits they would gain from it (ibid., 2). Davies also listed and explained the top ten contact center workforce management trends in detail. Since these listings of trends coming from Gartner are known to influence both the vendors and the possible end-user organizations, they are presented here as well. This list will influence especially those vendors that are not the leaders of market share because they want to make sure they are following the “trends”. Organizations, on the other hand, are using these kinds of lists to evaluate possible vendors and they will as from vendors questions like “What is your commitment to agent empowerment?”. The trends are the following:

1. increased deployment flexibility
2. change of focus on technological underpinnings
3. desire for longer-term strategic planning
4. support for work-at-home agents
5. commitment to agent empowerment
6. extension to other departments
7. increased commitment to WFO suites
8. investment from smaller contact centers

9. need for true optimization of multichannel environments
10. internationalization is becoming a key differentiator

The first trend refers to the shifts towards web-based architectures, SaaS-based offering and multitenant hosting. The second trend is about shifting from the forecasting accuracy methods into "ease of use, value for money and functional utilization" (ibid., 2). The third trend is to require the tools to support long-term strategic planning for sustainable service levels and service quality, and for strategic business goals. Concepts like training objectives, recruitment needs and "what-if" scenarios are increasingly demanded. The fourth trend basically wants the workforce management tools to allow the work from anywhere because the underlying technology does already support it. The fifth trend refers the availability of the workforce management tool for agents so that they can perform most of the work related issues independently. The sixth trend refers to the fact that all major contact center workforce management vendors have extended their services to cover the workforce that is not working in the contact centers. Many of the other vendors are trying to follow but some tools just cannot support the work outside the contact center environment itself. The seventh trend just states that there is an increased commitment to workforce management optimization (WFO) suites both from the vendors side and increasingly from the user side as well. The eight trend notes that even the small contact centers are starting to realize that there are tools for small implementations and that they would also benefit from the tool considerably. The tools are no longer only for middle-size and large organizations. The ninth trend is to demand accurate forecasting and scheduling of agents that work simultaneously with more than one channel (phone, email, chat). The last trend is about the demands like multiple language support, local legislation support, and support for prayer breaks and single-sex shifts. The first two are very important in Europe and the last two in Muslim countries.

There is also a major shift going on from contact center workforce management tools into contact center workforce optimization suite. Close (2003) was probably one of the first ones who started talking about workforce optimization in a sense the concept is understood today. She proposed the following functionalities as the possible additions to the pure workforce management tools (writer's note: that at the time consisted mainly on forecasting, scheduling and reporting): budgeting tools, performance management, quality monitoring, analytics and training/e-

learning solutions (ibid., 3). Since then, it has been mainly Gartner Group and Davies who has followed the WFO market trends and research. Although the WFO research goes beyond the focus of this paper, it is shortly covered here because it will have an impact on the future of the workforce management tools.

Davies (2005) noted that in the year 2005 WFO suite market was in its infancy. According to him the functionalities included are interaction recording, quality management, IVR surveying, e-learning, WFM and performance management (3-ibid., 6). On the following year Davies (2006 a) introduced the WFO framework to be the basis for vendor evaluations in the future. He also predicted that in the future there will be less vendors with more integrated applications (ibid., 2). He saw the core technologies as being workforce management with quality management, e-learning and performance management (ibid., 4). On the same year Davies (2006 c) noted that not all vendors are moving from workforce management to workforce optimization (ibid., 2). Also, workforce optimization tools cover strategic planning, agent recruitment, deployment, monitoring, evaluation, improvement, motivation and corporate accountability (ibid., 3). Then, Davies (2009 c, 2-4) added strategic planning into the requirements and noted that the trends are towards both a single vendor to provide the whole WFO suite and to move into the SaaS model with it. In another research paper Davies (2009 d, 2-3) recommended that the companies should buy from a single vendor and that the vendor landscape is rapidly changing and will look different in two years. Davies, as a representative of the whole the Gartner Group, published the final criteria for WFO tool evaluation: workforce management and strategic planning, call recording and quality management, coaching and e-learning, performance management, surveying and interaction analytics (ibid., 4). Finally, in the beginning of this year Davies (2010) gave an overview of the research done in WFO area in 2009. The areas touched by Gartner research have been recording, agent evaluation, forecasting, scheduling, training, reporting and interaction management. He concluded that despite of the complexity of WFO, the amount of WFO vendors will increase through acquisitions, R&D and OEM partnerships, and that SaaS will become more available and more popular (ibid., 3).

2.3 ITIL and workforce management together

There is really no research done specifically on ITIL framework model with either workforce management processes or tools. There is no integration or even effects discussed. However, according to the writer's ten year experience on workforce management consulting there is a clear need for this. There have been several companies that have taken an effort to implement ITIL version 2 or even version 3 into their contact centers or more specifically, in their help desks or service desks, but they have then complained that the expected return of investment is not there. Without an exception the case have been that the ITIL implementation has included new work titles and an incident management tool but no integration has been done with the workforce management processes. Some companies have even had a workforce management tool but it had not been integrated efficiently with the workforce management processes and not at all with the ITIL processes or the incident management tool.

Another, specifically workforce management related, issue is that the organizations have not yet purchased a workforce management tool or it has been improperly implemented. Many companies have not realized that with a proper workforce management tool that is properly implemented has a very rapid Return of Investment (ROI), often only a couple of months. It is true that the good workforce management tools cost money and if the ROI calculations have not been made properly, the prize looks high. Also, the company has purchased a tool from a good salesperson, a tool that does not fulfill the needs of the business and/or the tool has not been properly implemented i.e. integrated with the workforce management processes. In fact, it is slowly becoming evident that the many European companies have realized that "something went wrong" but cannot quite say what and they are turning into consulting agencies for help.

Many of these companies asking for consultation already have several ISO certificates, CRM and ERP tools are in use, ITIL model (or similar like EA, CoBit, CMMI or eTOM) has been implemented, the tools that are supposed to change "everything" have been purchased but still the ROI is not what is expected and what various vendors and publications have promised. Finally, it has also become evident that especially with the workforce management consultancy field, the consultants usually know their own product well but are not experts on several product and definitely not, at least, on additional frameworks like ITIL. For example, a head of a university service desk tells how they are implementing the ITIL methodology (Lyons 2009). According to her they will have a new ticketing

system but she notes that they are lacking human resources to run the service desk. She goes on and points out what she could do as the manager to improve the situation: take care of herself first, take breaks and motivate the team. She would greatly benefit if someone would consult her and support organizing the workforce management processes a) to support ITIL processes and b) to optimize the work to make the available human resources to cover the workload efficiently.

2.4 Summary

The purpose of this chapter was to give an overview on both ITIL and workforce management research. As it was noted by several writers, the academic research related to ITIL is very limited. SO far there have been only some investigations around the concept of ITIL itself and some related to its implementation and integration with other concepts and tools. Since it is widely accepted that ITIL is a framework of best practices and the use is spreading at least to most of the major companies, research in this area needs to pick up in order to understand better the ITIL dynamics in practice. Also, more valuable information is needed for successful implementation of ITIL regarding to business processes and various tools the business might make an investment in. The research related to workforce management is broader but so is the topic itself. However, the research related to contact center workforce management processes is limited and even the processes involved have not been agreed yet. The research related to tools do exist but the majority of the contact center workforce management tools are from established vendors and the possible research remain proprietary to the parties involved only. Also, there is no research done how workforce management processes and tools should be implemented according to ITIL framework. Therefore, it is essential to first take a closer look at the ITIL framework and then move into proposals of contact center workforce management processes and how these processes with tools could be implemented according to ITIL guidelines.

3 ITIL

The chapter deals with the core of the ITIL which is the five books called Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement. The titles of these books also form a so called ITIL service lifecycle. There are over 1300 pages in these three books and it is not feasible to give a comprehensive and detailed view into all of them. Therefore, each book is introduced as its own topic and it is a rough overview of the content with a focus on those topics that are the most relevant to this paper.

ITIL framework is also known for its function of acting as a source of good practice in Service Management (SM). Service management itself describes the ways that services are used to provide value to customers. These capabilities are divided into functions and processes that are spread out through-out the ITIL service lifecycle and they also form the organization's capacity, competency and confidence for action.

3.1 Service Strategy

Service strategy is the core of the ITIL version 3 lifecycle. It creates the base for the other four books. It is also the guide for all IT service providers for building and maintaining a clear service strategy. The book (Iqbal and Nieves, 2007) is divided into nine chapters: 1) introduction, 2) service management as a practice, 3) service strategy principles, 4) service strategy, 5) service economics, 6) strategy and organization, 7) strategy, tactics and operations, 8) technology and strategy and 9) challenges, critical success factors and risks. Since the first two chapters have already been discussed sufficiently before, there is no need to repeat the information here.

Service strategy principles covers topics like value creation, service assets, service structure and service strategy fundamentals. The value creation deals with the gaps between perceptions, preferences and actual attributes. Service assets consist of both resources and capabilities, and business units or service units, whichever is used. Service structures talk about moving from value chains to value networks

and the complexity of interactions as a whole. Finally the service strategy fundamentals are basically the four Ps of Porter (1980): perspective (vision and direction), position (policies and distinctions), patterns (ongoing actions and adjustments) and plans (method and execution).

Service strategy lays out the strategy as it is seen by the ITIL developers. It defines the market on the bases of services and strategy. Then it develops the offerings, and the strategic assets that can be divided into increasing the service potential and increasing the performance potential. The following table (TABLE 1) gives a good range of examples how the service potentials can be increased.

TABLE 1. Examples of how service potential in increased (Iqbal, Nieves, 2007, 128)

Service management initiative	Increasing service potential from capabilities	Increasing service potential from resources
Data centre rationalization	Better control over service operations Lower complexity in infrastructure Development of infrastructure and technology assets	Increases the capacity of assets Increases economies of scale and scope Capacity building in service assets
Training and certification	Knowledgeable staff in control of Service Lifecycle Improved analysis and decisions	Staffing of key competencies Extension of Service Desk hours
Implement Incident Management process	Better response to service incidents Prioritization of recovery activities	Reducing losses in resource utilization
Develop service design process	Systematic design of services Enrichment of design portfolio	Reuse of service components Fewer service failures through design
Thin client computing	Increased flexibility in work locations Enhanced service continuity capabilities	Standardization and control of configurations Centralization of admin functions

And the increasing performance potential is related to questions like is every service designed and operating properly and are the models and structures right. The last major topic under service strategy chapter is preparation for execution.

The preparation includes strategic assessment, setting objectives, defining critical success factors, aligning with customer needs, and expansion and growth.

Service economics deals with financial management, return of investment, service portfolio management and its methods. In order to understand the service economics it is necessary to define the business objectives. There are some common business objectives but the companies can and will have some of their own as well. However, the objectives are divided into four groups according to the focus the objectives have. These groups are operational, financial, strategic and industry. The table below (TABLE 2) gives some very good examples of common business objectives.

TABLE 2. Common business objectives (Iqbal, Nieves, 2007, 176)

Operational	Financial	Strategic	Industry
Shorten Development time	Improve return on assets	Establish or enhance strategic positioning	Increase market share
Increase productivity	Avoid costs	Introduce competitive products	Improve market position
Increase capacity	Increase discretionary spending as a percentage of budget	Improve professionalism of organization	Increase repeat business
Increase reliability	Decrease nondiscretionary spending	Improve customer satisfaction	Take market leadership
Minimize risks	Increase revenues	Provide better quality	Recognized as producer of reliable or quality products or services
Improve resource utilization	Increase margins	Provide customized offerings	Recognized as low price leader
Improve efficiencies	Keep spending to within budget	Introduce new products or services	Recognized as compliant to industry standards

Under service economics the service portfolio management is further divided into business service and IT service. As it can be seen from the figure below (FIGURE 1), the difference is minimal. There where business services talk about business process and workflow, there IT service has IT application and logic. However, it

should be noted that both of them are a part of the whole picture and the position is identical.

