

Professional women in the transition to the Fourth Industrial Revolution: a brazilian gaze

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Abstract

An increasing number of studies are being conducted with the objective of understanding discriminatory practices associated with the management of female professionals. Aimed at broadening this discussion in the context of the fourth industrial revolution, this paper discusses results of a quantitative research developed with 45,217 professionals (including women and men) from Brazilian companies participants of the Alliance for the Empowerment of Women, an initiative by UN Women. The results show that women are still underrepresented at the top level of organizations and have little participation in the most demanded professional areas in the context of the Industry 4.0.

Keywords

Women wages; Wage gap between men and women; Industry 4.0

Mulheres profissionais na transição para a Quarta Revolução Industrial: um olhar brasileiro

Resumo

Um número crescente de estudos vem sendo realizado com o objetivo de compreender as práticas discriminatórias associadas à gestão de profissionais do sexo feminino. Com o objetivo de ampliar tais discussões no contexto da quarta revolução industrial, este artigo discute os resultados de uma pesquisa quantitativa desenvolvida com 45.217 profissionais (incluindo mulheres e homens) de empresas brasileiras participantes da Aliança pelo Empoderamento das Mulheres, uma iniciativa da ONU Mulheres. Os resultados apontam que as mulheres ainda permanecem subrepresentadas no nível hierárquico superior das organizações e possuem pequena participação nas áreas profissionais mais demandadas no contexto da Indústria 4.0.

Palavras-Chave

Remuneração das mulheres; Diferença salarial entre homens e mulheres; Indústria 4.0

Mujeres profesionales en la transición a la Cuarta Revolución Industrial: una visión brasileña

Resumen

Se ha llevado a cabo un número creciente de estudios con el objetivo de comprender las prácticas discriminatorias asociadas con la gestión de las mujeres profesionales. Con el fin de ampliar estas discusiones en el contexto de la cuarta revolución industrial, este artículo analiza los resultados de una investigación cuantitativa realizada con 45.217 profesionales (incluidos hombres y mujeres) de empresas brasileñas que participan en la Alianza para el Empoderamiento de las Mujeres, una iniciativa de ONU Mujeres. Los resultados muestran que las mujeres siguen estando subrepresentadas en el nivel jerárquico superior de las organizaciones y tienen poca participación en las áreas profesionales más demandadas en el contexto de la Industria 4.0.

Palabras clave

Compensación de la mujer; Brecha salarial entre hombres y mujeres; Industria 4.0

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Introduction

Increasing number of studies are being conducted with the objective of better understanding discriminatory practices associated with the management of female professionals, especially those related to career and remuneration (LAUSTEN, 2016).

As observed by Blau and Kahn (2000), despite advances, the importance of further studies on the subject are remarkable, considering the increasing numbers of women in the labor market. Nevertheless, authors such as Blau and Kahn (2000) and Bertrand and Hallock (2000) reveal that women are still disregarded in the internal processes of promotion - and/or external contracting - to positions of higher hierarchical levels and, therefore, higher remuneration. In the absence of analyzes confirming a greater competence of male executive vis-à-vis woman executive, attention should be paid to financial losses as well as the waste of internal and external talent, even considered in such recruitment and selection processes.

In any case, significant part of theories on compensation have origins in agency models that estimate the existence of a positive and significant correlation between compensation and organizational results (ERIKSSON; LAUSTEN, 2000; PINHO; PINA, 2018). In addition to organizational performance, factors such as the size of the organization, geographical coverage, sector competitiveness and degree of responsibilities associated with hierarchical positions commonly pointed out as important predictors of women's remuneration (LAUSTEN, 2016; ROSEN, 1992).

In Brazil, although women's participation in the labor market is significant (74%) and their level of education is higher than that of men (according to IBGE data), they are still a minority in the direction of companies. In 2016, only 38% of managerial positions in the country were occupied by women (IBGE, 2019).

The reasons pointed out for such are numerous and diverse involving from aspects related to the singular condition of the woman - e.g.: maternity - through geo-economics, cultural and organizational characteristics - as well as the masculine domain of business and networks of relationships, of which women are historically excluded.

Aimed at broadening the discussions on the subject also in the context of transition to the fourth industrial revolution, this paper discusses results of research developed with Brazilian companies participants of the Alliance for the Empowerment of Women, an initiative promoted by UN Women. In general lines, the research aimed to investigate the management of female professionals, involving aspects such as compensation, promotion, succession process, training and development programs among women in companies affiliated to the Alliance, considering different socio-demographic and professional statistical crossings.

The Alliance for the Empowerment of Women was formed in 2011 and currently involves twelve participating companies: Accenture, Avon, CPFL, Cummins, Dow, Ernest & Young, IBM, KPMG, Maersk, Talenses, Unilever and Whirlpool, with the purpose of developing and disseminating transformative corporate practices that contribute to overcoming existing barriers to full representation of women in business, based on the UN Women Principles for Women's Empowerment. In methodological terms, the research that subsidized the discussions presented in this paper can be characterized as quantitative, developed from data from a universe of 45,217 professionals (men and women).

