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Proposal of a Device for the Analysis of Work Motivation Characteristics

Proposta de Artefato para Análise de Características Motivacionais do Trabalho

Propuesta de Artefacto para el Análisis de Características de Motivación en el Trabajo

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ABSTRACT

The theory for studying the motivational potential of certain jobs – or job design – was developed for the context of an industrial society, one that is quite different from our current information society. This research proposes a device for discussing and analyzing the key characteristics of motivation referring to jobs, according to the theories of job design and to the information society context. This is a pragmatic research, which applies the Design Science research strategy. Based on an inventory and on content analysis of scientific research concerning job design – published in the twenty-first century in the electronic databases of PROQUEST and EBSCO scientific articles – the motivational characteristics that are associated to this theory were identified, structured and presented in the proposed device.

Keywords: Jobs. Job design. Process improvement. Worker motivation. Design science.

RESUMO

A teoria para estudo do potencial motivador de postos de trabalho, denominada *job design*, foi desenvolvida para o contexto da sociedade industrial, bastante distinta da atual sociedade da informação. Esta pesquisa propõe um artefato voltado para discussão e análise de características centrais da motivação associadas aos postos de trabalho, segundo as teorias de *job design* e o contexto da sociedade da informação. Trata-se de uma pesquisa pragmática, com emprego da

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estratégia de pesquisa *Design Science*. A partir do inventário e da análise de conteúdo das pesquisas científicas sobre *job design*, publicadas no século XXI nas bases eletrônicas de artigos científicos PROQUEST e EBSCO, características motivacionais associadas às dimensões dessa teoria são identificadas, estruturadas e apresentadas no artefato proposto.

Palavras-chave: Posto de trabalho. *Job design*. Melhoria de processo. Motivação do trabalhador. *Design science*.

RESUMEN

La teoría para estudiar el potencial motivacional de puestos de trabajo, denominado Job Design, se desarrolló en el contexto de la sociedad industrial, muy diferente a la actual sociedad de la información. Esta investigación propone un artefacto desarrollado a partir del debate y análisis de las características centrales de la motivación asociada a los puestos de trabajo, de acuerdo con las teorías del Job Design y el contexto de la sociedad de la información. Se trata de un estudio pragmático, empleando la estrategia de investigación Design Science. Del inventario y análisis del contenido de la investigación científica del Job Design, publicado en el siglo XXI en las bases de datos electrónicos de artículos científicos PROQUEST y EBSCO, las características motivacionales asociadas con las dimensiones de la teoría del Job Design se han identificado, estructurado y presentado en el artefacto propuesto.

Palabras clave: Puesto de trabajo. Job design. Mejora de procesos. La motivación del trabajador. Design science.

1 INTRODUCTION

Despite criticism concerning the sparse attention given by process improvement projects to the welfare and motivation of collaborators (MICKLETHWAITE, WOOLDRIDGE, 1998) and of literature suggesting that the Job Design approach is fundamental to the success of process improvement projects (BISSON, FOLK, 2000; KETTINGER, TENG, GUHA, 1997), there is a lack of scientific literature addressing cases, applied research or theoretical discussions regarding the integration of approaches towards process improvement and redesign of jobs. This lack of texts can be easily observed when searching in scientific article databases such as EBSCO and PROQUEST, using as criteria an association of keywords from both topics: job design, work satisfaction, job satisfaction and job motivation in texts that also address the topics process improvement, process redesign or reengineering.

The theory of planning jobs, also known as job design, proposes – when structuring job positions – taking into account the dimensions that are important to the motivation of their occupiers. Hackman and Oldham's (1976) model of job characteristics, also known as Job Characteristics Model (JCM), is one of the central theories of the Job Design approach (GRANT *et al.*, 2010). The scales developed by Hackman and Oldham (1975) and by Sims, Szilagyi and Keller (1976) are important references for measuring the motivational potential of jobs within organizations. Since they are seminal articles referring to the topic and are widely disseminated, these two scales are the key references of this research.

In terms of managerial action, of the practical enforcement of job design concepts in the field, i.e., of their enforcement in projects to (re)design jobs within current organizations, two difficulties are perceived:

a) Hackman and Oldham's (1975) and Sims, Szilagyi and Keller's (1976) models date from the early 1970s, and were developed and validated for the industrial reality of the time, marked by theories concerning mechanistic organizations, typical of industrial society (GOREY, DOBAT, 1996);

b) job design theories do not present practical guidelines to create (specify) or make them become (revision of existing specifications) the most attractive jobs. The most pragmatic resource provided by job design theories is the equation for measuring the motivating potential

score (the MPS) of jobs. For process improvement, measurement is part of the problem; there is a lack of management tools with adequate theoretical basis for monitoring the performance of activities that establish or revise jobs in motivational terms.

These difficulties brought about, respectively, the definition of the problem and of the goal of this research. The following question expresses the central problem to this research: when comparing research from the twentieth century, which applied the theory job design, to similar research from the early twenty-first century, what changes can be observed in terms of the motivational characteristics of jobs that may indicate this theory's adequacy to the current information society context? The answer to this question results in subsidies towards achieving the objective of this research: to develop a device for discussing and analyzing the central features of motivation associated to jobs, according to the theories of job design and to the context of the information society.