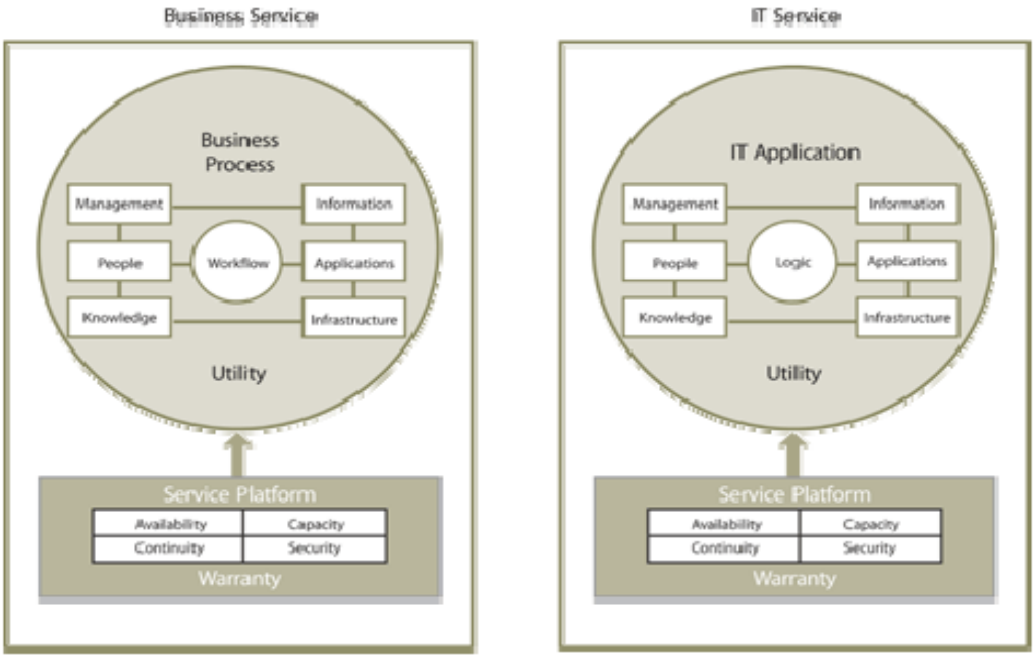

FIGURE 1. Business service and IT service (Iqbal, Nieves, 2007, 187)

Strategy and organization covers topics like organizational development, design, and culture, and ends up with sourcing strategy. These are relatively short topics since it is assumed, for example, that the "organizational culture" does not need that much of an explanation. The following chapter of strategy, tactics and operations is equally short because it deals with topics like implementation thorough the lifecycle, strategy and design, strategy and operation, and strategy and improvement. The improvement contains the topics of quality, reliability, maintainability, redundancy, accessibility and availability.

Technology and strategy focuses on service automation, service interfaces and tools related service strategy. Service automation has an impact on the performance of service assets such as management, organization, people, process, knowledge and information. Implementing applications themselves are already an

improvement but the support function of tools can also create more improvement. Service automation does also help the quality of service, reduce costs, reduce complexity and uncertainty, and improve efficiency. The tools and service strategy is mainly interested in the advantages of simulation and analytical models.

The last chapter of Service Strategy –book is about challenges, critical success factors and risks. It talks about the complexity of the systems, coordination and control, preserving value and risks. Preserving value can be related to issues like deviation in performance, operational efficiency and effectiveness and reducing hidden costs. Finally, the risks surface from lack of accurate information, service provider, contract, and design.

3.2 Service Design

Service design is the second stage inside the ITIL service life cycle and one of the three concepts around the service strategy as the core. The book (Rudd and Lloyd, 2007) is also divided into nine chapters: 1) introduction, 2) service management as a practice, 3) service design principles, 4) service design processes, 5) service design technology-related activities, 6) organizing for service design, 7) technology considerations, 8) implementing service design and 9) challenges, critical success factors and risks. Since the first two chapters are very similar in every five books and the topics have been already discussed sufficiently before, there is no need to repeat the information here.

Service design principles covers a lot of topics. These topics include goals, balanced design, identifying service requirements, design activities, design aspects, the subsequent design activities, design constraints, service oriented architecture, business service management and service design models. First, examples of the goals for service design are that it satisfies the business objectives, easily and efficiently developed services and efficient and effective processes. The service requirements deal with topics like scalability, business processes and units supported by the service, agreed business functionality and requirements and the architecture. The design activities cover requirements collection and the original design, and the whole process of acquiring the service from an external source.

Service design processes chapter consists of a several topics to manage: service catalogue, service level, capacity, availability, IT service continuity, information security and supplier. The following chapter is about service design technology related activities that covers requirement engineering, data and information management and application management. The chapter after service design technology is about organizing for service design. It talks about the so called RACI model (responsible, accountable, consulted, informed) and how the functional and activity analysis is done with it. In addition, the chapter talks about the ITIL relevant roles and responsibilities: roles and responsibilities: process owner, service design manager, IT planner, IT architect, SL manager, availability manager, continuity manager, capacity manager, security manager and supplier manager.

The seventh chapter is focusing on technology considerations like service design tools, service management tools and implementing service design. Service design tools are used to design hardware, software, environment, process and data whereas the service management tools are used to run the IT together with the business. These service management tools have a long list of features that need to be fulfilled depending on the purpose of a specific tool.

Implementing service design, and challenges, critical success factors and risks are the last two chapters of service design. Implementing service design covers business impact analysis, service level requirements, risks to the services and processes, implementing service design with a vision and goals, and the measurements of service design like Key Performance Indicators (KPIs). The challenges include the possible lack of commitment and misunderstanding the business requirements and the actual risks come from poor design that will result in poor implementation.

3.3 Service Transition

Service transition is the third stage and after service design inside the ITIL service life cycle and one of the three concepts around the service strategy as the core. This book (Lacy and Macfarlane, 2007) is also divided into nine chapters and the structure follows closely that of service design: 1) introduction, 2) service management as a practice, 3) service transition principles, 4) service transition

processes, 5) service transition common operation activities, 6) organizing for service transition, 7) technology considerations, 8) implementing service transition and 9) challenges, critical success factors and risks. Since the first two chapters are very similar in every five books and the topics have been already discussed sufficiently before, there is no need to repeat the information here.

Service transition principles are divided into two categories: 1) principles supporting service transition like understand what is a service, how a service delivers value to business, and 2) policies for service transition like common framework and standards, re-use processes and systems, knowledge transfer and decision support, and release and deployment packages.

Service transition processes consists of various management related topics. There are transition planning and support, change management, service and configuration management, release and deployment management, service validation and testing, evaluation and knowledge management. Transition planning and support focuses on planning capacity and resources, providing support and coordinating activities. Change management is all about controlling the effectiveness of support and this effectiveness can be measured through risks involved and errors occurred. Service asset and configuration management basically identifies, controls, records, reports, audits and verifies service assets and configuration items and in this way supports business objectives and requirements. Release and deployment management covers building, testing and delivering the services. Service validation and testing is for quality assurance, problems and costs to services. Evaluation is about performance delivery, process, planning and reporting, and knowledge management intends to make sure that the right info is delivered to right place or people.

Service transition common operation activities covers management of the following topics: communications, commitment, organization change and stakeholders change. The following chapter, “Organizing for service transition”, covers areas like generic roles, organizational context for transitioning a service, organization models to support service transition and service transitioning relationship with other lifecycle stages.

The seventh chapter talks about those knowledge management, collaboration and configuration tools that support service transition. The purpose of knowledge management tools is to define and to document content related to services and

especially related to service transition itself. Collaboration tools consist of many possibilities but include shared calendars and tasks, messages, email, teleconferencing and workflow management. Configuration management systems are concerned about security, accessibility and maintainability of all the systems made available. The following chapter talks about implementing service transition in three stages: justify, design and implement. Finally, the last chapter lists the challenges, critical success factors and risks of service transition.

3.4 Service Operation

Service operation is the fourth stage and after service transition inside the ITIL service life cycle and one of the three concepts around the service strategy as the core. This book (Office of Government Commerce, 2007) is also divided into nine chapters and the structure follows closely that of service design: 1) introduction, 2) service management as a practice, 3) service operation principles, 4) service operation processes, 5) common service operation activities, 6) organizing for service operation, 7) technology considerations, 8) implementation consideration and 9) challenges, critical success factors and risks. Since the first two chapters are very similar in every five books and the topics have been already discussed sufficiently before, there is no need to repeat the information here.

The chapters three and four are relatively short. The chapter of service operation principles covers several topics. First, it deals with different functions, groups, teams, departments and divisions. Then, it talks about achieving balance in service operation, providing service, communication and documentation. Finally, it outlines the operation staff involvement in service design and service transition. Service operation processes include the management of events, incidents, problems and access. It also covers request fulfillment and operational activities of processes covered in other lifecycle phases.

Common service operation activities is a large chapter and covers many topics. Basically it is all about monitoring and control of service operations. First, it talks about IT operations management and support of mainframes, servers, networks, and middleware. Then, it continues with databases, storage and archiving, directory services and information security management. Finally, activities include

desktop support, internet and web management, facilities and data center management, and the improvement of operational activities as a whole.

Organizing for service operations contains information and instructions about functions, service desk and about three other management topics: technical, IT operations and application. Finally, both service operation roles and responsibilities, and service operation organization structures are covered.

The chapters seven and eight both deal with considerations and the last chapter of service operations deals with the challenges, critical success factors and risks. Technology considerations includes, besides the generic ones, event management, incident management, problem management and access management. Also, request fulfillment and service desk specific technology considerations are covered. Implementation considerations have topics about management change in service operations, service operations and project management, assessing and managing risk in service operations, operational staff in service design and transition, and planning and implementing service management technologies.

3.5 Continual Service Improvement

Continual service improvement is the fifth and the final stage inside the ITIL service life cycle and it surrounds the other stages. As with all the other books, this book (Spalding, 2007) is also divided into nine chapters and the structure follows closely that of service design: 1) introduction, 2) service management as a practice, 3) continual service improvement principles, 4) continual service improvement processes, 5) continual service improvement methods and techniques, 6) organizing for continual service improvement, 7) technology considerations, 8) implementing continual service improvement and 9) challenges, critical success factors and risks. Since the first two chapters are very similar in every five books and the topics have been already discussed sufficiently before, there is no need to repeat the information here.

The chapter of continual service improvement principles deals with various topics. First, the organizational change and how it needs to be taken into account with continual service improvement processes. Also, the ownership of the continual

service improvement and the role definitions are discussed. Then, the focus is on the external and internal drivers, service level management, knowledge management and service measurements. Finally, the topics of frameworks, models, standards and quality systems and how they are related to continual service improvement are laid out.

Continual service improvement processes, methods and techniques are covered in two chapters. First, the processes related to continual service improvement include improvement itself, service reporting, service measurement, return on investment, business questions and service level management. Then, methods and techniques for continual service improvement are explained with assessment, benchmarking, and measuring and reporting frameworks. Finally, the other service management processes are covered.

