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COMPETENCY-BASED MANAGEMENT:
An Analysis of the Job Satisfaction of Call Center Workers in Pernambuco

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ABSTRACT

The call center sector has experienced high growth in recent years. Call centers rose to prominence with the evolution of information technology and the transformation of modern society, but high turnover rates and absenteeism have been of concern to the industry. Given the importance of this sector to local economies and society, this study seeks to analyze the relationship between the skills, satisfaction and performance of call center professionals. Thus, the study investigates 140 workers from a call center in the Brazilian state of Pernambuco. After applying factor analysis to the survey data, it was observed using the Kayser-Meyer-Olkin (KMO) test that the procedure was able to explain 82.3% of the factors. These results suggest that the development of Competency, Knowledge, Skills and Attitude based on the sample were determining factors in people management in the call center.

Keywords: *Competence-Based Evaluation, Call Center, People Management, Job satisfaction, Customer Service*

1- INTRODUCTION

Call centers have grown due to various economic, social, cultural and political causes that facilitate interactions at distance, both over the Internet and by telephone (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b). Brazilian economic stability began to consolidate in the 1990s and events such as the privatization of telecommunications and electricity distributors in the country, the enactment of the Consumer Protection Code, growth tracking services, the Internet and the constant evolution of information technology opened up space for the development of the contact center industry (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b).

Thus, the use of technology in call centers allowed the integration of telecommunication technologies and information system operations. Both systems are responsible for controling activities, distributing work, monitoring performance, measuring operating results, making direct contact with consumers through input and output connections and opening channels of communication with customers (Gião, Borini, & Júnior, 2010).

In 2012 the Brazilian contact center industry earned about US$ 15 billion, an increase of 16.5% compared to earnings of US$ 14 billion in 2011. The service sector employs approximately 1.44 million people, and the number of agents in outsourced companies has reached 540,000 (Corporation, 2013).

Although call centers perform an important social role in generating employment and income, this sector is a subject for concern due to high employee turnover. There are several reasons for this, mostly stemming from employees feeling undervalued, which induces them to exit the call center market in search of new opportunities. Other factors include the lack of autonomy, monitoring systems identified as being unfair by employees, salaries and benefits that are incompatible with the degree of responsibility required, plastered scales, low flexibility in adapting working hours, lack of a retention strategy for talented employees, low involvement of senior management and low investment in training (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b).

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The competency evaluation model allows us to analyze job satisfaction among call center professionals. With regard to professional practice, competence is the ability to act responsibly, integrate resources and transfer knowledge and skills that add economic value to organizations and social value to the individual (Fleury & Fleury, 2011). In the corporate environment, the word "competency" is related to the characteristics of the person (McCLELLAND, 1973). The emergence of management models for skills in organizations has brought different connotations to the term "skills" (Brandão & Guimarães, GESTÃO DE COMPETÊNCIAS E GESTÃO DE DESEMPENHO: Tecnologias distintas ou instrumentos de um mesmo constructo?, 2001). Human or professional skills are manifested through the traditional combination of SKA (Skills, Knowledge and Attitude), and employees with far-reaching skills add value to people and organizations (Brandão, et al., 2008).

The objective of this paper is to study the relationship between skills performance and the satisfaction and performance of professionals working in call centers, with a particular focus on analyzing issues related to motivation, work appreciation and learning. This study represents an important application because both companies and workers aim to balance job satisfaction and productivity. This analysis makes it possible to show how the development of knowledge, skills, ability and attitudes are crucial in the management of call center employees.

Data were obtained through systematic observational field research: questionnaires were distributed to 140 workers at a call center in the city of Recife. To assess whether the data permitted the use of factor analysis, the Kayser-Meyer-Olkin (KMO) test was used. After the application of factor analysis on the mass of data, it was observed that the Kayser-Meyer-Olkin (KMO) statistic was 0.823, meaning that the factor analysis was able to explain 82.3% of the factors.