This research can be included in the pragmatic research paradigm (CRESWELL, 2007), since it collaborates with the development of devices for professionals - in this case, for process analysts and business analysts focused on process improvement. We used the Design Science research strategy (HEVNER *et al.*, 2004; VAN AKEN, 2005) to develop the device, which is a template that describes the characteristics of the position concerning job motivation, structured according to the models of Hackman and Oldham (1974) and Sims, Szilagyi and Keller (1976). To this end, this research will identify and analyze recent scientific papers, published in the twenty-first century, addressing applications of these authors' models. What we propose is that these models be made adequate to the reality of new jobs, ones that belong to the current information society (GOREY, DOBAT, 1996), covering aspects and dimensions that were adapted or added onto the original models of job design. It is important to note that the models of Hackman and Oldham (1974) and Sims, Szilagyi, and Keller (1976) date from the early 1970s, and that they were developed and validated for the reality of the industrial society of the time.

The transition from the industrial model to a model of knowledge-based organizations has substantially altered workers' expected skills (DUTRA, 2004). These changes have also influenced career expectations, which are now a personal enterprise, concerning the self, and no longer perceived as something that is connected to organizations themselves. The concept of careers "without borders", that is, of careers that transcend the boundaries of organizations, is quite appropriate to describe the experiences of many professionals who work at jobs that make intensive use of knowledge (COELHO, 2006). This changing landscape impacts both the task environment as well as the design of jobs, especially in knowledge-intensive companies.

The article first discusses the theoretical framework, the main concepts of the job characteristics model. Next are presented the operational procedures of research, with details of the operations for the development of the proposed device and, after that, analysis and discussion of collected data. Finally, we discuss major findings, study limits and propositions for future research.

2 JOB CHARACTERISTICS MODEL

Process improvement was widely reported in Western organizations during the last quarter of the twentieth century, and Total Quality Management (TQM) initiatives were one of the theoretical and practical benchmarks of this movement. Concepts, techniques, tools and methods associated with process improvement are present in several current business approaches, presented under different names: business process improvement, business process management, business reengineering and business process (re)design, amongst others. Davenport (1993) and Hammer (1997) were some of the authors who helped to spread business process improvement concepts.

The proposed use of Job Design as an important technique for process improvement

projects, for creating and adjusting jobs in order to make them more attractive to employees, is present, for example, in the research of Kettinger, Teng and Guha (1997). Despite its relevance and the recommendations of the use of Job Design for process improvement, scientific literature does not present any articles concerning applied research that demonstrate the integrated and consistent use of the two topics: job design and process improvement. Team restructuring projects, in the team management field, are the most pragmatic applications of job design to process improvement (MORGESON *et al.*, 2006).

Job Design is often researched in the area of people management (FOSS *et al.*, 2009). Associated to a challenge that is well defined in the organizational context – employee motivation –, Job Design is also strongly associated with pragmatic research (CRESWELL, 2007). According to Grant *et al.* (2010), over the last three decades, research concerning Job Design played a key role in the connection between theory and practice in the field of people management. The job characteristics model (HACKMAN, OLDHAM, 1976), the theory of the socio-technical system (TRIST, 1981) and the interdisciplinary framework of work design (CAMPION, McCLELLAND, 1993), are characteristic of Job Design research that helped in identifying:

> [...] the diversity of tasks, knowledge and job characteristics; the psychological and behavioral effects of jobs; the mediation mechanisms that explain these effects; and the individual and contextual factors that moderate these effects. (GRANT *et al.* 2010, p. 145).

The studies of the influence of job characteristics were initiated by Turner and Lawrence (1965), expanded by Hackman and Lawler (1971) and systematized by Hackman and Oldham (1975). Turner and Lawrence (1965) identified six job attributes that are significant to the study of the behavior of an individual when carrying out duties at work: variety, autonomy, required interaction, operational interaction, knowledge, skill and responsibility. They synthesize general job characteristics in four dimensions: autonomy, task identity, variety and feedback. Hackman and Lawler (1971) added two more dimensions related to the social environment: coexistence with others and friendship opportunities. This theoretical model by Hackman and Lawler (1971) gave rise to an instrument aimed at measuring job characteristics. Hackman and Oldham (1974) used both the theoretical model and the instrument developed by Hackman and Lawler (1971) as input for the development of a job diagnostic survey (JDS).

The model presented by Hackman and Oldham (1974) proposes that job results are related to job characteristics, to critical psychological states, and are mediated by individual differences. To them, the five essential dimensions of work are: skill variety, task identity, task significance, autonomy and feedback. Positive personal and professional outcomes, such as high internal motivation, high job satisfaction, high performance, low absenteeism and low turnover, are achieved when three critical psychological states are present at work: to experience the significance of the job, to experience responsibility for the results of the job and to know job results. Figure 1 presents and integrates the key abstractions in Hackman and Oldham's (1974) model for enriching job characteristics.

The five essential dimensions of work, in terms of highest potential for motivation, are thus defined (HACKMAN, OLDHAM, 1974):

a) Skill variety – to what degree a task involves different activities to be carried out. Can be understood as the degree of worker skills required to carry out a given job;

b) Task identity – to what degree a task is carried out from beginning to end by the same worker. Includes the degree of his perception of the scope of his work in completing the task as a whole;

c) Task meaningfulness – to what degree a task has significant impact to other people, to the organization and/or to society;

d) Autonomy – to what degree the task allows the individual freedom and independence to plan and carry out his work;

e) Feedback - to what degree the employee receives information concerning the work of his responsibility. Sources of information may be bosses, peers, customers or the work itself.