The last four chapters handle continuous service improvement from the organizing, technology, implementation and challenge point of views. First, the support roles and responsibilities are covered. Then, technology deals with the support tools and implementation includes critical considerations, starting points, governance, organizational change and communication strategy plan. Finally, the challenges, critical success factors and risks of implementing continuous service development are discussed.

3.6 Summary

This chapter has given a short overview for the whole ITIL service lifecycle that is explained in great detail in five books. The overview does not necessarily provide enough knowledge to make the comparison itself. Some background information is necessary like understanding all the terminology and other concepts used within ITIL books. However, the purpose of this chapter is to give the knowledge needed to understand the comparison made between ITIL and the processes and tools implementation models presented later on in this paper.

4 WORKFORCE MANAGEMENT PROCESSES

The purpose of this chapter is to introduce two generic contact center workforce management process models: an overall model and an implementation model. The overall model explains what topics the writer includes under "workforce management processes" and the implementation model reveals a method how workforce management processes are detected or created and how they are then launched for production environment. These two models create the baseline for the whole contact center workforce management processes work, and later, help explaining a third model for implementing the processes and tools together. This chapter has fourteen topics, one for each process of the overall contact center workforce management processes model. Two of the topics are divided further into subtopics. The other one is the process of information collection that explain in detail what information needs to be collected and this is also the content of the document to be produced. The other topic with subtopics is the process of planning. In this case each subtopic focuses on a specific planning period.

One of the earlier academic works claim that the management processes are forecasting, trunk space requirements, queuing and staffing, and workforce scheduling (Klunge 1999). According to Koole (2004, 2) the "complete picture of standard approach" is to have four processes: predicting the call volume and then agents needed, figuring out the needed shifts and finally scheduling the agents. Wassergkrug, Taub, Zeltyn, Gilat, Lipets, Feldman and Mandelbaum (2007) even leave the actual scheduling out when they claim the first three processes is all that is needed. Intra-day performance management is added to this list by Liao, Delft, Koole, Dallery and Jouini (2009. 1). Gupta and Parija (2009, 97) also recognize the importance of strategic planning for the contact center management. However, the most comprehensive list of workforce management processes comes from An, Jeng, Lee and Ren (2007). It is most likely due to the fact that their research focused on effective workforce management. According to them, workforce management practices should be "marketplace-driven, culturally aware, boundary-free and globally accessible" (ibid., 2187). The practices they identified are strategic planning, workload and legislative forecasting, turnover analysis, budgeting, hiring and training.

The contact center workforce management processes model (FIGURE 2) that the writer is about to present here is not based on academic research. Rather, it has evolved throughout the years in real life situation and is based on the preserved need of the organizations that run a contact center or its specialized forms of a help desk and a service desk. The proposed model has fourteen main processes. Two of these processes, besides of being processes of their own, both guide and support the other twelve processes. One of these two processes is the business strategy and the other one is documentation. The business strategy itself sets the baseline for all other operations and the business strategy processes guide the other processes towards the right direction. The documentation processes collect all the information needed by all the other processes mentioned here into one place, usually into one document with several appendices. All the other twelve processes need to follow the business strategy and they get the necessary information from the documentation that is a result of the documentation processes.

FIGURE 2. Contact center workforce management processes model

This contact center workforce management processes model remains basically the same regardless of whether the actual implementation involves only the processes

or processes and tools together. The only bigger difference is that the configuration processes are not used if there is no tool to configure. The individual processes are affected lightly if there is a proper workforce management tool available. In that case the processes lean to the tool for support and the processes become more automatic. Without the presence of a tool, however, the processes remain highly manually executed.

Like the model presented right before, the workforce management processes implementation process model (TABLE 3) presented here is a generic model as well. This means that the detailed implementation plan with specific tasks and timeline is always created and tailored to a specific organization. This also means that the implementation timeline can be anywhere from a month to a full year depending on both the size of the infrastructure architecture (like the amount of geographical sites), the amount of training to be given and the level of workforce management processes integration into the existing relevant business processes. This model has been invented many years ago by the writer and it has gone through several development iterations based on the experiences gained from real life situations.

TABLE 3. Contact center workforce management processes implementation model

1. Kick-off; introduction to the process and planning for proceedings
2. Filling out the "questionnaire" (a document)
   - Questions related to contact center, it's work shifts and processes
3. The First "workshop" –period (not necessarily a workshop)
   - Working on the questionnaire together
   - Processes (planning and forecasting resources, planning work and scheduling, operations, other)
   - More detailed plan for the implementation process based on the results of the first workshop period (timeline, tasks, assignment of specific responsibilities)
4. The Second "workshop" –period (not necessarily a workshop)
   - Fine tuning (documentation, processes)
5. Functional processes user training (managers, administrators, supervisors, agents)
6. Piloting the new processes to gather information and to get user experience
7. Full implementation
   - New processes become part of the daily work

There are seven steps in the implementation process model and none of them are optional. In the model the document that will be written during the process is explained below under the topic headings 4.2.1-35. The information collection period focuses on steps one through three and the information collection can happen in various ways. Only one of the methods is a formal workshop and other methods include, but are not limited to, interviews, document reading and observations. The break between the steps three and the four are usually several weeks or, at least, the step three takes a long time. The formal document is presented for the first time during the step four.

4.1 Business Strategy

Business strategy processes execute the business strategy itself and these processes can be divided into short-term and into long-term ones. Since the organizations should operate according to its business process, every workforce management process introduced under this chapter is intended to reflect the actual business strategy of the specific organization. If this is found not the case in real life, either the processes need to be revised to support the strategy or the business strategy needs to be changed.

4.2 Documentation

Under this topic the structure of the document that is an integral part of the contact center workforce management processes implementation model, introduced under the main heading of this chapter, and the respective combined processes and tools implementation model, to be introduced under the main heading of the next chapter, is revealed. The subtopics follow closely the actual document to be written except it omits things like possible appendices. The actual content of this document is the core part of a successful processes and or tools implementation. The document template is not shown to an organization in the beginning. Whoever collects the various pieces of information together keeps writing them into the document. There the information is readily available for all those parties involved.

The document is given to the organization and its end users first for the review of the correctness of the information and finally for the documentation storage purposes. The rest of the implementation of either processes or processes and tools together depend crucially on the quality of the information collection period and the actual documentation itself.

The information can be collected in various ways. Some of the methods include formal workshops, meetings, observations, interviews, short questionnaires and reading the existing documentation. The content of the document varies only lightly if the purpose is to implement some more efficient and effective contact center workforce management processes without a tool. Only the topics of "technical requirements", "workforce management user rights and user security" and "workforce management technical environment description" are removed. Some other topics might be slightly altered by leaving the tools relevant information out because it does not exist. All topics are introduced shortly by explaining what is collected and in some cases also why i.e. the reason for collecting that specific piece of information.

4.2.1 Functional needs

The purpose of this subtopic is to collect together all the possible functional needs that are likely to have an influence on implementation. These functional needs include at least basic objectives, service level objectives, resource management objectives, general management objectives and the desired processes to be developed.

First, the basic objectives should be listed and the relevant values as well. These objectives include topics like answer ratios, sales volumes and general quality. Also, it is very important to note if the organization currently does not have, or at least recognize, any current basic objectives. Second, the same should be done with the service level objectives. For example, is there a minimum number of agents agreed to answer to a specific queue in any given time, or for how long it is acceptable for a customer to wait before a connection is established with an agent. Again, it is very important to note if the organization currently does not have, or at least recognize, any current service level objectives. In addition, it should be noted

if there is a system that warns if these objectives are not fulfilled. This is especially important if the organization has made any service level agreements with anybody. Third, the similar information collection regarding resource management objectives should be done as was done with the previous objectives. An example of this kind of an objective is the possibly agreed minimum staffing level. Fourth, the general management objectives information collection requirements follow the requirements of the previous three objectives. Overall, it should be noted if any of the objectives are planned to be improved or changed any time soon. Finally, all those processes that would like to be improved should be collected here. These processes can vary and can be executed on various time levels like daily, weekly, monthly, quarterly and yearly.

4.2.2 Process descriptions

This subtopic should cover all those workforce management processes that have been identified. The descriptions do not cover everything but enough details need to be provided so that the process can be understood and followed.

4.2.3 Position descriptions

All the contact center positions need to be listed and shortly described. In case a workforce management tool is going to be implemented all the possible new positions need to be identified and described as well.

4.2.4 Technical requirements

This subtopic is relevant for the actual contact center workforce management tools implementation only and should be removed if this is not the case. The technical requirements both from the current environment and from the vendor side are documented here. This information includes things like hardware, operating

system, capacity, security, network connections, access rights, existing and supported databases and their size requirements, possible web browsers and other possible requirement.

4.2.5 Key Performance Indicators

There are two kinds of key performance indicators (KPIs) and they both need to be collected and documented here. The process KPIs are focused on process efficiency and the strategic KPIs are focused on business outcome. For example, some of the KPIs could be average speed of answer, average handling time, service level, budget, coverage, occupancy, abandonment rate and adherence. Holincheck and Buckmaster (2004, 4) talk about human capital management processes and they identify some process KPIs being length of planning cycle and manager time spent, and strategic KPIs being critical role head count gap and span of control. These examples are also relevant in this context presented in this paper.

4.2.6 Return of Investment

The return of the investment (ROI) the organization expects to gain from either the processes implementation or the processes and tools implementation need to be collected and at least the results of the calculations need to be documented here. After the implementation is finished the same calculations need to be re-performed and the actual results need to be documented here. In case the results did not meet the expectations, the reasons should be investigated and the results of the investigation need to be documented here as well for a learning experience and also for a future reference.

The manual processes are usually inefficient, time consuming and expensive and they tie the managers up unnecessarily. The workforce implementations are performed in order to increase profitability but there are often some hidden implementation costs, especially if the requirement specifications are not created and a tool is then purchased and only some modules are included to “try out” the tool. It pays off to first figure out the technical and especially the functional

requirements, find the proper tool and then do the whole implementation process, including the expected and occurred ROI calculations. The results should be showing at least on efficiency, productivity, labor costs, staffing and scheduling optimization, forecasts, service levels, customer wait times and on deployment of critical resources.

The writer has experienced that the rather rapid ROI are showing in many areas if the implementation is executed properly. Forecasting becomes more accurate and agent utilization is improved. Scheduling and adherence reduce administrative overhead. Re-organizing and partially automating agent related tasks like trading and time off requests reduces both agent and administrative costs by freeing time for other work to be performed. Finally, properly executed capacity planning increases customer satisfaction and improves various KPIs.

It has been about two years since Genesys (2008, 7) publicized a so called "ROI scorecard" (TABLE 4). The writer has been using it ever since in cases where an organization has had some problems actual ROI calculations. However, in the majority cases the business management is well capable of making these calculations but, for some reason, do not want to share them.