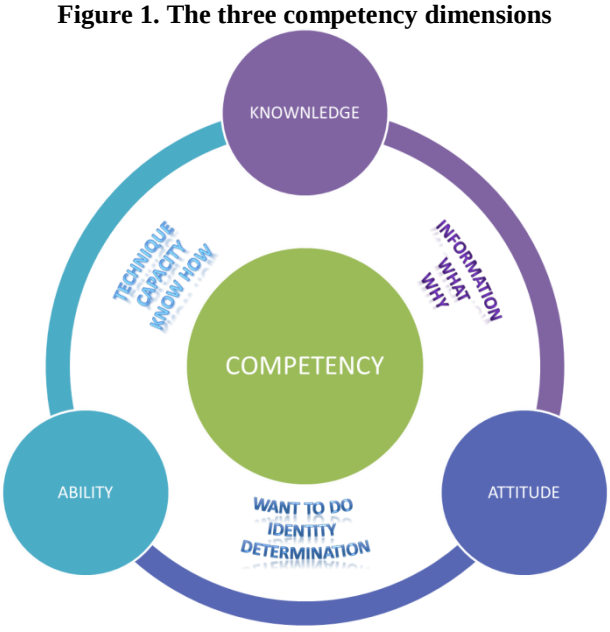
2 - THEORETICAL

2.1 - Competence Concept

The competence concept in the organizational context first entered the discourse from the perspective of the individual in 1973, when Mcclelland published the article, "Testing for competence rather than intelligence." This article initiated the debate on competence among psychologists and administrators in the United States. Mcclelland (1973) differentiates racing fitness from fitness in general, suggesting that fitness is a natural talent, whereas a person must work to develop the skills and knowledge to perform a specific task such as racing.

Le Boterf (1994) describes competence as a set of social and communicative organizational learning skills Consequently, human skills are related to performance benchmarks, i.e., an individual demonstrates competence through the adoption of certain behaviors that are observed at work (SANTOS, 2001). Brandão and Guimarães (2001) indicate that competency has three dimensions, as shown in Figure 1: a dimension related to information and the knowledge of what and why, technical ability, and attitude.

Figure 1. The three competency dimensions



Source: Durand (2000)

Zarifian (2012) indicates three major changes at work that justify the use of the management model of competencies in organizations: the event concept, which is related to an individual's ability to resolve sudden or unexpected work situations; communication, or the ability to understand both oneself and others, as in a customer service interaction; and knowledge, especially as it pertains to knowing the company and its activities, i.e., disregarding that jurisdiction is encapsulated in a task or stock of knowledge.

However, the concept of competence reveals its heuristic power when analyzing the world of work and contextual changes, whether in business or societies (Fleury & Fleury, 2011). Competence is a knowing act that is both responsible and recognized; it implies mobilizing, integrating and transfering knowledge, resources, and skills that add economic value to an organization and social value to an individual. Through this prism, competency management meets the demand for innovation and flexibility required by companies (Fleury & Fleury, 2011).

A strategic competence management model defines the powers of both the organization and the people so that both parties' expected results can be obtained through a mutual relationship (MUNCK, MUNCK, & SOUZA, 2010).

According to Prahalad and Hamel (1990), competence is the ability to mix and integrate resources into products and services. An organization's competitiveness would be thus determined by the dynamic interrelationship of organizational competencies and competitive strategy. Optimal skills are formed from resources, and strategies are drawn from resource groups (core competencies) (Fleury & Fleury, 2011).

From the perspective of competence, Prahalad and Hamel (1990) differentiate organizational skills and core competencies and suggest that key competencies obey three criteria: they bring benefits to consumers, they are highly differentiated, and they enable different markets to be opened; in contrast, organizational skills are related to the organizational mandate, i.e., they are the skills needed for each function. Companies therefore have several different organizational skills, with their core skills being those that strategically differentiate them from competitors and guarantee a competitive advantage (Prahalad & Hamel, 1990).

Zarifian (2012) suggests a subdivision of organizational skills that results in the development of individual skills: competence in processes (knowing the work processes), technical skills (which must be performed at work), jurisdiction over the organization (knowing how to organize workflows), service competence (what is the impact the product or service will have on the consumer?) and social skills (knowing how to interact, involves peoples' attitudes and behavior). Developing these skills makes significant contributions to organizations, particularly in the industrial operations sector (Zarifian, 2012).

Studies conducted by Brandão et al. (2008) have shown that companies and researchers could devote considerable time to examining how differing levels of skills expressed by employees may explain the variance in operating results (Brandão, et al., 2008). It can be understood, however, that competence is knowledge of a particular context put into action, or the practice of knowledge (Furukawa & Cunha, 2010).

Table 1 shows a summary of key studies in organizational environments based on competence assessment.