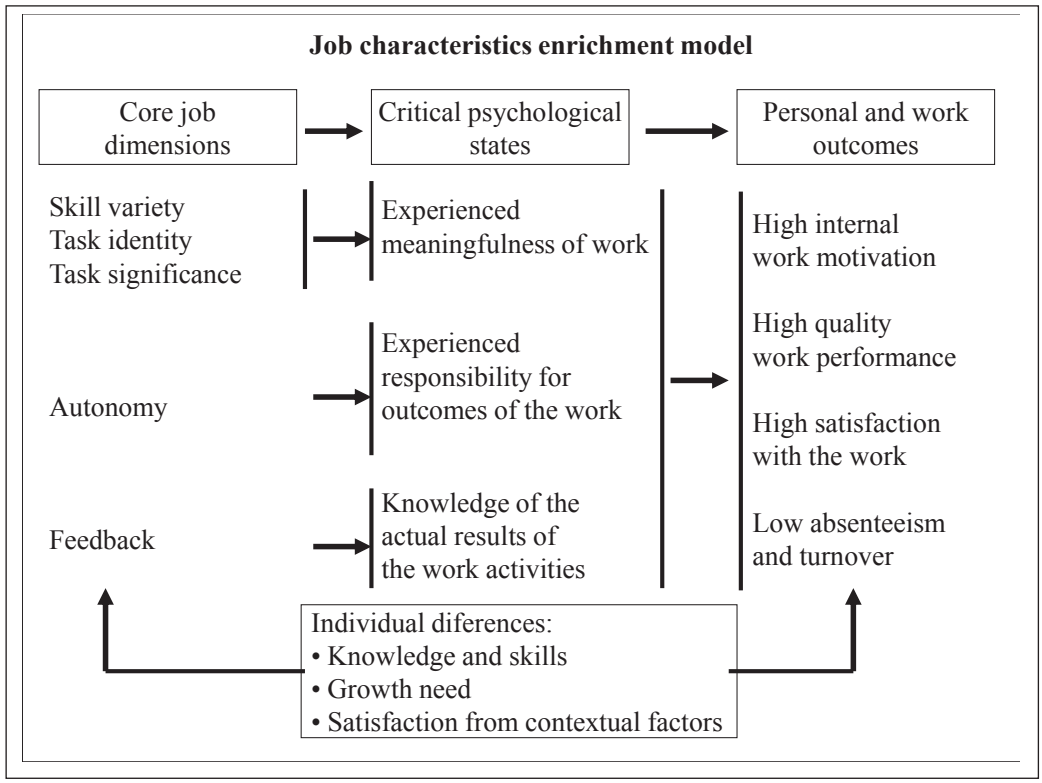

FIGURE 1 – Job characteristics enrichment model

Source: Adapted from Hackman *et al.* (1975, p. 58).

The research of Sims, Szilagyi and Keller, published in 1976, was conceived and planned in 1973 and also used the model of Hackman and Lawler (1971) as a theoretical framework. The objective of the research was to develop an instrument for assessing job characteristics and dimensions assessed were exactly those proposed by Hackman and Lawler (1971). Chart 1 shows the dimensions assessed by instruments developed by Hackman and Oldham (1974) and Sims, Szilagyi and Keller (1976). The dimensions assessed by the two instruments are quite similar; the only differences are the subdivision of the feedback dimension and the inclusion of the task significance dimension by Hackman and Oldham (1974). The dimensions of dealing with others and friendship opportunities in both instruments can be considered similar as to the objective of this work, since both involve the social environment for carrying out work, and are related to extrinsic aspects of the job and not as much with carrying out the task itself, differently from autonomy, feedback, skill variety and task identity dimensions.

Scale	***Job Diagnostic Survey* (JDS)**	***Job Characteristics Inventory* (JCI)**
Authors	Hackman and Oldham (1974)	Sims, Szilagyi and Keller (1976)
Dimensions	Autonomy Dealing with other people *Feedback* from agents *Feedback* from own work Skill variety Task identity Task significance	Autonomy Dealing with other people Friendship opportunities *Feedback* Skillvariety Task identity

CHART 1 – Dimensions of motivation considered by authors who are a reference in the *job design* theory

Source: The authors.

The theory of Hackman and Oldham (1974) can be applied to assessing the possible impacts of job motivational characteristics on organizations by calculating the motivating potential score (MPS) described in Figure 2. The dimension of dealing with other people is related to extrinsic aspects of the task (social work environment) and therefore is not a part of the Motivating Potential Score. The MPS helps to identify the reality of a scenario, in this case a job, facing the perception of its occupant, the employee occupying the position. In terms of initiatives that aim at restructuring jobs that are identified as unattractive, job design theories do not present any practical ways of making them more attractive. This is the problem addressed by this research, which aims at proposing a device for discussing and analyzing the key features of dimensions associated with job motivation.

$$\text{Motivating Potential Score} = \left[\frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \right] \times \text{Autonomy} \times \text{Feedback}$$

FIGURE 2 – Formula for calculating a job's Motivating Potential Score

Source: Hackman and Oldham (1975, p. 160)

Over 35 years after the theoretical proposition of the job characteristics model, this article aims at analyzing ways this model can be applied to the context of today's organizations, typical of information society, observing changes and/or adjustments that may have occurred.