TABLE 4. ROI Scorecard (Genesys, 2008, 7)

1. Automating Forecasting, Scheduling, and Resource Tracking Benefit = current number agents times percentage increase in utilization divided by occupancy X fully loaded cost per agent
2. Integrating Intelligent Contact Routing Benefit = fully burdened personnel salary times total time spent on WFM skill updates times reduction in time due to automatic updates
3. Tracking Multi-channel Activities Benefit = current number of agents times percentage increase in utilization divided by occupancy times fully loaded cost per agent
4. Managing the Use of Real-Time Adherence Benefit = (scheduled availability percentage minus measured availability percentage) times number of agents times percentage reduction in shrinkage times fully loaded cost per agent
5. Empowering Agents to Manage Their Schedules Reduction in attrition benefit = total number of agents times percentage turnover rate times reduction in churn due to WFM x average replacement cost per agent

6. Streamlining Administration Tasks Labor saving benefit = fully burdened personnel salary times total time spent on contact center workforce management activity times reduction in administration handling time due to WFM

4.2.7 The benefits from using resource management

The purpose here is to keep track of all the possible operational benefits identified related to workforce management implementation. First, the benefits that are desired should be collected before the implementation takes place, during the implementation and after the implementation is over. The easiest way is to do this with a web form and allow anonymity. The active comparison of the desired benefits in the beginning and during the implementation allows the identification possible issues that could still be fixed during the implementation. The desires left in the end could be kept in mind and moved into a new implementation process later if necessary. The other set of information that needs to be collected and closely followed is the benefits that are felt to have been gained during the implementation process and then, again, after the processes is all over.

4.2.8 Current method of operation

The current methods of operation, especially those related to forecasting, scheduling, planning, performance and adherence, reporting, trading shifts, time off requests, scheduling meetings and trainings and exception management need to be collected and documented here. Also, anything else that comes into mind related to current methods of operation need to be documented. Furthermore, existing and identified good practices and those practices that could be improved should be documented under this subtopic as well. All the topics identified above have some future instructions below.

The detailed information regarding forecasting includes the way it is decided how many people should be working at any given time and what should they be doing then. Is this planning done on paper or is there a system supporting this task. The possible system or the program needs to be identified. If there already is a workforce management tool in place, is it used alone or in combination with something else? Basically, the current forecasting process, if any, needs to be identified and its current level of optimality calculated.

The information related to scheduling need to be collected and documented. How are the work shifts planned and how many weeks in advance this is done? Who is responsible for planning them? Does the person decide how many are needed, who is working and where and does the same person grant days off? Can the employees affect the shifts in advance like the shifts they want? How is this information collected? How are the possible exceptions to the shifts collected and taken into account during planning? The result from answering these questions is the description of the current scheduling process.

All the current general planning processes that somehow are related to workforce management need to be collected and documented in order to understand what processes are still manual or otherwise inefficient. This information includes what is planned, where the planning takes place, how often the planning takes place and who does the planning.

Performance and adherence are yet other workforce management processes to be identified and documented. Information like what is followed, who does the following and what are the consecutive actions if there are any exceptions identified need to be documented. It is also important to know if the performance and adherence are only followed from historical reporting.

The current general methods and processes related to reporting are also important. What are reported, how often, who does the reporting and who receives them? How are the reports created and does the data come from one system or several of them?

What is the current process for trading shifts? Are there any rules for trading shifts and if so, what are they? How many trades occur daily or weekly?

The current processes related to time off requests need to be identified. How is it decided who goes on vacation and when? How are the time-off (day off, vacation) requests handled? Are there differences on processes between different kinds of times off? If so, what are they? Are there limitations on times off and if so, what are they? What happens when there is a conflict like more people want to have time off than it has been agreed in advance or if the granted time off would affect the service level negatively?

The current processes related to scheduling meetings and trainings need to be documented. How many meeting and training requests are there daily? How is it decided whether they are done, when they take place and who will participate? These figures are needed for both on daily and weekly levels. Are there any agreements on getting this kind of information in advance (like for scheduling purposes)? If so, the agreements need to be listed. Are there any other agreements made related to scheduling meetings and trainings?

Finally, all possible relevant exception management processes need to be written down. It might help the identification if the possible relevant exceptions are listed first and then the processes are described. Also, in case there are no exception management processes identified, it should be stated as well.

4.2.9 Future method of operation

The purpose of this subtopic is to collect all those pieces of information that were positively identified as inefficient, ineffective or even nonexistent under the previous subtopic. Then, the current processes should be changed, the desired methods to make the change identified and the future processes described.

4.2.10 General rules of operation

All those contracts and other official agreements that affect the operations need to be identified, listed and described shortly. These include things like labor union agreements or government regulated issues. The content of those parts where

information relates to workforce management processes is needed. This includes information like hours of operations, daily / weekly / monthly work hours, breaks, days off, evening work, weekend work, over time work and vacations. Also, some other information related to workforce configuration like how many weeks in advance the shifts need to be published, daily / weekly / monthly / yearly hours of work on various contracts (full time, part time, permanent, seasonal employee) and so on. Are there any other contacts, agreements or rules that affect the operations as a whole?

4.2.11 Agreed methods of working

All those agreed methods of working that are not identified under either the "Current methods of operation" or the "General rules of operation" subtopics need to be documented here. These agreement can be either internal or with other units inside the organization. In case the methods of working could be improved, it should be noted here, the implementation plan created and the new agreed methods of working documented.

4.2.12 Contact channels

All contact channels need to be identified and the details documented. Usually this consists at least of the following channels: incoming phone calls and outgoing calls, outbound campaigns, emails and the web. It is very important to collect the relevant statistics in order to understand the relative complexity of the work.

On incoming phone calls and outgoing individual calls it is important to write down the numbers that customers use to call in and where the call ends up. The purpose is not to write here the routing strategies (add as an appendix if desired). Instead, the description should be in a level like, for example, when customer calls into number xxx, it is directed to the queue called yyy or to a menu that has the zzzz possible choices. The main purpose is to have list of the subjects, tasks and

skills. Also, the call volumes for each queue on day, week, month and year levels need to be documented. In addition, the specific days when it is assumed or known that the volumes are considerably different (for example: in the beginning or in the end of the months, certain month(s), yearly campaigns on specific time). Do the special holidays have an effect? Are there any other times that exceptions are experienced in daily operations?

The information related to possible outbound campaigns is equally important to incoming calls. What are the main topics like sales or questionnaires and the related call volumes (day / week / month / year). Are there any alterations on volumes? Are any formal systems or programs used to get information or to dial out? What calling mode is used, if applicable (preview / predictive / progressive). How are the calling lists used? If the outbound campaigns are not done and this topic is not relevant it needs to be stated here as well.

Another contact channel that requires documentation is email. The main topics and the related volumes (day / week / month / year) are needed. Is the incoming flow regular or are there peaks or slower times? How many emails can an agent handle in an hour and in a day? If the emails are not handled and this topic is not relevant it need to be stated here as well.

The information related to web use need to be identified as well. How is the web used with the customers? What are the volumes? Also, it needs to be stated if this topic is not relevant.

4.2.13 The content of contact channels

The content of the each contact channel identified previously need to be analyzed further. The special attention should be given to the possible manual processes.

4.2.14 Contact channels routing

It is important to understand how calls, emails and other tasks are routed to agents. It does not matter whether there is a workforce management tool involved or not. However, it should be noted if the tool is to be used for routing in any way.

There are many ways to do routing and it can become very complicated, and for reason. The purpose here is not to copy the whole routing with routing strategies here but to note the logic behind. For example, the routing can be based on skills, service levels, business priorities, customer profiles or costs.

4.2.15 Organizational chart

The relevant organization chart is needed. If there is only one or few, they should be copied here. Otherwise their place is in appendix. The charts need to be explained, if necessary. Also, all locations of contact center operation, the number of supervisors, team leader and agents. Finally, if there are going to be any changes on the recorded information any time soon, it should also be noted.

4.2.16 Information related to agents

The number of teams, their names and how many members are in each team are needed. Also, it is important to note the type of the agents in each team. Are they full time, part time or, for example, on maternity leave? All other exceptions to the main work contract (full time, five days a week) need to be described. Finally, if there are going to be any changes on the recorded information any time soon, it should also be noted.

4.2.17 Working hours

What are the regular working hours? The days of the week of operations, the times in each day and all the exceptions to the regular working hours Are there any exceptions right before or during holidays?

4.2.18 Scheduling and shift information

All the possible lengths of shifts in minutes and all the possible beginning and ending times need to be recorded. Also, the process of work scheduling need to be described.

4.2.19 Shift rotation

It is important to know if there is any rotation of shifts used at all. Every rotation need to be noted and its use explained. How are people assigned to rotations? Do all the rotations start from the same week? Are there any exceptions to rotations?

4.2.20 Agent skill management

There are various pieces of information that need to be noted here. These include all the possible skills and skill levels used and the explanation what they mean. Then, the knowledge of the method the skill level of an agent is decided is important. Are teams formed based on skills or on something else and are there any rules like the size of a team. How are the trainings to be held decided and how are the participants on specific trainings selected? Does the training build on the previous training? Does the training relate to a specific skill level? Is training and learning reviewed or even repeated? How is the need for training identified? Is there an official training manual where all this information is included?

4.2.21 Agent tasks

All possible tasks related to work excluding tasks like participating meetings or trainings, need to be recorded. The tasks could include, for example, inbound, outbound, email, mailing, trainer responsibilities etc.

4.2.22 Breaks

It is also important to know all the different types of scheduled breaks during the day like meals. The length of each break, the number of breaks an agent can have and possible other restrictions like the specific times of a day or a week the breaks can occur are some of the pieces of information to be collected. Are there any other agreements or restrictions like how many people can be on a specific break simultaneously or how many hours one has to work before the first break or after the last break or in between two breaks? Is this use of breaks monitored somehow and if so, how?

4.2.23 Meetings

There should be a plan for the meetings. For example, daily meetings should be short, weekly meetings should be more tactical meetings and monthly meetings strategic ones. Whatever the case, both the general information and the planning process are needed. The information includes a list of all known meetings that occur daily, weekly, monthly or yearly, the list of participants if known, and the process how the needed meetings are decided, when they are taking place, the length, time of the day and so on. Also, how far in advance new meeting are known?

4.2.24 Trainings

The similar information is needed about training that was needed about meetings. This information includes lists of known trainings, the frequency they are held and the possible preselected participants. Also, the trainings for the following couple of months need to be identified.

4.2.25 Other exceptions to a regular work day

Are there any other exceptions that are not yet recorded but that should be noted? For example, the organization will turn 50 years old and there will be special celebrations or there is a fire drill every first Monday of the month at a certain time.

4.2.26 Time off

The organizations have all possible types of time off that need to be listed. For example, there are winter and summer vacations, shorter working days before holidays, holidays, maternity leave, weddings, funerals, sick leave, part-retirement and personal days off. Are there any restrictions on lengths or how many people can be on a specific type of time off?

4.2.27 Workforce management user rights and user security

This information is only needed if workforce management tools are to be implemented. The workforce management tools have access rights to be configured. Each tool has a set of principles to follow and the user groups vary from a tool to another. All the principles with the user groups and the members of these groups need to be identified.

4.2.28 Forecasting with workforce management

General rules and priorities need to be recorded. For example: in case of a conflict is it more important to keep up the service quality level or will certain or even all meetings, trainings and other be more important? Also, what is the percentage of a drop in service level quality that is not acceptable to be planned on purpose? There are many other prioritizations to be done as well. It should be noted that some priorities might be on the level of a strategic business secret and those may not be included here. However, even these instructions should be written down somewhere and given to the people who do scheduling.

4.2.29 Planning resources with workforce management

Are there any other guiding principles that have not been mentioned elsewhere in this document. For example, does a team always have to be at work at the same time? Does leaving on vacation or returning from one have any effect on the content of the immediately preceding or following work day?

4.2.30 Workforce management as a part of general planning process

Are there any ideas or thoughts regarding the possible use of workforce management as a part of general planning process? For example, one could try to improve processes (operations) to be more effective or change the work shifts or rotation to better fit the goals.

4.2.31 The use of workforce management with performance management

It is possible to use workforce management processes to support performance management. If this is the case, the processes need to be identified and described.