Table 1 – Studies concerning Skills Assessments in Organizations

AUTHORS	SUMMARY
(Drejer, 2000)	Proposed that studying skills development would facilitate the development of a model that could contribute to the development of business management.
(Grzeda, 2004)	The central proposition is that competence adds a conceptual layer to the dynamics of management. Thus, when racing management is applied, determining effective performance becomes more ambiguous. The competence approach is certainly designed to reveal the components of effective management performance, but it often seems that little more than a change in rhetoric has occurred, i.e., the replacement of terms like competence by behavior, outcomes, skills, knowledge and attitudes, or underlying individual characteristics that determine behavior.
(Colombo & Grilli, 2005)	This paper empirically analyzes the relationship between the growth of new technology-based companies and the founders' human capital to bring out the "wealth" effects and the "capacity" of human capital. To do so, the authors use a sample comprising 506 young Italian companies operating in high-tech sectors in both industry and services. According

	to theories based on competence, econometric estimates show that the nature of founders' education and prior work experience has a fundamental influence on growth.
(Golfetto & Gibbert, 2006)	The author discusses the notion of marketing skills in the buyer-supplier relationship and the role these skills play in creating value for the customer. The study addresses the role of skills in industrial marketing, which has two main focuses. The first is to establish an approach that manages skills as a contribution to organizational processes and examines how marketing skills, such as relationship management with the customer and channel design, lead to higher financial returns. The second emergent approach focuses on marketing skills as a source of value to the customer.
(Furukawa & Cunha, 2010)	The authors conduct an unstructured literature review of subject competencies in the areas of General Administration and Nursing using the descriptors management, health management, nursing management and professional competence. Through this study, the authors observe that although the concept of competence remains a source of discussion, it shows great results when applied to people management. This relationship is established through mutual development, to the extent that people are recovered by the organization when they actually contribute to its development. Organizations are also appreciated by individuals insofar as they offer practical conditions for their development.
(Zago & Retour, 2012)	The authors analyze data collected in three consolidated large and medium-sized organizations in France from June to October 2009. This study broadened the understanding of the aggregation levels of management by competence and contributed to the conceptual consolidation and management of the idea of competence.
(Godoy & D'Amelio, 2012)	The author maps which skills are developed and used by managers with backgrounds in engineering, psychology and business administration working in a company's environmental sanitation sector by developing a basic qualitative research method.
(Denkena, Charlin, & Merwart, 2013)	Evaluates a method using a simulation of a model production workshop. The results illustrate that systematic skills planning leads to additional costs in the short term due to greater effort to train production staff at "work." Moreover, the long term benefits of this workshop training were calculated by a break-even-point. "Economies of skills" featuring increased flexibility resulted in greater work efficiency.

Source: Adapted from Munck, Munck and Souza (2010)

The studies reviewed here used both theoretical and empirical approaches and show that skills development is related to an individual's job satisfaction and associated with better productivity; furthermore, there is a mutual appreciation between organizations and workers when skills development occurs.

2.2. The evolution of the call center market in Brazil

Consumer telephone services were first available in Berlin approximately 1880, shortly after Alexander Graham Bell patented the first telephone in England. In the United States in 1950, some newspapers and magazines published ads with the telephone numbers in response media, but the first mass marketing campaign by telephone, conducted by the Ford Motor Company, did not occur until the 1970s. The term telemarketing became widespread in the 1980s, but the Brazilian call center market did not begin to grow until the 1990s. Telemarketing has evolved as companies have begun to use telemarketing calls for both originating and receiving calls for marketing and sales purposes, and technological advances have allowed an assemblage of services in call centers, which have also become known as contact centers (Jamil & Silva, 2005).

Madruga (2009b) emphasizes that the growth of call centers in Brazil occurred due to various economic, social, cultural and political factors that facilitated distance interactions either through the Internet or by phone. Various sectors of the economy, including automobiles, education, telecommunications, banks, restaurants, hospitals, and general industries establish relationships with their customers through call centers (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b); in Brazil, however, the use of the telephone was driven by several key events that make it possible to understand the expansion of call center companies, summarized below in Table 2.

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Table 2 – Factors that contributed to the expansion of call centers in Brazil.