3 OPERATIONAL PROCEDURES OF RESEARCH

The device presented in this research - a template for suggesting and discussing possible motivational aspects associated with jobs - is made up of techniques, concepts and methodology. In the epistemological field of pragmatic research (CRESWELL, 2007), the Design Science approach is the most recent, and its key object is the proposition and testing of devices for professionals (HEVNER et al., 2004; VAN AKEN, ROMME, 2009).

The design science research method aims at creating knowledge that can be used by professionals in their fields for troubleshooting (VAN AKEN, ROMME, 2009). The term design science was chosen to highlight how new knowledge is oriented towards projects (design) for solutions (devices) of professional

communities' specific problems. Manson (2006) states that the process of using knowledge to plan and create a device, in a careful and systematic way, facing rigorous analysis of the effectiveness of the device to achieve the proposed goal, is one type of scientific pragmatic knowledge. In the administration field, research with a design science approach is concentrated in the management of information systems (TRUEX, CUELLAR, TAKEDA, 2009).

Hevner et al. (2004) systematized a set of seven guidelines that have become a reference for researchers, reviewers, editors and readers when understanding and evaluating the design science research method. Some of the guidelines were more relevant to the time of drafting the proposed research project, others for analysis of the results generated by it, but all criteria apply to this research regardless of the time during which they were applied. The considered guidelines are as follows:

a) the object of research must be a device;

b) the device must be associated with problems that are relevant to a group of professionals;

c) there must be rigorous demonstration of the usefulness, quality and efficiency of the device designed and tested by practitioners;

d) significant contributions to the field to which the device will be applied should be brought about;

e) the method employed in creating and validating the device must be rigorous;

f) the use of resources to achieve purposes must comply with the laws of the environment that are relevant to the problem (effectively, not create side effects);

g) the results of the design science research should be presented to the business and technology public that are relevant to the device, that is, must be divulged to practitioners, not restricted to scientific media (HEVNER *et al.*, 2004, p. 83).

The scope of research described in this article, in terms of guidelines of the design science approach, is geared to the two initial phases - introduction and analysis –, specifically the proposition of the device, including its development process. The value of the proposed device is described in the context of research justification, in the introduction. Development is described in this section in terms of research operational procedures – and device presentation, resulting from the analysis of the collected data, occurs in the following section, called data analysis. The implementation of guidelines iii, iv and v of the design science approach described by Hevner *et al.* (2004) would be a natural continuation to this research.

3.1 Operations carried out for developing the device

To identify the evolution of scores for assessing the motivating potential of jobs developed by Hackman and Oldham (1975) and Sims, Szilagyi and Keller (1976), we carried out research on the electronic databases of scientific articles PROQUEST and EBSCO, in search of articles, published over the 2001-2011 period, that mentioned the two sets of authors throughout the text. The two scientific article electronic databases were chosen based on their availability, that is, they were the two that allowed researchers full and unrestricted access to the entire collection of scientific journals.

The search software in these two electronic scientific article databases was configured as follows: a) choice of scientific articles only; that is, we marked only the option for magazines to which "double blind review" was applied; b) published in the twenty-first century only; in the period of publication option, we stated the initial date was "2001" and end date "2011"; and c) mention of the two groups of authors defined as reference of the job design approach; we configured the words (strings) "Hackman", "Oldham", "Sims", "Szilagyi" and "Keller" as binding along the body of the article. The research took place in December, 2011, and resulted in the identification of 48 papers that met the three research criteria described.

The 48 articles identified by research were analyzed using the technique of content analysis

(BARDIN, 2009); the following activities were carried out:

a) initial recognition of texts; pre-analysis of articles through a quick read or, according to Bardin (2009), we proceeded to "floating reading";

b) definition of codes for identifying relevant content. According to Bardin (2009), one of the key roles of the researcher concerns pruning, defining coding or registration units. In this research, codes for analysis were obtained through joint analysis: from the initial understanding of texts, from "floating reading", and analysis of dimensions of the motivational characteristics of jobs proposed by Hackman and Oldham (1975) and Sims, Szilagyi and Keller (1976), described in Chart 1. This work resulted in the following codes: autonomy, feedback, variety, identity and significance, similar to those found in articles that consolidate and describe the theories of job design, such as the key dimensions found in Robbin, Judge and Sobral (2010);

c) identification of codes in the body of the articles' texts. For the 48 sample articles, we carried out a search operation in the text as to the five codes. Each of the five codes was researched individually, via the search command (search) available in PDF-type file reader software (Acrobat Reader). For each occurrence of the word (code) throughout the text, we proceeded to a full reading of the paragraph in which it was inserted. Very commonly, each code appeared in more than one place, thus, for each code, several paragraphs of the article were read;

d) content analysis; for each paragraph quoting the code, the relevance of the content in terms of applying it in scale for analysis of motivation of jobs was verified. We also observed if there was a breakdown of the dimension in terms of analyzed aspects, namely, checking the existence of subcodes or subdimensions of the scale of motivation analysis. The relevant portion of the text was copied and the subcode referenced in a worksheet of codes and subcodes. If it already existed, the excerpt was copied to an also already existing worksheet of codes and subcodes; otherwise, we created a new spreadsheet for the subcode or even for the code, in certain situations.