However, usually the workforce management tools are used with performance management tools or the performance management functionality is integrated into the workforce management tool. The processes need to be identified and explained. The information needs to include at least the users involved, the frequency of the observations and the consecutive actions taken, if necessary.

4.2.32 Changing shifts

The agents can and will request changes to their shifts both before the shifts are published and afterwards. All the related processes need to be identified and they will vary depending on whether a workforce management tool is available to support the processes. How are the pieces of information like meeting or time off requests dealt with? It is necessary to identify both the process and all the possible user roles involved. When the work shifts are published, the agents usually trade with each other the inconvenient shifts with more suitable ones. However, there are cases when the trading is not possible.

4.2.33 Workforce management reporting

A list of reports with the content is needed, how often they are needed, who needs them and especially why these people need them. This helps avoiding “reporting overload” since workforce management tools are too powerful to have all reports for everyone all the time. One should start with limited number of well planned reports and processes for their use and keep adding them when one becomes more familiar with the kinds of reports that can be gotten out of workforce management tools and the possibilities they open for operations.

4.2.34 Workforce management technical environment description

The description of the technical implementation of the workforce management tool is necessary. This also includes the architecture design of the environment. The technical design should include all necessary servers, workforce management tool components in each, and various other pieces of technical information. This section should include not only the production environment but the possible development and test environments as well.

4.2.35 Workforce management integration to other systems

The workforce management tools have to be integrated to at least some other systems. The minimum requirement is that the volume and average handling time data comes from somewhere either by direct integration or through a specifically developed interface. The dataflow should be automated. There might be some additional integrations between a workforce management tool and other systems needed to be identified. Some examples for possible system integrations include corporate e-mail, human resources, salary management, external reporting, performance management and e-training.

4.3 Configuration

Configuration is the only contact center workforce management model –process that is optional in a sense that it is only used when both the processes and tools are implemented. There is nothing to configure if the implementation is purely done for the various workforce management processes.

This configuration has also two clearly distinctive phases: the initial configuration and the following iterative modifications. Basically, the initial configuration consists of entering all those relevant pieces of information that was collected during the documentation process and that is described in more detail under 4.2.1-35. However, the specific details to be configured and how they are to be configured vary a bit depending on the specific tool in question. Once the configuration is finished for the first time, most of the data do not need to be changed because the company structure, the labor laws or the access rights, for

example, do not change all that often. The following configuration usually is related to new meetings and trainings as well as changes in agent information only.

4.4 Forecasting

Forecasting processes can be divided into two categories: long-term and short-term. Long term processes relate to planning on budgets, staff, operational changes, and on a high level, trainings and scheduling vacations. Short term processes are associated with volumes, average handling times, staffing and scheduling. Normally historical data is used to forecast the future anywhere from one day to several years and there is no limitation on how many forecasts can be created.

4.5 Scheduling

Scheduling process is based on the results of the short-term forecasting, and also with the configuration process if the scheduling is performed with a tool. The scheduling process has to take various pieces of information into account. A workforce management tool would already have this information configures and it would be automatically used. However, without a tool the agents have to be manually scheduled according to governing rules and regulations including various exceptions to the work day. Possible priorities, service level requirements and rotation of shifts. Basically, the schedule would need to remember everything relevant from the processes documentation. Scheduling is usually performed with several iterations to find out the best suitable schedule. Efficiency analysis is an essential part of this process as well. Finally, it is always important to remember that no agent is available for every minute to work when scheduled. There will always be so called overhead when an agent is not doing the actual work. For example, an agent might be taking a break, participating in training or a meeting, arriving or leaving, starting up or shutting down the computer, talking to a

colleague or an supervisor or even on vacation or sick. Good schedules realize this and calculate the overhead in and poor ones do not.

4.6 Intraday management: adherence

The adherence process of intraday management is basically actively monitoring that the agents are doing what they are supposed to be doing. This is practically impossible in any detailed level without a tool. One can keep an eye on the amount of people on breaks and on various statuses of the phone, like “on call” or “not ready for next call”, with a queue display, for example. However, proper contact center workforce management tool can keep a track of the activities actually performed and the tool can give a warning in a minute if the agent is not doing what is scheduled. This is extremely important when the contact center opens or closes or when large numbers of agents are creating warnings. There might be a situation, for example, that many agents postponed their break to shrink the sudden and unexpected increase in an incoming call queue. If the supervisor does not realize this and everybody will leave to their postponed break along with those rightfully scheduled to be done so, the operations will suffer from shortage of resources at least with a lowered service level.

4.7 Intraday management: performance

Performance processes are similar to the adherence processes. However, instead of focusing on agents, it focuses on the successfulness of forecasting and scheduling processes. However, a proper contact center workforce management tool is required if the forecasted, required and scheduled values want to be compared with the actual performance ones. The performance monitoring focuses on the deviation and might call for an action if the performance is seriously poorer than what was intentionally planned and scheduled for. In few cases the forecast has been accurate but the scheduling has been knowingly done with an acceptance of a lower service level as the consequence. In this case, naturally, no action is taken.

4.8 Trading

Trading of shifts takes place after the schedules have been published and the activity is more intense towards recently published ones than those that have been available for more than a week. The trading process without a tool goes in the way that two agents agree on a change and then ask for a permission from a supervisor who usually grants it and marks it down somewhere (an excel sheet, a note pad, a post-it note). The trading process with a proper tool would automate part of the process. An agent could accept a trade proposal and the system could automatically approve it and make the change immediately visible to everybody as long as some preconditions exist like the shifts are of same length. In case there is something prohibiting the automatic acceptance, a supervisor would get that for approval but the system would still store and display the outcome automatically.

4.9 Reporting

There is no use to create lots of reports if the whole process is not thought through. However, the reports are the essential part of evaluating the past performance and to make future plans, for example, to improve efficiency and effectiveness of the operations through individual processes improvement. Therefore, not only the content, interval and level of the reports but also the reactions to these reports should be planned carefully.

4.10 Training

Training is a rightful process of its own. It consists of making a strategic decision for the need for a specific kind of training, planning the topic and the content, creating the material, selecting the participants, scheduling them to participate, holding the training, testing the learning if so desired, evaluating the training itself and providing a review or a more advanced level training later on. Contact center

agents do not differ from any other employees here. Everyone needs training. However, training is one form of overhead when the agent is not performing productive work. The time spent on training need to be calculated on various processes like planning and scheduling.

4.11 Assessment

The assessment processes are very important but the actual processes as well as the methods used and the consecutive actions taken afterwards vary considerably from an organization to another. Assessment itself is a part of quality management and is visible part of other processes like adherence, performance and training. The assessment is also used, for example, when assigning skill levels to agents, when figuring out potential service level impact and when monitoring live calls to identify agents' strengths and weaknesses.

4.12 Planning

In this topic the complex planning process is explained. The complexity comes from the fact that the planning processes and the focus change considerably depending on the planning period in question. None of the contact centers can run without planning but the thoroughness of the work and also the relative importance of the period used can vary greatly from an organization to another. Also, the step-by-step approaches to the planning processes are somewhat different. However, the goal here is to present the planning process as the writer sees it and the details are added or omitted when this process is adapted to a specific organization. Each subtopic presents one specific period and the periods are: a trend, a year, a quartile, a month, a week and a day.

In contact centers short term planning and long term planning need to be defined because both are relatively shorter than what is usually understood with them. In this workforce management process model short term planning covers daily planning and weekly planning, and long term planning contain activities that

happen monthly, quarterly or once a year. Any planning that is longer than a year are considered rather trends than a long term planning.

4.12.1 Trends

Trends are more of a set of guidelines and usually cover from over a year to three years into the future. The previous or current years are also covered. The organization already has a strategy for the future. These guidelines, or trends, can be divided into three main categories: vacation planning, meeting and training planning and planning for exceptions.

The vacation planning includes decisions like the general vacation times, minimum and maximum lengths each time and the minimum and maximum number of people that can be on vacation in each task, team and site. These decisions can be fixed or they can even rotate from a geographical site to another (or from team to another) if there are more than one location where the contact center is run. The meeting and training planning is very similar to the vacation planning because the goal is to agree both on actual content and attendance requirements and then optimal time to have them. Finally, planning for exception is how the overall support for the contact center is organized. This covers processes that support quick decision making, strategies reviews, budget reviews and hiring in the long run.

4.12.2 Yearly planning

Yearly planning process is executed once a year, usually in November or December. It is basically nothing more than making very rough forecasts for the following year on the whole year, month, week and day levels and then tactical planning of all resources (human, hardware, financial) for the same periods.

First, one needs to forecast the volumes for each channel (calls, emails, chat), the average handling time of each contact and the amount of people available for each period considering holidays, vacations, required training and other exceptions that

can lower the availability of the current workforce. Then one needs to calculate the impact of the forecast into service level. This is done by subtracting the forecasted from the desired service level in order to get the size of likely gap between these two. Then the need for new employees in order to reach the desired service level is calculated and together with the approximate budget, the decision is made to either hire more people or to lower the service level. Also, the need for training for the whole year is determined as well as preparations made to cover the possible impact of known changes in the organization. Each one of these sub processes mentioned are shortly introduced below.

First, all the forecast calculations are run in a day level and the daily level calculations are used for all automated calculations thereafter for accuracy. However, the results are usually presented on weekly and monthly levels, and the decisions made on a monthly level. Volume and average handling times are automated if the organization already has a workforce management tool. However, the number of employees available for each given time usually needs manual intervention.

In order to get the future number of working days covered by employees collectively, three categories need to be decided. First, the current number of employees needs to be analyzed. Is the ratio of permanent and temporary employees acceptable and are there possibly any people leaving the contact center work either for a longer period of time or for good. Also, based on the previous year's experiences, are there any additional reductions to be expected yet not known. Second, the amount of vacation days the employees have collectively and when they are likely to be kept need to be calculated. Third, all the pre-known meetings and the needs for training need to be calculated. When all these three calculation are put together, one gets the approximate shrinkage or the actual availability time to the total full-time-equivalent (FTE) calculated.

Then the organization needs to decide the desired quality determined by the service level or whatever other key performance indicators it wants to follow. This needs to be decided for the whole year but the calculations need to be available for each day and the possible acceptable deviations marked. For example, some organizations allow lowed quality during the nights or on a Christmas Eve.

Once all the above calculations are made and the available budget frame is known, the organization will make the final decisions regarding hiring new people,

spending on training, drafting the individual budgets and changes to the service level plans.

4.12.3 Quartile and monthly planning

Quartile and monthly planning are otherwise basically the same except their relative length varies. Both use the yearly plan as a starting point because the results of these two processes are basically the specific yearly plan but the planning has been done in more detail. Also, the special features of each quartile consist of the special features of the respective three month periods put together. The content varies from an organization to another but some things can be assumed to be there. For example, the first quartile includes summer vacation planning of the current employees and the possible recruitment decisions for the summer time to cover for the people on vacation. The second quartile has the possible summer employee training, the third prepared for the Autumn and the last one, quartile four, includes the planning for winter vacations and the yearly planning for the following year. All these quartile plans should include a list of those important decisions that a) can be done, and b) has to be done at a certain point of time.

Making the quartile plan is a process of its own. The organization needs to decide who collects the information together, what information is needed, from where does the information come and who needs to receive the plan for decisions. Here the existence of a contact center workforce management tool is indispensable. One can get quickly even very complicated scenarios calculated with forecasting and with so called “what-if” scenarios.