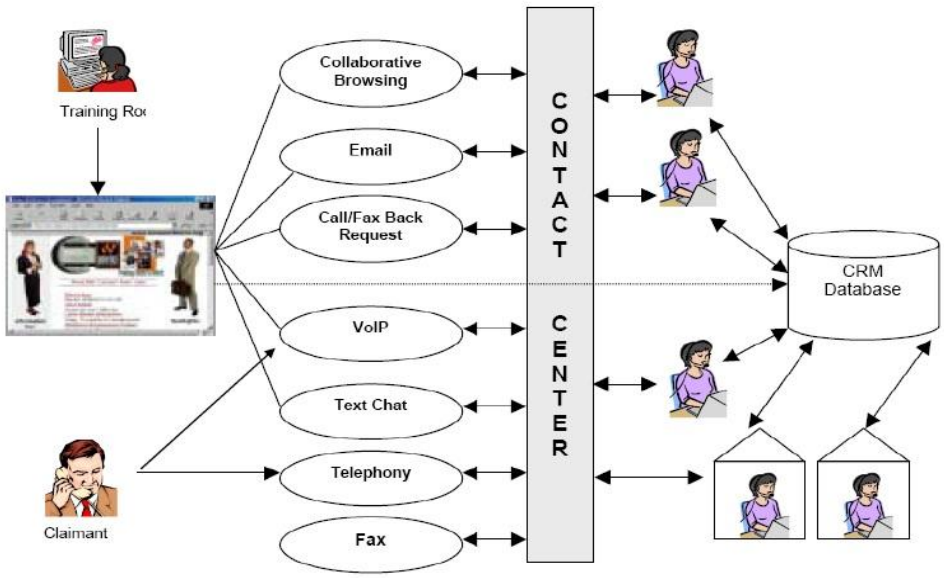
YEAR	EVENT
1980	The oil crisis makes door to door sales more expensive. Telemarketing and direct mail begin to be used more frequently for distance business (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b).
1990	With trade liberalization, the telecommunications industry undergoes structural changes.The telecommunications monopoly ends and privatization begins (GAVA, VIDAL, & RODRIGUES, 2009).
1990	The enactment of the Consumer Protection Code (CPC) to ensure compliance with the rights of Brazilian citizens serves as the basis for Law No. 6523, which regulates the activity of Customer Service Centers (SAC), although the law was not sanctioned until July 31, 2008 (Madruga, Call Centers de alta performance, 2009a)
1994	The stabilization of the Brazilian economy with the implementation of the plan brings profound changes, and Brazilians trade high inflation for a newly stable currency with greater purchasing power (IANONI, 2009).
1996-1997	The first regulatory agencies are established, including the National Telecommunications Agency (ANATEL) (IANONI, 2009).
2000	The development of Information and Communication Technology (ICT) takes off. Internet companies do business by connecting to their customers, distributors, employees and suppliers online, creating social networks (MAXIMIANO, 2012).

Source: Adapted from Munck, Munck and Souza (2010)

In this contex, call centers became able to bring together various services based on a multi-service platform Customer Service Center (SAC) offering services such as telemarketing, collection, self-service, after-sales and web contact centers. Users can also process calls and customer requests through specialized database or other interactive channels such as fax and email (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b). These Interaction Centers are the next generation of call centers and have the technological ability to integrate services via phone, Internet chat and email, resulting in speed and convenience (Jamil & Silva, 2005).

A case study conducted by Lan and Chin (2005) shows that a system that combines an information technology platform, an e-commerce platform and a service platform can provide a collaborative production environment for customers and service agencies. In addition, implementing this type of system makes it possible to increase the availability of rapid prototyping, allowing manufacturing facilities to improve the initial product development cycles for small and medium enterprises. The findings of this study show that practical results of applied engineering indicate that both service companies and customers have benefited from telecare systems (Lan & Chin, 2005). A diagram of the typical contact center architecture is shown in Figure 2.

Figure 2. Typical architecture of contact center integrated with a CRM



Source: Adapted from Gião, Borini and Júnior (2010).

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Wuermeling (2001) provides a draft for implementing rules so that e-commerce and teleservices companies can maintain their businesses in Germany. In spite of recent technological breakthroughs, modifications in the provision of teleservices are still needed. According to the Brazilian Association of Teleservices (ABT), the call center sector is regulated by two decrees. Annex II of NR-17 was implemented in March 2007 and represents a regulatory framework for the telemarketing sector in security and health. Another call center-focused regulation is Decree 6523, which came into force in December 2008 and comprises the laws on consumer care service, called the law of the SAC, the application of which is intended to resolve consumer demands for information, and procedures for complaints and the suspension and cancellation of contracts and services (ABT, 2013).

In 2012, the Brazilian contact center industry earned about US$ 16 billion, an increase of 16.5% compared to 2011, when it earned $ 14.45 billion. The service sector employs approximately 1.44 million people, and the number of agents in outsourced companies has reached 540,000 (Corporation, 2013). The data in Table 3 show the recent evolution of the sector.

Table 3. The evolution of the contact center industry in Brazil

Year	PA count Outsourcing	PA Total	Employees	Providers Billing**	Billing all related sectors**
2009	174.000	471.000	448.000	7,98	21,03
2010	204.000	552.000	484.000	8,79	23,78
2011	259.000	703.000	540.000	10,84	28,90
2012*	300.000	812.000	594.000	12,63	35,08

Source: (Corporation, 2013). Adaptado de Ricci e Rachid (2010).
*2012 Projections
** Brazilian Real Currency

In recent years, services in the post-sales phase, including not only warranties but also repairs and above all maintenance and customer loyalty, have become exceedingly important. This is a reflection of current customer needs that encompass not only the expectation of a high quality product from the factory but also high quality and efficient service (KuÈssel, Liestmann, Spiess, & Stich, 2000). Call centers are the result of the information society, using a broad base of data and large information flows to manage their internal processes, which aim both to meet the demands of contractors and clients and act in informational management (Andrade & Neto, 2009).