The content analysis procedure was carried out by three analysts, who worked isolatedly on analysis of the same set of texts: the 48 sample articles. In a second step, the three professionals analyzed, together, the three worksheets of codes and subcodes generated for all articles. The aspects that were not common to all three analysts were identified and discussed by the group in order to reach a consensus concerning codes and subcodes in articles.

The consolidation of codes and subcodes, identified by analysts in the 48 sample articles, resulted in the subsidies necessary to developing the device – a template for suggesting and discussing possible motivational aspects of jobs being created or redesigned.

Importantly, researchers, in order to include research published in Brazilian scientific journals, carried out research in the Scientific Electronic Library Online (SciELO) and the Scientific Electronic Library Periodicals (Spell), the latter specific for journals belonging to the field of administration. These repositories do not offer the resource of a search by word (string) along the text, according to criteria that was established for research: that strings "Hackman", "Oldham", "Sims", "Szilagyi" and "Keller" occurred in the article. Research was carried out with available functions, searching for the following keywords: job design or *desenho do cargo*. Amongst the articles this search returned, none met the requirements for inclusion in the research sample: a quote of the two groups of authors defined as reference for the job design approach.

4 ANALYSIS OF COLLECTED DATA

Some of applied research related to job design, present in 48 articles of the sample analyzed, did not present the questionnaire used for data collection, because the same instrument developed by Hackman and Oldham (1975)

or Sims, Szilagyi and Keller (1976) was used. As an example, the research of Srivastava and Sinha (2011, p. 704) describes: *"Job autonomy was measured through Autonomy scale adapted from Hackman and Lawler (1971), Hackman and Oldham (1974) and Sims, Szilagyi and Keller (1976)*." Some research addressed generically only macrodimensions addressed by the two groups of authors that are references to the theories of job design, as identified in the text of Baral and Bhargava (2010, p. 281): "*They were measured using seven single items (one item is each characteristic) from larger Measures originally created by Hackman and Oldham (1974) and Sims et al. (1976)*". For these reasons, the scales described in both text that are references for job design were also analyzed and considered in order to establish the dimensions and subdimensions of the proposed device.

Certain issues of the scales for analysis of motivational characteristics are very general, and address the dimension only in a macro way - and are therefore negligible in terms of motivational characteristics to be suggested for redesigning jobs. Issues in terms of scales of motivation are important to evaluate the responses as a whole, cross-references, and are present even in the scales of Hackman and Oldham (1974) and Sims, Szilagyi, and Keller (1976). Chart 2 shows some examples of macro questions scales found in the research sample and in the instruments of the two reference texts.

Dimension	Excerpts of texts with macro questions that do not indicate a subdimension
Autonomy	I have plenty of freedom to carry out my work (COELHO; AUGUSTO, 2008, p. 171, our translation); I am totally responsible for the way in which I carry out my work (LLOYD, 2008, p. 34, our translation).
Feedback	The opportunity to find out how well I am doing my job (SIMS; SZILAGYI; KELLER, 1976, p. 200, our translation).
Identity	No macro or general questions were found in the sample.
Significance	To what degree do you feel you are contributing something meaningful to your organization? (HIRSCHFELD; SCHMITT; BEDEIAN, 2002, p. 558, our translation).
Variety	How much variety is there in your job? (HACKMAN; OLDHAM, 1974, p. 48, our translation)

CHART 2 – Examples of macro questions found in articles by authors in the sample

Source: The authors.

The next figures show the characteristics of the jobs identified from the analysis of the sample, i.e. the research of motivation associated with the theory of job design. The features contained in the figures are respectively associated with the following dimensions: autonomy, as described in Chart 3; feedback, as described in Chart 4; identity, described in Chart 5, significance, described in Chart 6; and variety, as described in Chart 7. Some job characteristics were associated with more than one dimension; this is the case of the characteristic "carry out work independently" highlighted by Foss *et al.* (2009) as appropriate to the identity dimension, and also identified by Lloyd (2008) as relevant to the autonomy dimension. In such cases, the characteristic is associated with two dimensions, considering that the relevant aspect of the device is to indicate the potential motivational associated with the job, regardless of whether it has one or two dimensions that can help the business analyst to understand the importance of the characteristic of the job in question.

Of the five dimensions of the job associated with motivation, the autonomy dimension was mentioned in 48 surveys of the analyzed sample. This dimension was also the one with the most amount of features identified, as shown in Chart 5, which is consistent with researchers who state that autonomy is the job dimension that has received most attention in literature (LLOYD, 2008). Of the 37 characteristics described in "Template for suggesting and discussing possible motivational aspects of jobs being created or

redesigned", identified from the analysis of the research sample (excluding the three highlighted in bold italics, which do not come from the research sample), 14 (38%) are associated with the autonomy dimension.