Once the plan has been made and approved, the execution needs to be followed. Again, it needs to be known who does the following, what exactly is followed, how it is to be done and who all need various kinds of reports and how often they should receive them. There should be various plans for different outcomes to be promptly executed, if necessary. Sometimes the reaction can wait until the next quartile planning period but often the corrective actions are taken either monthly or weekly bases. Daily reactions to quartile level planning is not appropriate and likely not even feasible.

However, the purpose of comparing the planned to the existing results is to find out where the plan succeeded and where not. The results are then used for future quartile planning and if necessary, the processes are improved.

4.12.4 Weekly planning

Weekly planning needs to be divided into two main areas. The other weekly planning refers to the plans done for the following week, usually on Fridays, and the other is scheduling done for a one whole week that need to be published to the agents from two to six weeks in advance depending on the labor and possible other agreements.

Usually the information of the following week is available in one location by Friday, and if not, it needs to be collected together. These pieces of information include vacations and other absences, agent wishes, meetings, trainings and any other issues that can affect the availability of planned agents. There need to be formal processes of who is responsible for collecting everything together, how the collection is performed and which information needs to be approved in advance and by whom.

When all the information is in one place, the volume forecasts for the following week need to be checked, and then the forecasted need of agents need to be compared against the scheduled and actually available agents. Corrective actions like canceling a training, moving a meeting or changing tasks might be necessary to keep the desired service level. In case there is an external organization that has agents available on-demand basis, the process of getting replacements from there need to be described.

The other form of weekly planning is the scheduling. There needs to be a process of how far in advance they are planned and how the changes are made afterwards. The actual scheduling process is explained under the subtopic heading 4.5. The changes can be immediately done or done before the actual week or day affected or even during the day for the same day. No matter of the timeline or the actual change, there has to be a proper process so that every change is recorded and available for all consecutive planning periods.

Weekly planning is very time consuming especially if there is no formal workforce management tool available to support the various related processes. For example, a tool can save several days worth of hours by providing user interfaces for changes management and forecasting. All the meetings and trainings and other exceptions can be immediately entered when they are known, the agents can trade shifts or request vacations and any alterations of the plan can be quickly run through "what-if" scenarios. These scenarios will immediately show if the change would impact the service level for an unacceptable level without actually committing the change to the actual schedule.

4.12.5 Daily planning

Daily planning can be done twice for the same day: on the previous day or during the day in question. The big difference is the actual time these two planning processes give to react to possibly detected challenges. Some supervisors even have quick processes for a day after tomorrow planning and the rest of the week planning but often these are not necessary because the weekly or daily planning already cover it adequately. If the planning is done the day before, the process might include updating the information, rerunning the forecast for the following day, adjusting the tasks of the agents and possibly asking some agents for overtime. The same day planning processes include checking in the morning that the first shift made it to work, comparing the forecasted, scheduled and actual performance and reacting to possible problems arising.

4.13 Recruitment

Each organization has recruitment processes. In this case the recruitment process is actually describing the triggers and the actual decision making process that a new employee is needed. The decisions can be made during the various planning periods, even on daily planning if an organization is using outsourced agents that can be called to work for the following day or even with few-hour-notice. If this is the case, the organization does have a workforce management tool to do relatively

accurate forecasts. In any longer planning period like a year and a quartile, the recruitment process for contact center workforce need to be described but it is actually used inside the planning periods.

4.14 Agents involvement

Processes that allow agents to become actively involved in the whole contact center workforce management process model are valuable because they do not only save time and other resources but also boost motivation. Increased motivation is known to boost productivity in return. The involvement is passive if the agents are only allowed to tell preferences for vacations when specifically asked or request trades from a supervisor. The involvement becomes active when the preferences can be given at any time, shifts traded automatically if two agents agree, self-assessment can be made and even future schedules can be bid before they are actually assigned.

4.15 Summary

In this chapter two new process models were introduced. The first one, the contact center workforce management processes model seem to be one of the most comprehensive models what comes to the workforce management processes, if not the most comprehensive one. The traditional models usually cover only forecasting and scheduling based on the calculated need and sometimes intraday management and even business strategy are included. However, contact centers are complex environments that have a number of processes to take care of. Modern organizations drive for efficiency and effectiveness of the operations and in order to support them on this goal, a more comprehensive model is needed. Hopefully this model presented here will be one of the models supporting such goals.

The second model introduced was the contact center workforce management processes implementation process model. It is not enough to have a model that lists the main process components of workforce management. The processes need to be either recognized or created anew to suite for each organization. Although the general principles of each process remain the same, the organization's business strategy, organizational culture, technical architecture, tools and people will make each process somewhat unique to each organization. Therefore, the second model attempts to show one way how this implementation can be successfully done regardless of the specific organization in question. Together, these two models could provide a valuable guideline on how to work around the contact center processes and to support the specific process of contact center workforce management tools implementation described in the following chapter.

5 WORKFORCE MANAGEMENT TOOLS

In this chapter the workforce management tools are dealt with in more detail. The tools implementation needs the knowledge of the existing or desired processes but the workforce management tools also shape the processes themselves. Therefore, it is vitally important to understand this linkage. First, the workforce management tool deliverables along with some best practices are introduced. Then, the possible opportunities and gains are discussed. Then, the writers own processes and tools implementation model is revealed along with a relatively short peak into the workforce management vendors in the contact center market. Finally, three specific workforce management vendors are shortly introduced under their proper subtopics because they have certainly shaped the writers workforce management processes model and the processes and tools implementation model throughout the past years.

Davies (2007, 2) thinks that organizations with more than 30 agents in their contact centers would benefit from using some kind of workforce management tool specifically made for contact center operations. This observation was made over three years ago. However, the fact is that even the writer keeps running into contact centers, help desks and even service desks with hundreds of agents and the scheduling is still done with the combination of excels, word and emails. In addition to the traditional tool functions of forecasting and scheduling, the trend seems to be for strategic planning, intraday management and agent empowerment through agent user interfaces. These newer trends can no longer be effectively done without proper tools. Davies adds to this list by observing the need for performance management, quality management, internationalization, technical advantages, solution accuracy and ease of use (ibid., 2007, 2-3).

One of the workforce management tool vendors, Genesys (2008), has also listed generic capabilities for the tools. It is rather obvious that its own tool does fulfill these requirements but the requirements are so generic that all the proper contact center tools should and they do fulfill them in one way or the other. There are six points to be covered. Proper tools automate forecasting, scheduling and resource tracking, integrate contact routing, track multichannel activities, manage real-time adherence, empower agents and organize the administrative work. It should be noted that the automation of forecasting and scheduling still need to be initiated

manually but the real focus here is on the proper and automated data collection and the actual calculations based on the collected data. The term "multichannel activities" refers to the possibility for an agent to work simultaneously, for example, with the incoming calls and emails and to be scheduled to work that way. Finally, the agent empowerment refers to that possibility for the agents to influence their shift planning with proper workforce management agent user interface.

There are also some best practices that the vendors' consultants and their partner consultants use or recommend to be used every time they are in contact with an organization. It is already a common practice that the workforce management tools collect data, do forecasting and scheduling and create historical reports on performance. Rosenberg (2005) also identifies few other tasks that surprisingly not all vendors have implemented even by the first half of 2010. These tasks include creating work schedules based on costs and service levels, real-time adherence compared to forecasts and schedules, allow agent empowerment and provide the possibility to work with "what-if" scenarios (Rosenberg 2005). Rosenberg also had some very important general observations related to workforce management tools implementation and use (ibid., 2005, 3-7). These are shortened and collected below.

- The quality of data affects the solution performance.
- Installation is only a small part of the whole: daily operations and how effectively the solution is used more important.
- Optimal scheduling and routing makes operations more efficient.
- Flexibility on schedule planning and publishing has a positive effect.
- Fast reaction to adherence makes a difference.
- To operate effectively one has to have a suitable WFM solution used efficiently.
- Occupancy rates more than from 85 percent to 90 percent create agent burnouts and undesirable call handlings that exceed the efficiency savings.

Rosenberg's list sounds like it should be common sense and everybody works accordingly. However, it is surprisingly often that an organization is caught doing otherwise. For example, after a power outage or a network failure when a workforce management tool cannot collect data, the future forecasts will be erratic because the invalid data is not corrected afterwards. Another example is of organizations that do not take the time to efficiently integrate the tool with the processes. It is a proven fact that approximately ten percent of the workforce management tool implementation is related to activities around the actual

installation. The remaining 90 percent of the time goes by understanding the relevant business processes, collecting data and information for the configuration, integrating the tool with the processes and training the people to use the tools efficiently and effectively. Finally, agents behave according to what is measured. For example, from the writers personal experience as an agent, if the agents are asked to take as many calls as possible, the agents do but the ones get rid of the customer as quickly as possible and the service quality suffers. Also, if the requirement is to be working (occupied by the phone) as much as possible, an agent tends to unnecessarily prolong the call as long as possible and the quality, efficiency and effectiveness all suffer. Therefore, the managers need to find balanced measurements for key performance indicators so that the work is effective and cost efficient.

The following workforce management opportunities and best practices are also based on the writer's personal experience and are those that are promoted to both existing and potential customers. First, the workforce management tool implementation should be planned carefully and it should be integrated as a vital part to support the relevant business processes, and the processes should be also rechecked and improved, if necessary. Then, the workforce management tools tend to be so comprehensive that they are meant for many people to share. The technical people should do the architecture planning, the actual installation and database management. The contact center configuration responsibility should be initially done by one person with good documentation skills. Forecasting and scheduling is usually done by another person than the one doing the initial configuration but could be performed by the same person later on. Daily monitoring and operations are usually shared among the team leaders or even the agents, and reporting is often moved to a reporting specialist or a group of specialist.

The organizations often ask the proven benefits of implementing a workforce management tool. All vendors have made their own lists of positive effects and some academic research is conducted in this area. However, the vendors are cautious to give exact values and they prefer giving ranges of values, and for a good reason. The exact return of investment calculation can only be made when the organization has already decided on the tool, has benchmarked the starting point and compares the results after some time after the tool implementation. Any calculations made prior to that point can only yield best estimations.

When the writer has been asked to present the benefits of a formal tool implementation into the business, first the specific vendor's calculations have been presented followed by the following table (TABLE 5) that is based on the writer's personal experiences based on numerous workforce management implementations and other consulting. It should be noted that the table applies to any proper workforce management tool and to any organization in question. This is why no numeric values are presented. In the first column those topics are listed that are improved with the properly implemented tool. The second column shows those elements that are increased. The third column lists undesirable aspects that are reduced. Finally, the last column shows few additional benefits. This last column can have some additional pieces of information for specific organizations in question.

TABLE 5. The benefits of workforce management tools implementation

IMPROVES	INCREASES	REDUCES	OTHER
Overall operational efficiency	Agent/supervisor productivity, efficiency	Understaffing and overstaffing costs	ROI achieved relatively fast
Contact Center and contact handling efficiency	First time contact resolution rate	Administration time	Meet labor regulatory requirements
SLA adherence tracking	Speed of answer	Unproductive hours	
Service level	Flexibility in managing outsourcers	Average call length, handling time, queue times, call transfers	
Load balancing	Customer satisfaction	Agent absenteeism	

Once an organization has selected a specific workforce management tool the implementation starts. The end result should be an efficiently and effectively used tool that is fully integrated with the relevant business processes. However, even the most powerful tool can fail if the whole implementation process is not carefully planned and executed or the continuous use of the tool is not what intended. The software needs to be installed and configured, the users need to receive proper training and continuous support. This all requires a lot of ethnic, industry and tool

specific knowledge related to the business processes in addition to well planned and executed implementation.