There is an important social and economic role associated with call centers. A synthesis of research published in the Brazilian yearbook provides a profile of contact center workers, as shown in Table 4:

Table 4. Contact Center worker profile

Genre	**2010**	**2012**
Male	31%	25%
Female	69%	75%
Age	**2010**	**2012**
Up to 25 years old	52%	53%
From 25 to 35 years old	32.50%	31%
Above 35 years old	15.50%	16%
Education	**2010**	**2012**
High School	71%	72%
Undergraduate	19%	15%
College graduate	10%	13%

Source: adapted from Corporation (2013).

The data compiled by the yearbook show that in 2012, women accounted for 75% of the staff, 53% of the people hired are young people aged 25 and below and 72% had no schooling beyond high school. This profile suggests that these workers are unlikely to be recruited for other branches of the economy. Thus, the call center absorbs these professionals providing opportunities for social inclusion (Corporation, 2013). Yet, studies conducted by

Gant and Walford (1998) address the issue of social inclusion and suggest that telecommunications services can help individuals who are "dependent" to become more independent, to the extent that call centers may eventually employ more elderly and disabled people in their operations (Gant & Walford, 1998).

2.3 People management in call centers

Madruga (2009a) emphasizes that the call center is a suitable partner for large, medium and small businesses, whether through sales, service and customer complaints, or charges: behind the walls are people who can deliver results provided there is suitable investment in their training and other professional needs (Madruga, Call Centers de alta performance, 2009a).

Vilela and Assunção (2004) state that it is characteristic of the industry for companies to operate in the provision of consumer telephone services. This process occurs through outsourcing, which implies mobilizing communication to compensate for the cultural and intellectual differences between clients and others, as well as reversing the aggressive manifestations demonstrated by dissatisfied and ill-informed customers. For workers, there is a dichotomy between avoiding difficult situations and managing strict control standards of time and quality manifested in the use of scripts, manuals and flowcharts (Vilela & Assunção, 2004).

The call center business structure, in turn, also awakens a competitive climate: employees have individual and collective goals and are thus monitored by their teams; additionally, the pace of work is intense and repetitive, resulting in the worker's low identification with the profession (Ricci & Rachid, 2013).

In the environment of call center control operations, the pressure for production and competition stimulates disagreements between operators. Standardization hampers workers' decision-making autonomy, ultimately creating a negative stigma surrounding the profession, reinforced by the view that working in a call center is temporary (Ricci & Rachid, 2013).

For this reason, employee turnover in Brazilian call centers reaches 40% per year on average, meaning that after two years, almost no members of a team remain with the original company. It also shows that companies generally have difficulty retaining talented workers (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b). The available pool of labor supports the expansion of call centers, but operating difficulties in large cities, such as Sao Paulo and Rio de Janeiro, have forced companies to move operations to the Brazilian interior (Neto, 2013). Contax, for example, migrated 15,000 jobs to Recife in 2010 and consequently reduced absenteeism and turnover losses (CATRÃO, 2012). The difficulty in retaining talent in large cities is due to the high cost of living, which is not compatible with the remuneration for call center work (CATRÃO, 2012).

Ferreira (2004) demonstrates that to the extent that the telemarketing sector involves the most advanced information technology and telecommunications, it is also an environment in which the management style can be the most archaic and bureaucratic, often with reference to industrial models and the Taylorist management theories of the last century (Ferreira, 2004). Jamil and Silva (2005) state that many call center managers seek solutions that will foster higher productivity, but the competitive advantage of call center companies is strongly related to people: while any business can access infrastructure, hardware and software, the involvement and motivation of people is key to ensuring a competitive advantage in the call center market (Jamil & Silva, 2005).

Sirota, Mischkind and Meltzeri (2005) present three factors that people hope to have in their workplaces: equity, in the sense that their superiors act fairly with respect to remuneration and the handling of interpersonal conflict; realization, which is more relevant to people who hold higher positions; and fellowship, or a friendly working environment even when there is a climate of competition (Sirota, Mischkind, & Meltzeri, 2005). Thus, mediations on call center work appear to a balance of pleasure and suffering, and operators often consider that even with the stress of their daily activities, they believe in the recognition of work performed with commitment (Scolari, Costa, & Mazzili, 2009).