Motivational dimension: Autonomy	
Identified characteristic	Excerpts from articles associated to the characteristic
To judge and solve problems	I am encouraged to find solutions to solve problems (COELHO; AUGUSTO, 2008, p. 171, our translation); chance to use my personal judgment or initiative (HACKMAN; OLDHAM, 1975, p. 50, our translation).
To choose activities/procedures to be carried out	and decide about procedures to be followed (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation); I am capable of choosing the path to follow with my work (the procedures to use) (COELHO; AUGUSTO, 2008, p. 171, our translation).
To choose work agenda	Employees have a decisive vote about their work agenda (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation); Control over a person's working hours and sequence of activities (SEKHAR, 2011, p. 31, our translation).
To define working hours	At my job I have control over my working hours (LLOYD, 2008, p. 34, our translation).
To define at what rate work will be carried out	The control I have over the rhythm of my work (SIMS; SZILAGYI; KELLER, 1976, p. 200, our translation).
To choose equipment/tools	Selecting the equipment they will use (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation).
To choose the working method	Discretion about the procedures and means of carrying out work (SEKHAR, 2011, p. 31, our translation); I am authorized to decide how to proceed to carry out my work (the method to be used) (SADLER-SMITH; EL-KOT; LEAT, 2003, p. 718, our translation).
To choose work evaluation criteria	The ability to choose alternative goals in terms of the ones through which a person's performance is evaluated (SEKHAR, 2011, p. 31, our translation); My work allows me to change the normal way in which we are evaluated, so that I can emphasize certain aspects of my work and de-emphasize others (SADLER-SMITH; EL-KOT; LEAT, 2003, p. 718, our translation).
To make necessary decisions	My work allows me to make a load of decisions on my own (LLOYD, 2008, p. 34, our translation); the degree in which employees were given explicit and specific decision-making rights (SEKHAR, 2011, p. 31, our translation).
To define when to carry out personal activities	My work is such that I am able to decide when to carry out specific work activities (SADLER-SMITH; EL-KOT; LEAT, 2003, p. 718, our translation).
To define work objectives	I am capable of changing my work goals (what I should carry out) (SADLER-SMITH; EL-KOT; LEAT, 2003, p. 718, our translation).
To define the scope of my work	I have a degree of control over what I should do (what my supervisor sees as my work) (SADLER-SMITH; EL-KOT; LEAT, 2003, p. 718).
To carry out work independently from others	I am capable of doing my job in a way that is independent of others (LLOYD, 2008, p. 34, our translation).
To control the physical conditioons of the work environment	Can you control the physical conditions of your work station (for example, lighting, temperature)? (PIERCE, O'DRISCOLL, COGHLAN, 2004, p. 519, our translation)

CHART 3 – Motivational characteristics, found in recent literature, associated to the Autonomy dimension of the job design theory

Source: The authors.

Among the job characteristics with the potential for motivating employees, some are aligned with other major contemporary theories associated with employee motivation. For characteristics associated with the feedback dimension, described in Chart 4, there are two that relevant to the theory of organizational justice; they are the following: "Feedback is designed

fairly" and "Feedback is given in a respectful manner". The theory of organizational justice works with four variables associated with the following themes and perceptions of employees: attributive justice, "is waht I received fair?"; procedural justice, "is the process (logic) used to define the outcome fair?"; informational justice, "is the data (inputs) used in the calculation process and decision-making fair?"; and interactional justice, "am I treated with dignity and respect?". The last of these dimensions of the theory of organizational justice, interactional justice, is linked with the "feedback is given in a respectful manner" characteristic of the feedback dimension, just as the other three dimensions of organizational justice theory (attributive, procedural and informational justice) are the details of the "feedback is designed fairly" characteristic. These are important job characteristics which can be analyzed for different topics and, thus, must be linked to different theories of motivation.

Motivational dimension: Feedback	
Identified characteristic	Excerpts from articles associated to the characteristic
Feedback from bosses	Feedback from my boss about my performance at work (FOSS *et al.,* 2009, p. 881, our translation); feedback from my boss about how well I am doing my job (SIMS; SZILAGYI; KELLER, 1976, p. 200, our translation)
Feedback from peers	And job peers almost never give me any feedback (HACKMAN; OLDHAM, 1975, p. 50, our translation)
Feedback from others within the organization, apart from bosses	The extent of feedback you receive from other individuals apart from your supervisor (SIMS; SZILAGYI; KELLER, 1976, p. 200, our translation)
Formal or institutional recognition	Formal recognition (FOSS *et al.*, 2009, p. 881, our translation);
Feedback is given in a respectful manner	The degree of respect and fair treatment I receive from management (GALUP, KLEIN, JIANG, 2008, p. 63, our translation)
Feedback is designed in a fair way	The degree of respect and fair treatment I receive from management (GALUP, KLEIN, JIANG, 2008, p. 63, our translation)
Quality of feedback given by the organization	The global quality of supervision that I receive at work (GALUP, KLEIN, JIANG, 2008, p. 63, our translation)

CHART 4 – Motivational characteristics, found in recent literature, associated to the Feedback dimension of the job design theory

Source: The authors.

The importance of feedback has been widely discussed in the field of people management, especially as to performance evaluation. According to Latham and Wexley (1994), this function is a key to increased productivity. In recent years there has been an extension of performance evaluation systems by incorporating information from various sources. An example of such a system is a 360° model of performance appraisal, a method in which the employee receives feedback on their performance from multiple sources (internal and external to the organization).

Chart 5 shows the Identity dimension. The perception of task identity is a fundamental element for the attribution of meaning to work by the employee. This was a major challenge for the jobs of the industrial era, due to applying of the Taylor principles to job design, which profoundly affected the sense of identity within the jobs carried out. This challenge is still very current, considering the significant growth of jobs in the service sector in developed and developing countries (KLETZER, 2005), as well as the greater structuring and organization of this sector, impacting job design.