The writer's workforce management processes implementation model was introduced in the previous chapter but the tools implementation requires both the processes implementation tasks and the tool implementation tasks united into one comprehensive model (TABLE 6). The most common implementation mistake is to downplay the importance of the processes implementation tasks integrated with the tool when implementing a workforce management tool. This model has been invented many years ago and has gone through several development iterations based on the experiences gained from real life situations.

TABLE 6. Contact center workforce management processes and tools implementation model

1. Kick-off; introduction to the process and planning for proceedings
2. Filling out the "questionnaire" (a document)
    - Questions related to contact center, it's work shifts and processes
3. The First "workshop" –period (not necessarily a workshop)
    - Working on the questionnaire together
    - Processes (planning and forecasting resources, planning work and scheduling, operations, other)
    - Gather info needed for technical installation and functional configuration
    - More detailed plan for the implementation process based on the results of the first workshop period (timeline, tasks, assignment of specific responsibilities)
4. Technical installation
5. Functional configuration
6. The Second "workshop" –period (not necessarily a workshop)
    - Before / during / after the functional configuration
    - Fine tuning (of installation, configuration, documentation, processes)
7. Technical (if necessary) and functional user training (admin, supervisors, agents)
8. Test use / piloting to gather data and to get user experience
    - For example: forecasting and adherence require historical data to work properly
9. Finalizing configuration
10. Full implementation
    - Includes full use of forecasting, adherence and related reports
    - Can be done already with piloting, if historical data available from elsewhere!
    - Includes intensive expert support for the first few months for users to gain more experience

The workforce management processes and tools implementation process model presented here is a generic model. This means that the detailed implementation plan with specific tasks and timeline is always created and tailored to a specific organization. This also means that the implementation timeline can be anywhere from a month to a full year depending on both the size of the infrastructure architecture (like the amount of geographical sites), the amount of training to be given and the level of tool integration into the existing relevant business processes.

There are plenty of contact center workforce management tools available. Gartner group keeps publishing new vendor evaluation documentation every year. In recent years it has been Davies who has written this documentation (Davies, 2005-2009). Companies tend to consult the Gartner site and this specific document when starting their selection process. Therefore, it does matter even to the vendors what Gartner representatives write about them. In Davies (Davies 2009a) latest vendor landscape for 2010 he identifies about 25 active contact center workforce management vendors in global markets. And they "account for more than 95 percent of the WFM revenue (ibid., 2009a, 1). According to Davies Gartner group evaluates the vendors with six criteria: vision, viability, functionality, architecture, support and cost (ibid., 3). The biggest vendors based on customer base and deal size (seats) are Aspect, Genesys, Nice, Teleopti and Verint with over 500 customers worldwide and the average deal size of each vendor varies from 50 to over 1000 seats. Additionally, there are two other big vendors as what comes to customer base but their market is limited and the deal sizes are very small. Calabrio has about 600 customers with from 25 to 250 seats each but it operates only in the U.S and in Europe. Portage has over 1000 customers but their seats vary from 30 to 80 and it operates only in the U.S. (Davies 2009, 4-6).

It is also interesting to compare the latest list to that of Close and Berg (2003) from Gartner group. As a result, Close and Gartner only recognize Aspect and Genesys (2). Nice became a player in the market later when it bought both IEX and Performix, Verint acquired Witness that had acquired Blue Pumpkin earlier and Teleopti was still relatively small and unknown to global markets.

The following subtopics will shortly introduce three of the five biggest contact center workforce management vendors and their tools. These tools were selected because the writer knows them best, she can implement them and these tools have

definitely had considerable influence on both the workforce management processes implementation model and the workforce management processes and tools implementation model presented earlier. The tools are not compared against each other because it is not relevant here and the comparison would only be beneficial against a specific organization's requirement specifications anyway. Furthermore, the writer knows little about some other tools as well but not enough to implement them or to have had any effect on the formation of the models. These tools are: Blue Pumpkin (now Verint), IEX (now Nice), InVision, Oracle and SAP. This is why they are not presented in detail in this paper.

5.1 Aspect

Aspect (Davies 2009, 2) is an American company that has full contact center infrastructure product line. Although based on the United States of America Aspect is a global company not only for the general contact center infrastructure tools but also a global provider of workforce optimization suite. This suite consists of workforce management, quality management and performance management tools. Workforce management software can be purchased as a part of the contact center product line or as a stand-alone product. The newest version of the workforce management tool is 7.3 and the tool is sold as modules. All the functionality is mostly found from one user interface and depending of the modules purchased, different functions are visible and available.

Currently there are eleven modules of which configuration, administration, employees, forecasting, scheduling and reports form the core. Additional modules are shortcuts, tracking intraday performance, advanced tracking, agent empowerment and "what-if" scenarios. In configuration most of the contact center related information is entered including local labor laws opening hours and tasks. Another important module that might not be self explanatory by its name is "agent empowerment". In this case the agents are allowed to trade their shifts with each other, monitor their own performance, bid for the future shifts and make various requests regarding their work like time-off or specific shifts. Finally, "what if" module allows forecasting and scheduling administrators to try out the possible impact of various scenarios. For example, how the performance would be affected

if certain amount of agents would be scheduled on training on a specific time or to find service level wise an optimal time to have team meetings.

Technically Aspect workforce management is so called main server software. The virtual servers need to be installed, it uses MS SQL and needs its own database. The management client is called eWFM and the agents need to be given a separate access to the system if they are to use it themselves. Although parts of the Aspect are already web based, one still needs to install eWFM client and the agent tools into every computer where the workforce management would be used.

5.2 Genesys

Genesys (Davies 2009, 2) is a subsidiary of Alcatel-Lucent but operates under its own brand. Genesys, like Alcatel, is an American company with full contact center infrastructure suite and it also operates globally. Workforce management is one of the products. Some other tools are quality management and performance management tools that can be purchased separately and in addition to the workforce management itself. Genesys workforce management is often purchased as a part of the customer interaction management platform but it can be purchased as a stand-alone product as well. The newest version of the workforce management tool is 8.0 and it became publicly available on the last day of June this year. The workforce management is one product and it is sold as one. Therefore, all the modules are immediately available. There are four user interfaces geared towards specific user groups. Database utility is for the workforce management database management, configuration utility is for the business configuration management, and supervisors and agents have their own respective user interfaces.

The modules are divided among the four user interfaces. The database utility takes care of both manual database or database schema cleanup and the data migration into a newer workforce management version when necessary. The configuration utility contains the core information about the business: organization, activities and policies like contracts and shifts. These two utility tools are central but do not need to be used in every day contact center management. However, the supervisor and agent tools are used every day. The supervisor interface has the following

modules: policies, configuration, calendar, forecast, schedule, trading, performance, adherence and reports. Here the policies are related to exceptions to a regular work day like meetings and time off and the configuration refers to SMS and e-mail notifications and internal presentation colors. The Genesys workforce management tool also has the "what if" function but it is inside the forecasting and schedule modules. The agent interface includes schedule, trading, preferences, time off and bidding. Therefore, the agents can view their shifts, trade them, tell supervisors about the work time preferences, request time off and bid for the desired future shifts.

Technically Genesys workforce management software consists of several virtual server components. They can all be installed into one server but usually the customer environments are so large that the virtual servers are distributed among two or more servers. There are five different databases supported: DB2, Informix, MS SQL, Oracle and Sybase. The database utility and the configuration utility user interfaces need to be installed into every computer where they are used. However, the supervisor and agent tools are web based and the only thing needed is one of the following web browsers: Firefox, Microsoft IE, Mozilla or Netscape.

5.3 Teleopti

Teleopti (Davies 2009, 2) is a Swedish company that is focused specifically on workforce management and some other specific tools and it operates globally. Since Teleopti does not have its own contact center product line, it sells the workforce management tool as a stand-alone product with performance management inside the workforce management tool, and integrates the tool with other contact center product lines or suites like Aspect and Genesys. The newest version of the workforce management tool is 7. And, like Aspect, the tool is sold as modules. The administrator has two user interfaces and the agents have one. Depending on the purchased modules, the appearances of the user interfaces vary in some ways.

There are six modules in one administrator user interface that form the base for the Teleopti workforce management. They are people, forecasts, intraday, shifts, schedules and reports. The other modules are rather self explanatory except that

the agents are administered in people and intraday is actually meant for managing the schedules one day at the time. Here intraday does not mean the intraday monitoring. Additional modules, that can be purchased separately, include agent client with agent schedule and preferences, real time adherence, performance manager and payroll integration. Other integrations are possible but the integration tools need to be bought separately.

Technically Teleopti workforce management need to be installed into a MS SQL server with MS IIS and it needs to be integrated with whatever contact center platform the organization is using. It also needs a database server with multiple databases to store both the configuration and the collected contact center data for future calculations. The three tools: resource planner, team manager client and agent clients are .NET based clients and require installation to the computers where they are used.

5.4 Summary

In this chapter the contact center workforce management vendor and tools market have been looked at in more detail. There are lists of requirements what all workforce management tools should deliver, what are the best practices and what are some of the opportunities for various benefits. Also, a processes and tools implementation model was introduced as well as some key vendors in the market. Although the model has been only used with three of the contact center workforce management vendor tools, it is to be expected that it would work with the rest of them as well. However, this assumption needs to be tested and academically validated.

It is also important to notice that although most of this information is well known and freely available (through Gartner Group, Forrester, vendors, consultants or public internet), so many tools implementation projects fail or gain less than should be expected. Therefore, it is likely that the implementation process was poorly planned or executed and especially the existing workforce management business processes were not integrated with the tool implemented. The contact center workforce management tools and processes implementation was introduced as an attempt to reduce or even overcome these challenges. All the implementation

projects of the writer have been successful and the model has been used every time. However, the model should also be tested by someone else than the writer in order to exclude possible hidden variables like personality or the experience of the executor. Now the question is: Can this model be used with organizations that have implemented, are implementing or will soon implement ITIL version 3 into their IT processes? Also, what are the changes to be made, if any, to the models when actively implemented according to ITIL version 3?

6 THE PROCESSES AND TOOLS IMPLEMENTATION MODELS AND ITIL

In this chapter the two contact center workforce management implementation models, one for processes only and the other for processes and tools together, are reflected against the ITIL framework service lifecycle and especially the content presented in the five core books. This comparison is made in order to observe and later answer to the research questions regarding how well the two contact center workforce management implementation models fit into the ITIL version 3. This chapter is organized according to the five ITIL core stages that are published as five books with the same name.

6.1 Workforce management and Service Strategy

The contact center workforce management implementation models are built to both follow and to support business strategies. The models seem to work the same way with the ITIL framework service strategy. However, the models do not define the strategy, they can only support a strategy change, if necessary. In any case, there are few places in the service strategy that are the most relevant to the workforce management.

The first one is the development of strategic assets in order to increase the service potential. Implementing the contact center workforce management processes alone according to the model will have a positive impact on the service level. When the workforce management tools are added into the picture, the service levels are

increased even further. These are the two ways the models do support service strategy.

The second one is the service economics and especially common business objectives support. The workforce management tools not only provide support for the strategies in general but they also provide operational data for various purposes like calculations of return of investment and business objectives. This support is build into both implementation models already when the operational data and other information is collected for the workforce management implementation document.