Employees are driven away from call centers for several reasons, including incorrect work expectations, a lack of autonomy in resolving customer problems, low investment in training, low managerial involvement, immature supervisors who are unable to handle the degree of responsibility assigned to them, salaries incompatible with the cost of living and little flexibility in shift scheduling (Madruga, Gestão Moderna de Call Center & Telemarketing, 2009b).

In the case of organizations, however, the subject is people who have knowledge, skills and attitudes that comprise major competitive factors for organizations (Araújo & Garcia, 2010). The recognition that satisfaction is an emotional reaction shows that emotions have come to occupy an important position in international organizations,

whereas satisfaction has heretofore been a minor calculation in the complex game of perceptions and evaluations in the workplace. Job satisfaction results from the perception that one's job is in line with one's values and needs (Clegg, Hardy, & R.Nord, 2012).

3 - METHODOLOGY

This study is based on systematic observational field research. Data were subjected to qualitative analysis to analyze and interpret deeper patterns to describe the complexity of human behavior (Marconi & Lakatos, 2011). Semi-structured questionnaires were administered to a sample of 140 university students who work hold operational and management positions in call centers. This sample corresponds to 10% of the university worker population of a call center company in Recife.

The questionnaire consisted of two parts: the first part, made up of three questions, focused on respondent demographics. In the second part, the questions were structured based on the three dimensions of the evaluation model for skills: Knowledge, Skills and Attitudes (KSA). Each survey item consisted of multiple choice and degree of domain questions using a six-point Likert scale ranging from 1 (no domain) to 6 (excellent), with responses based on work experiences. The questionnaire and the interview script were developed based on the model used by Russo (2010), in which each question seeks to identify the interviewees' perception of their work experiences.

The survey was developed and implemented using a Term of Consent, a formal process of clarification for the respondent stating the nature of the interview and that the participant was free to participate or decline and could decline to answer any question at any time.

Factor analysis was used to analyze the data. Factor analysis is a multivariate statistical technique for identifying or seeking common variability of dimensions existing directly on unobservable phenomena through a set of variables or indicators (Corrar, Paulo, & Filho, 2011).

Factor analysis assumes that high correlations between variables generate groups that form factors; it is a technique that identifies factors that explain the associations between a set of variables. The hypothesis of normality is permitted depending on the method used for extracting factors, e.g., maximum likelihood, which demonstrates that the variables follow a normal distribution. Multicollinearity is critical to factor analysis because it aims to identify the relationships among variables (Corrar, Paulo, & Filho, 2011).

The Kayser-Meyer-Olkin (KMO) test was used to assess whether the data allowed the use of factor analysis. This test determines the level of data explanation from the factors found in the analysis. If the KMO test returns a value lower than 0.50, the factors found in the factor analysis cannot satisfactorily describe the variations in the original data (Corrar, Paulo, & Filho, 2011).

To confirm the assumption that factor analysis was an appropriate method, we used Bartlett's test of sphericity, which reveals the existence of a sufficient relationship between variables when the significance test returns a result less than 0.05. If the value is larger, there is likely a very small correlation between the variables, resulting in the non-application of factor analysis (Pestana & Gageiro, 2003). The variables in a factor analysis form axes of assessment of knowledge, skill and attitude of the questionnaire.

4 – DATA ANALYSIS

After the application of factor analysis to the mass of data, it was observed that the Kayser-Meyer-Olkin (KMO) statistic was 0.823, meaning that the factor analysis was able to explain 82.3% of the factors, an excellent result. Bartlett's test, shown in Table 3, revealed that the variables are highly correlated (returned value = 0.000).

Table 5. Results of KMO and Bartlett sphericity tests

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	1466.040
	Df	351
	Sig.	.000

The concept produced results of great importance in the factor analysis, namely, the commonalities. The resulting value represents the percentage of explanation obtained by an indicator or variable, or when all factors together are effective in explaining a variable. Therefore, the closer to one, the greater the factors' power of explanation. In this study, it was observed that most of the commonalities displayed a satisfactory percentage, i.e., greater than 50% (Corrar, Paulo, & Filho, 2011).

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Table 6. Factor commonalities

	Initial	Extraction
AGE	1.000	,653
GENDER	1.000	,679
TIME IN OFFICE	1.000	,574
C1	1.000	,565
C2	1.000	,633
C3	1.000	,538
C4	1.000	,559
C5	1.000	,644
C6	1.000	,665
C7	1.000	,533
H1	1.000	,767
H2	1.000	,658
H3	1.000	,633
H4	1.000	,722
H5	1.000	,659
H6	1.000	,656
H7	1.000	,590
A1	1.000	,686
A2	1.000	,602
A3	1.000	,667
A4	1.000	,677
A5	1.000	,779
A6	1.000	,381
A7	1.000	,568
A8	1.000	,698
A9	1.000	,725
A10	1.000	,737

Extraction Method: Principal Component Analysis.