Motivational dimension: Identity	
Identified characteristic	Excerpts from articles associated to the characteristic
To carry out a complete part of work	I have the opportunity to carry out a complete part of the work (COELHO; AUGUSTO, 2008, p. 171, our translation); The opportunity to complete the work that I began (FOSS *et al.*, 2009, p. 881, our translation); The opportunity to carry out work from beginning to end (that is, the chance to carry out work as a whole) (SIMS; SZILAGYI; KELLER, 1976, p. 200, our translation).
To carry out more than a complete part of work	I often carry out work from beginning to end (COELHO, AUGUSTO, 2008, p. 171, our translation).
To visualize the other parts that make up the work as a whole	At this job I have a complete vision of all phases of work (COELHO, AUGUSTO, 2008, p. 171, our translation).
To carry out work independently from others	The opportunity to carry out my work independently from others (FOSS *et al.*, 2009, p. 881, our translation).
To perceive the result of work	and can clearly identify the result of his efforts (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation).

CHART 5 – Motivational characteristics, found in recent literature, associated to the Identity dimension of the job design theory

Source: The authors.

Morin (2005) points out that even with the significant changes in the world of work, with the disappearance of permanent jobs and the emergence of new technologies and new forms of work organization, work remains an important value and a structural element in our society. Thus, the perception that the work carried out is meaningful remains a key element in employee behavior. In this context, the motivational dimension of Significance is particularly important. The results for this dimension are presented in Chart 6.

Motivational dimension: Significance	
Identified characteristic	Excerpts from articles associated to the characteristic
Work that can influence the lives of other people (beneficiaries)	The degree to which work has a substantial impact on the life or the work of other people – in the immediate organization or abroad (HACKMAN, OLDHAM, 1975, p. 161, our translation); Impact of work upon beneficiaries is the degree to which work offers opportunities for employees to affect the lives of beneficiaries (GRANT, 2007, p. 397, our translation).
Work that allows for contact with people benefited by it	Contact with beneficiaries is the degree to which work is structured in relational terms so as to offer opportunities for employees to interact and communicate with people affected by their work (GRANT, 2007, p. 398, our translation). To what extent your work requires you to work near other people (HACKMAN; OLDHAM, 1974, p. 48, our translation).
Work should allow the employee to perceive the impact his work has on the lives of the beneficiaries	Impact perceived for beneficiaries is the degree to which employees are aware that ther actions affect others (GRANT, 2007, p. 399, our translation).
Work should allow for the establishment of informal relationships with other people in the company	Establish informal relationships with other people at work (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation)
Work should allow for conversation with other people at work	Work allows employees to talk to one another at work (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation).
Work should require interaction amongst people	Work requires employees to deal with other people (SIMS; SZILAGYI; KELLER, 1976, p. 197, our translation); work requires plenty of cooperative work with other people (HACKMAN; OLDHAM, 1974, p. 50, our translation).

CHART 6 – Motivational characteristics, found in recent literature, associated to the Significance dimension of the job design theory

Source: the authors

Increased multifunctionality over the past few years may have had an impact on the variety of tasks inherent to jobs. Anyway, this dimension remains very important for the design of jobs and this research identified five characteristics associated with the Variety dimension, listed in Chart 7.

Motivational dimension: Variety	
Identified characteristic	Excerpts from articles associated to the characteristic
Of activities	I frequently carry out different tasks (COELHO; AUGUSTO, 2008, p. 171, our translation); work requires employees to carry out a wide variety of operations (SIMS, SZILAGYI, KELLER, 1976, p. 197, our translation).
Of skills	I use different skills and talents at this job (COELHO, AUGUSTO, 2008, p. 171, our translation); I use the relevant skills to carry out my work in an efficient way (LLOYD, 2008, p. 34, our translation).
Of knowledge	I have good knowledge of all the facets of my job (LLOYD, 2008, p. 34, our translation).
Of equipment/tools	The degree to which employees need to use a variety of equipment (SIMS, SZILAGYI, KELLER, 1976, p. 197, our translation).
Of challenges/complexity of work	Work requires me to use various complex or high level skills (HACKMAN, OLDHAM, 1975, p. 50, our translation); A characteristic of work that seems to encourage proactive behavior is the complexity of work, which may stimulate creativity, intellectual flexibility, and feelings of responsibility (GRANT; PARKER, 2009, p. 345, our translation).

CHART 7 – Motivational characteristics, found in recent literature, associated to the Variety dimension of the job design theory

Source: The authors.

The Variety, Identity and Significance dimensions are associated with the attribution of meaning to work, and have a considerable influence on employees' motivation, satisfaction and productivity. It is these dimensions that enable employees to experience that their work is meaningful.

The weakening of permanent work bonds, with increased staff turnover, is an essential element in the new work environment and has a significant impact on the concept of careers. Currently, the career concept tends to be associated with the professional history of each individual, separate from the organization and from the field of education. In this context, Balassiano and Costa (2006) identify the professionals exist in a constant state of transformation and learning, within an individual perspective of career management. Job design, its complexity and inherent challenges, are key in promoting the development of employees. This is a particularly relevant in a society based on information, especially for knowledge workers and knowledge intensive companies.

5 CONCLUSIONS

Content analysis of research described in the sample articles identified job characteristics with potential to motivate employees. For business analysts or process analysts, who discuss the creation or redesign of processes within organizations, these characteristics are important subsidies for establishing of high performance environments that require motivated professionals. Thus, these identified characteristics are presented as a template for suggesting and discussing possible motivational aspects for job creation or redesign, all associated with their respective dimension, as highlighted by columns in Chart 8.