The third and the final one is strategy with both improvement and technology. Although the workforce management processes implementation model does follow these guidelines, the best fit comes from the contact center workforce management processes and tools implementation model. The workforce management tools really support the improvement by increasing quality, reliability, maintainability, accessibility and availability of various operational things. Also, these tools do automate many manual workforce management processes and, at the same time, either simplify them or even make them unnecessary. Furthermore, these tools support the service strategy by providing simulations and analytical models for strategy development.

6.2 Workforce management and Service Design

The service design is really the core of both the contact center workforce management processes implementation model and the contact center workforce management processes and tools implementation model. Careful data collection is needed for planning and implementing workforce management processes so that they seamlessly fit into the other contact center processes. Also, the same preparatory work is necessary when not only the processes but the actual supporting tools are implemented. Therefore, it is expected that the models at least follow if not cover most of the parts of the ITIL service design stage.

First, almost all service design principles presented under chapter 3.2 are covered by the models. One of the goals, risk management, is not covered by the models

because it is assumed that the risk management is part of the project plan carried by the project manager and not part of the content management carried by the expert. Another topic that is not covered by the models is the evaluation of alternative solutions in forms of requests either for information, proposal or quotation (RFI, RFP and RFQ, respectively). This is because the models assume that this phase is already done if it was needed at all. The final topic not covered by the models is the various service design models. In case the workforce management tool is implemented, it is off-the-shelf and ITIL does not support the SaaS model that the workforce management tools are suitable for implementing.

The ITIL service design processes are almost covered as well by the implementation models. The service catalogue management is not planned into the models. Also, in case of the workforce management tools implementation the availability management can be initially build into the architecture, for example, by doubling the installation in a certain way but the availability management is rather part of the organization's IT support services operations than the focus of the contact center workforce management tools implementation model.

Organizing for service design also has two points that are not done exactly the way ITIL describes them. The other one is so called RACI model and the other one is the assignment of specific roles and processes. Workforce management implementation does require various people with different roles and responsibilities but they are not necessarily even the same people that are identified by the ITIL framework. This is mainly due to the fact that in ITIL the roles are IT related whereas the workforce management needs the business people for forecasting, scheduling, reporting and other processes.

However, service design technology-related activities, technology considerations, implementing service design and critical success factors are all covered in the implementation models, at least on the topic and concept levels. There might be some specific details under these topics in ITIL that are not performed exactly the way they are outlined in the ITIL book but the principle is definitely there.

6.3 Workforce management and Service Transition

The principles of the service transition are basically also covered by the contact center workforce management implementation models. The models follow the general idea that once the implementation is planned well with the support of the documentation it will be executed as planned. The only thing the models do not fully cover is the organizing for service transition. ITIL suggests organization models that are not necessary for workforce management. For example, in workforce management there is no service transition manager by that name. Project manager and the team of both technical and business experts will perform the transition together. The project manager takes care of the organizing side (like coordination) of the transition and the experts will execute the plan.

6.4 Workforce management and Service Operation

Service operation is not fully covered by the workforce management implementation models but this is not even necessary. Service operations stage covers the whole service desk whereas workforce management processes and tools are only a part of all the processes and tools in service desks.

Service operation principles are covered from the workforce management point of view because all the topics are planned on the level how workforce management implementation should be integrated as a part of the whole. For example, workforce management will contribute considerably on providing service by securing the right people to work at the right time and the workforce service operations documentation is taken care of by the document produced during the contact center workforce management implementation models execution.

However, the service operations processes cover a whole lot more than the workforce management processes implementation models. Event management, incident management, problem management and access management are all processes that have their own tools. They can be integrated with the workforce management processes and tools but it is not always planned that way. Also, these ITIL processes should already be there, or in case of a new service desk, planned and implemented simultaneously with the workforce management processes and tools implementation.

Common service operation activities are usually already implemented before workforce management. They do provide necessary service to workforce management and because of this, the contact center workforce management implementation models do take them into account already during the planning phase and the decisions are documented. For example, in case workforce management tools are implemented, the ITIL requirements of management of the network, servers, the database and desktop are necessary to run the workforce management installation. However, the workforce management models do not design these ITIL management processes but becomes managed by them. The same idea is repeated throughout the operation activities.

Organizing for service operations and technology considerations follow the same general principles as the operation activities. They are partially supporting the workforce management implementation but they are also partially supported by it. For example, application management takes care of any workforce management installation and the management processes are executed by the same people that also take care of many other applications running in a service desk. Also, there might be some special requirements for installing and using workforce management tools but the actual management of the implementation will be equal to the rest of the technology.

Finally, the contact center workforce management implementation models do follow the implementation considerations suggested by the ITIL framework service operation stage. There is, of course, more details in ITIL than covered by the workforce management models but as a singled out implementations, the models cover everything that is necessary and possible.

6.5 Workforce management and Continual Service Improvement

The contact center workforce management implementation models have covered the ITIL framework requirement of continual service improvement in all those points that are necessary. The models follow the continual service improvement principles what comes to both the processes and tools implementation. For example, the role definitions, service measurements, models and standards are all

planned and executed according to the ITIL and they are documented in the workforce management document.

In case the workforce management tools are implemented, they actually act as support tools for continual service improvement activities. This also means that the processes, methods and techniques of ITIL are also supported. The workforce management tools are flexible enough that if there are any organizational changes, the tools can be reconfigured to reflect the changes. For example, service reporting and return of investment calculations are possible with workforce management tools.

6.6 Summary

In this chapter the contact center workforce management implementation models have been reflected against the ITIL framework version 3 service lifecycle stages. First, the models both follow and support the service strategy rather well. Second, the service design really is the core of both workforce management implementation models and the service transition is also well covered. The service operations and continual service improvements are not fully covered but the coverage is adequate. These findings are very important additions to the information gathered in order to answer to some of the research questions. Also, it is necessary to decide whether any of the findings would have an impact in the form of a change on the content of the models themselves.

7 IMPACT OF THE PREVIOUS RESEARCH AND ITIL TO MODELS

In this chapter the possible influence of the research findings to the three models is discussed. The main goal here is to detect possible changes needed on the models so that they would be better aligned with ITIL framework version 3. There are two topics presented. First, the possible impact of the previous research on both ITIL and workforce management to the three contact center workforce management models are looked at. Then, the comparison is made between the models and the ITIL version 3 itself.

7.1 Changes to models triggered by research

Overall, it can be said that there are no changes to any of the three presented models needed because of the research findings. First, there is no need to change the contact center workforce management processes model itself. It is already the most comprehensive model there is and covered all the processes the previous models had introduced. Also, the descriptions of the individual processes did not add anything to descriptions in this paper. One challenge here is that there is no agreement within the academic world how many processes should a workforce management model include and what they should be. Second, there simply is no academic and publically available research done on either contact center workforce management processes implementation or tools implementation. Therefore, the three contact center workforce management models will not be altered because of the research.

7.2 Changes to models triggered by ITIL version 3

There are also no changes to the contact center workforce management implementation models needed because of the ITIL framework version 3. First, the models follow ITIL framework and its guidelines and recommendations rather

well. The stages of service design and transition were almost fully covered and the other three, strategy, operations and continual improvement, are covered on the level that is appropriate for using the models efficiently and effectively. Second, there is nothing in the models that would contradict with ITIL. In fact, the models support ITIL and provide one way of implementing a tool according to the ITIL framework. Therefore, the two contact center workforce management implementation models will not be altered because of the ITIL framework.

7.3 Summary

The purpose of this chapter was to find out if there were any alterations needed into any of the three contact center workforce management models. It was found out that neither the previous research nor the ITIL framework version 3 caused any alteration needs for the models. Therefore, it seems that the models do fit into the environments with ITIL implementation as they are now and they are aligned with both the previous research and the ITIL version 3.

8 CONCLUSION

One of the main goals of this research has been an attempt to obtain a theoretical validation for three different contact center workforce management processes models. They have evolved throughout the past several years in real life environments. In order to reach this goal, first five research questions have been formed.

1. *How well is the contact center workforce management processes model presented in this paper aligned with the previous workforce management research?*
2. *How well is the contact center workforce management processes implementation model presented in this paper aligned with the previous ITIL research?*
3. *How well does the contact center workforce management processes implementation model presented in this paper fit into ITIL version 3?*
4. *How well is the contact center workforce management process and tools implementation model presented in this paper aligned with the previous ITIL research?*
5. *How well does the contact center workforce management processes and tools implementation model presented in this paper fit into ITIL version 3?*

This research has also been seeking the relative level of fitting together the theoretical framework of ITIL and the two contact center workforce management implementation models. In case the models would not fit, they would have been modified accordingly.

There are also some pre-set limitations to the scope of the research. First, the research has been limited to contact centers and to two of its special forms, help desks and service desks. Second, the review of the academic research has been narrowed to workforce management, contact center layers one and two, and ITIL only. Finally, the focus has been on the ITIL version 3.

This research has been conducted in a constructive way. The focus has been on a contact center specific workforce management process model and two contact center workforce management implementation process models covering processes only and processes with tools. One of the goals has also been the actual

introduction of these three models. Also, in addition to validating the models against the previous research the two implementation process models have been needed to be viewed against the ITIL process framework. Prior to this research the usability of the workforce management process model and the two implementation process models have been developed and tested in practice, in real business environments.

First of all, one of the results of this research is theoretical validation of the set of three contact center processes models. Even though these models have been developed without theoretical background i.e. academic research and without the explicit guidance of the ITIL, they do follow both of them rather well. There is no need to change any of the models based on the research findings. Second, based on the previous research, the contact center workforce management processes model seem to include the most comprehensive list of workforce management processes there is so far in the academic research. Third, the three processes models have been theoretically validated against the ITIL framework version 3. Finally, this has been the first time workforce management implementation, either processes or tools, is reflected against ITIL.

The results have some very important implications for the future. First, the contact center workforce management processes model can also be used in real-life environments where ITIL has been or is being implemented. Also, it seems that ITIL can be implemented after the workforce management processes and tools are already in place. Second, there should be an increasing focus on getting both ITIL and business processes (including workforce management) into the higher education curricula. Third, this paper could serve as an introduction to the field for the current and future students who would like to prepare themselves to work in a contact center environment.

The writer has personally developed the three contact center workforce management processes models to the level they are presented in this paper. It has required several years and many actual workforce management processes or processes and tools implementations. The workforce management processes model actually seems to be the most comprehensive model available so far. Also, in addition to the practical validation, the theoretical validation of the three models has now been accomplished. The research results do not deviate from the previous research because there is no specific research to compare with. However, the parts

of the models that do have any research done, are fully aligned with the previous research.

Although both practical and theoretical validation has been done, there are some limitations what comes to the findings. First, although used many times over, the practical validation to the models has been performed by one person only. There is no way of saying whether the processes themselves are the only or even the main key to a successful implementation until other people have attempted to use them and received similar results. Second, the theoretical validation of the models need to be, at least, reviewed by several other people before the findings can be conclusive. Third, the scope is limited to contact centers and its variations and some of the workforce management processes might not be applicable in other environments.

Therefore, some of the future research could include both the theoretical and practical validation of any or all of the process models. Also, lots of future research is needed on ITIL version 3 itself and the implementation of different kinds of processes and tools according to ITIL framework version 3. The research could focus only one or two stages of the lifecycle, not all five. Then, enormous amount of research is needed around the contact center workforce management processes and implementation. Not only should the focus be contact centers, but the comparison of the differences in processes between contact centers, help desks and service desks could contribute greatly into the field. In conclusion, there is a lot of research to be done because the existing research on both ITIL and contact center workforce management are very immature.

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