There are several ways to analyze the variables and indicators in a factor. When one seeks to identify underlying trends that can be observed only by building relationships among variables, which is one of the objectives of this study, it is best to use the factor analysis mode (R mode factor analysis). To give one example, this method could be implemented to evaluate the characteristics of a manufacturing process that is industrially rated as best practice. Variables such as the qualification of manpower, quality systems and production controls, among others, can be standardized with the intention of finding latent properties (Corrar, Paulo, & Filho, 2011).

Factor analysis will return assessed values due to its ability to produce factors that can be evaluated. There are rare cases, however, when more than one factor explains the behavior of a variable or indicator very well. In these cases, solutions should be sought that explain the same degree of total variance but that are better fitted to the interpretation. Seeking to increase the quality of the indicators identified in the factor analysis, the factors were rotated using varimax rotation, which is characterized by its minimization of the occurrence of variables with high factor loadings for different factors, enabling a variable to be easily identified with only one factor (Corrar, Paulo, & Filho, 2011). In this research, the factor analysis resulted in seven factors with an explanatory power of 63.87%.

Table 7. Rotated components matrix

	Components						
	1	2	3	4	5	6	7
AGE	-.007	.041	-.025	.073	.801	-.014	.059
GENDER	.064	-.009	.152	-.017	-.133	-.101	-.790
TIME IN OFFICE	-.529	.138	.281	-.056	.398	-.180	.034
C1	.030	.121	.730	.097	.055	.018	-.057
C2	.221	.094	.662	-.156	.178	.280	.043
C3	.530	.051	.451	.042	.104	.072	-.185
C4	.099	.455	.492	.301	-.043	.075	-.047

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C5	.718	.217	.057	-.021	-.117	-.161	.195
C6	.219	.095	.588	.081	-.093	.043	.495
C7	.180	.484	.280	-.140	-.108	.079	.387
H1	.161	.793	.029	.144	.084	.263	-.119
H2	.058	.755	.219	-.001	.026	.183	.041
H3	-.025	.314	.061	.151	-.098	.702	-.065
H4	-.105	.337	.147	-.086	.186	.686	.251
H5	.151	.618	.251	-.017	.319	.196	.224
H6	.110	.313	.679	.287	.015	.040	-.023
H7	.464	-.026	.172	-.077	-.093	.529	.224
A1	.580	.177	.136	.177	.444	.256	-.068
A2	.269	.277	.301	.121	.349	.295	.373
A3	.341	.541	.175	.111	.423	-.080	.174
A4	.742	.152	.197	.154	.124	.158	-.003
A5	.701	.184	.244	.039	.418	-.114	-.066
A6	.210	.185	.322	-.013	.293	.240	.234
A7	.362	-.185	.125	.563	.207	.117	-.116
A8	-.096	.068	.057	.820	.084	.020	-.020
A9	.532	.163	.105	.603	-.103	-.051	.167
A10	.558	.230	.172	.547	-.048	-.075	.190
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 8 iterations.							

The composition of the seven factors appears in the following table. Each was assigned a hypothetical variable name to interpret the factors. The composition of these factors is detailed in Table 8.

Table 8: Description of factors after rotation by the Varimax method

Factor	Description
1- Motivational Factors	C3 (Constantly receive training on technical and operational procedures for customer service) C5 (The company offers professional growth opportunities) A1 (Wakes up and prepares for another day of work with feelings of satisfaction) A4 (The company noticeably cares about maintaining a favorable climate in the workplace) A5 (Feels pride in work performance) A10 (Sit-backed by managers) Call Center Time
2 - Adaptability / environment	H1 (Can work as part of a team) H2 (Can clearly transmit information to customers) H5 (Can adapt to new situations) A3 (Press for the quality of their work)
3 – Knowledge and technology	C1 (Awareness of organization standards) C2 (Know the resources available for using work equipment, i.e., phone, computer, headset, etc.) C4 (Prepared to take on new opportunities within the company) C6 (Recognizes the problems that arise during service) H6 (Dominates enterprise systems) A6 (Can usually fulfill the demands made on them)
4 - Employability	A7 (Concerned employee will leave the job in the future)
5 – Age	--
6 – Comunication	H3 (Writes correctly in Portuguese) H4 (Work is sufficiently organized that someone else can continue it; clear written communications) H7 (Has autonomy to solve customer problems)
7 - Ethics/Gender	A2 (Can act ethically in interpersonal relationships) Gender

Applying factor analysis shows that factor 1, i.e., the motivational factor, has the greatest influence on the issue of competence (14.28%). Another important feature is presented in factors 2 and 3, where there are no significant differences in adaptability/environment and knowledge/technology; as a percentage of explanation, these two factors account for 11.28% and 11.02%, respectively. In contrast, factor 4, employability, exercises little influence over competence at only 7.54%. Similar results are obtained for factors 5 (7.03%), 6 (6.78%) and 7 (5.92%). The total variance is detailed in Table 9.