The traditional management of organizations, arising from the creation and development of industrial society (GOREY, DOBAT, 1996), is based on a mechanistic model of the organization, characterized by: high specialization; rigid departmentalization; a clear chain of command; limited span of control;

high centralization; and high formalization (ROBBINS, JUDGE, SOBRAL, 2010). Technological innovation and the emergence of the knowledge society (GOREY, DOBAT, 1996) boosted the organic organizational model characterized by: multifunctional teams, multi-hierarchical teams, free flow of information, scope of employee autonomy, decentralization and reduced high formalization (ROBBINS, JUDGE, SOBRAL, 2010). Since the theoretical foundation of job design was established in industrial society, researchers expected that research would identify many characteristics associated with motivational subdimensions not yet addressed in the reference texts of the approach, which in fact occurred. A significant part of the characteristics found in the research quoted in the template is not mentioned in the reference texts.

It is important to highlight the nature and the distinction of knowledge generated by the seminal works of job design (HACKMAN, OLDHAM, 1975; SIMS, SZILAGYI, KELLER, 1976) and that developed by this research. The seminal works are exploratory in order to inventory the potential limitations associated with motivation. The issues of item scale used in this research were formulated to investigate from the perspective of the position's occupant; for example: "To what extent do you begin the work that will be done by another employee?" and "to what extent do you complete work that was begun by another employee?" (SIMS, SZILAGYI, KELLER, 1976, p. 200). In this research, these two issues are related to the first motivating aspect of the identity dimension in the template (Chart 8): "It must cover a complete piece of work." To realize these distinctions is important to highlight the applicability of scientific knowledge generated by the design science approach, in this case by gearing the template towards practitioners, that is, process analysts, business analysts and other professionals focused on process improvement. Another important aspect of this analogy between instruments is the quantification of new topics that are job motivators and were identified by this research. As highlighted by captions in Chart 8, of the 37 topics identified in the template, only 15 were covered by the instruments of Hackman and Oldham (1975) and Sims, Szilagyi, and Keller (1976). This characterizes the greater detailing of motivational characteristics associated with five dimensions of job design theory, more adequate to the current organizational environment of information society. As a result, this paper proposes a template that can assist managers in analyzing the motivating potential of current jobs within information society. The use of the template can also identify possible modifications to be made in job design in order to make them more stimulating.

It is interesting to note that – as a restriction in this research – characteristics identified in applied research, and reported in the sample articles, are associated with different contexts: companies of different sizes, from different business segments, different organizational cultures, amongst other aspects that differentiate organizations. One should consider that a motivating characteristic in a certain organizational context may not be equally motivating to another context. These differences were observed even in the seminal papers; Sims, Szilagyi and Keller (1976) did not validate the same group of motivating characteristics for the two sample groups: manufacturing and healthcare companies. In short, the initial template is a proposition that must be contextualized before being applied to any organizations. Managers that are aware of the contingency theory, as well as organizations with management models that are influenced by it, naturally observe the circumstances and necessary adjustments to the management techniques, tools and approaches, before the effectively applying these resources.

Job dimensions				
Autonomy	**Feedback**	**Identity**	**Significance**	**Variety**
to judge and solve problems	Feedback by bosses *[a, b]*	Must include a complete part of work *[a, b]*	Work that allows to influence the lives of others (beneficiaries) *[a, b]*	Of activities *[a, b]*
To choose procedures/activities to be carried out	Feedback by peers *[a]*	Must include more than a complete part of work *[a]*	Work that allows for contact with beneficiaries	Of skills *[a]*
To choose work agenda to be carried out	Feedback by others within the organization apart from bosses	Allow for the visualization of other parts that make up work as a whole *[b]*	Allows to realize impacts on the lives of beneficiaries	Of knowledge
To define working hours	Formal or institutional recognition	To carry out work independently from others *[b]*	Allows for the establishment of informal relationships with other people in the company *[b]*	Of equipment/tools
To define rhythm in which work will be carried out *[b]*	Feedback is given respectfully	To realize the final result of work	Allows for conversation with others during work *[b]*	Of challenges/work complexities
To choose equipment/tools	Feedback is designed fairly		Requires interaction with people *[a, b]*	
To choose the work method	Quality of feedback given by the organization			
To choose criteria for evaluating work				
To make necessary decisions *[a]*				
To define when to carry personal activities				
To define work objectives				
To define the scope of my work				
To carry out work independently from others *[a]*				
To control the physical conditions of the work environment				
Caption: *[a]* characteristic addressed by Hackman and Oldham's research (1975) *[b]* characteristic addressed by Sims, Szilagyi and Keller's research (1976)				

CHART 8 – Template for suggesting and discussing possible motivating aspects of jobs being created or redesigned

Source: The authors.

As a natural continuation to this research, we suggest the implementation and testing of the template with practitioners. In the design science approach, after the development of the device, it must be tested by "practitioners", i.e., the public who will use the device. Thus, the device should be used by process analysts or business analysts responsible for organizational improvement initiatives. Comprehensive projects that allow even for job design or redesign should be considered. Within the variations and measurements needed, we recommend that the MPS of jobs is identified before and after the efforts to redefine them, a part of the efforts when applying the device and another part without applying it.

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