Table 9. Explanation of total variance

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.626	28.243	28.243	7.626	28.243	28.243	3.856	14.283	14.283
2	2.626	9.724	37.968	2.626	9.724	37.968	3.048	11.289	25.572
3	1.660	6.148	44.115	1.660	6.148	44.115	2.978	11.029	36.600
4	1.534	5.680	49.796	1.534	5.680	49.796	2.037	7.546	44.147
5	1.433	5.307	55.103	1.433	5.307	55.103	1.899	7.034	51.181
6	1.227	4.543	59.646	1.227	4.543	59.646	1.830	6.779	57.960
7	1.143	4.232	63.877	1.143	4.232	63.877	1.598	5.918	63.877
8	.991	3.671	67.548						
9	.870	3.223	70.771						
10	.826	3.060	73.831						
11	.725	2.684	76.515						
12	.704	2.606	79.121						
13	.611	2.263	81.384						
14	.558	2.068	83.452						
15	.543	2.011	85.464						
16	.514	1.903	87.367						
17	.465	1.721	89.088						
18	.442	1.638	90.726						
19	.376	1.394	92.120						
20	.367	1.358	93.478						
21	.348	1.288	94.766						
22	.324	1.201	95.967						
23	.312	1.155	97.121						
24	.264	.979	98.100						
25	.189	.701	98.801						
26	.184	.681	99.482						
27	.140	.518	100.000						

Extraction Method: Principal Component Analysis.

5 - CONCLUSIONS

The rapid evolution of the call center market in Brazil has resulted in high levels of growth in this sector in the last decade. The economic, social and technological transformation of modern society has allowed business in this area to multiply. Despite the economic importance of this sector, companies have difficulty retaining their employees and identifying how they can act to motivate and satisfy their employees.

The performance evaluation model for skills uses factor analysis to demonstrate the influence of knowledge, skills, abilities and attitudes on the satisfaction and job performance of call center professionals. Data were obtained through systematic observational field research with questionnaires distributed to 140 workers at a call center in the city of Recife.

After applying factor analysis to the mass of data, it was observed that the Kayser-Meyer-Olkin (KMO) statistic was 0.823, meaning that factor analysis was able to explain 82.3% of the factors. The Bartlett sphericity test revealed that the variables have a high degree of correlation with a significance test equal to 0.000.

After performing a varimax rotation on the factor analysis, seven factors resulted with a 63.87% degree of explanation; it is therefore possible to ensure that there is a correlation between the three dimensions of competence, knowledge, ability and attitude, and the job satisfaction of people working in call centers.

At 14.28%, factor 1 (motivation) was most highly correlated with job satisfaction. The variables linking the competence attitude (A1, A4, A5, A10) can explain the relationship between the variables related to knowledge (C3 and C5), revealing that workers are more motivated, are proud of being engaged by training and are aware of growth opportunities offered by the company.

Factor 2 (adaptability/environment) accounted for 11.28%. Jurisdictional attitude established a significant correlation with the skills related to the ability variables H1, H2 and H5 through the A3 variable for people who strive for quality at work, show that they know how to work in teams, communicate clearly and can adapt to new situations.

Factor 3 (knowledge and technology) is competence knowledge, and its variables C1, C2, C4 and C6 can explain 11.02%. They correlate with the H6 and C6 variables, i.e., the more the worker knows about the relevant regulations and work tools, the more effectively that worker can carry out his or her job responsibilities. Yet, contrary to the hypothesis of any labor market, factor 4 (employability) accounts for only 7.54% of the influence on job satisfaction. Similar results were obtained for factors 5 (7.03%), 6 (6.78%) and 7 (5.92%). Age and gender are two variables that have little relevance for satisfaction.

The study revealed that the satisfaction and motivation of call center employees are related to training as front-line professionals who are subject to questions and pressure from customers waiting for solutions. Having limited technical knowledge and experiencing emotional distress in obtaining operational or procedural results generates a feeling of general dissatisfaction. There is room for future research work in this area, particularly work focusing on finding the causes of turnover and actions that can bolster the permanence of these professionals within companies.

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