1. Theoretical framework

1.1. The Fourth Industrial Revolution and organizational / professional implications

The growing volume of studies around the fourth industrial revolution points to significant changes regarding relations individual-work-organization. In essence, the set of data produced by research centers, government agencies and global consulting firms, as well as academic papers, indicate the depth and pace, not only regarding the resignification of classical analytical categories - work, profession, career and organization - such as regarding the pace of development and adoption of the new digitally based technologies, integrated by sensors, robots and self-referenced algorithms (MORGAN, 2014; FORD, 2015; SNRICEK; WILLIAMS, 2016; SCHWAB, 2016; FREY; OSBORNE, 2017; ROSS, 2017).

At societal level, the data signal to impacts in the transition and current economical ways those recommended by the Revolution 4.0, particularly in countries of the 'lower circuit of the economy' (SANTOS, 2011), such as Latin American countries. The pace of change, coupled with the high degree of professional qualifications required, shows the exclusion of the labor market - and/or its "uberization" - of significant populational contingents. Analysts infer similar impacts - but on an unprecedented scale - only to those experienced in the transition from agrarian to industrial world during the First Industrial Revolution.

Data from the US agency responsible for monitoring the labor market support its predictions by projecting that about 75% of current jobs will not exist in 2030 (Anderson, 2012). Other institutions such as the World Economic Forum – WEF and the Organization for Economic Cooperation and Development – OECD suggest overcoming in large-scale the fordism capitalism, based on the constitution of middle-class consumption, for non-inclusive modalities of capitalism, restricted to small contingent of consumers, covering somewhere around 20% of the global population. The remaining 80%, no longer relevant to the new forms of capitalism, would have to be prepared

for other forms of barter relationships - barter, solidarity economy, community cooperativism, local currency economies, subsistence entrepreneurship - backed by universal income programs (SNRICEK; WILLIAMS, 2016).

At the organizational level, the transformations point to the intense organizational desconcentration and decentralization, with the predominance of organizational arrangements such as business platforms and startup ecosystems. They also signal the intensification of the outsourcing processes of management activities. Impacts are also expected on business and management models. Rather than competing exclusively through operational efficiency strategies, companies are now also doing so based on innovation, expanding production of customized and integrated products through (re-) configurable factories and business platforms (ISMAIL, 2014).

In Brazil, The National Industry Confederation – CNI monitors the impact of the new technologies on business models and management systems of Brazilian companies. Along the 2,225 companies investigated by CNI (2016) - 910 small, 815 medium, and 500 large - 43% indicates not have the technologies with potential to boost the competitiveness in the era 4.0. It is worth mentioning that the among large companies, this percentage is 32%, reaching 57%, among small companies.

Considering the degree of technologies incorporated, 52% of the Brazilian companies do not rely on typical technologies of the fourth industrial revolution. Such percentual drops to 40% among those of medium technology. For an example, in devices and accessories, the percentage is 63%, wood (57%), rubber (56%), machinery and equipment (30%), machines and equipment (31%) and automotive vehicles (37%).

Additionally, the data point to the heterogeneity of the Brazilian industry, which presupposes the need for specific initiatives for different sectors, based on their different stages and rhythms of evolution. To this end, CNI (2016) presents an agenda of macro proposals, having as common the following focuses: 1. the development of supply chains and suppliers; 2. the establishment of Industry 4.0 technology induction mechanisms; 3. fostering technological development; 4. the expansion and improvement of infrastructure; 5. the construction of regulatory frameworks; 6. training of human resources; 7. the institutional articulation.

According to Capgemini Consulting (2017), Revolution 4.0 will force organizations to rethink traditional forms of value creation, incorporating differentiated business arrangements that prioritize network innovation, outsourcing of production and management processes, focused production. in small lots and building smart supply chains.

By involving such broad changes impacts are also indicated in relation to the dimension of organizational and personal values. First, companies should be able to revisit traditional models of leadership and management of people still firmly rooted in the prevailing principles of the

previous revolution (MORGAN, 2014). It should, for example, to put more open to cooperation inter and intraorganizational and the establishment of partnerships involving the sharing of data and operational and market information.

In the sphere of work, Revolution 4.0 signals for radical implications (FREY; OSBORNE, 2017; HOLZER, 2017). Firstly, low-educated workers involved in low complexity tasks will tend to be the first to risk replacement by new technologies unless recycled to other functions and / or sectors. Even in this second case, there is no consensus among scholars on the ability of the Revolution 4.0 to generate jobs in volume necessary for the absorption of labor to be freed, at least in the short and medium terms (MANYIKA; SPENCE, 2018).

Paradoxically, while new jobs tend to be of higher quality, allowing for greater meaning and variety of skills, there are concerns about the ability of organizations to establish organizational environments in which new job profiles can mobilize the required skills, as creativity, entrepreneurial capacity and initiative of action and decision. It is still unclear whether expectations of cooperation between human workers and robots, rather than greater autonomy, will result in intensified time, movement and behavior control mechanisms (MORGAN, 2014; ROSS, 2017; SUSSKIND; SUSSKIND, 2017).

For Schwab (2016), the impact of Revolution 4.0 should not be underestimated, either on the composition of the labor market structure, on the polarization between occupations or on the intensification of social inequalities. Even in countries of more developed economies, the weakening of social welfare systems and the stagnation of wages, registered since 2000, highlight the risks of a new movement of emptying the middle class, with the exclusion of lower-income workers at the same time deepening the gap between them and a better qualified - and relatively better paid - minority.

According to Fadulu (2017), minorities such as women, blacks, low-educated immigrants, and young people proved to be the most vulnerable, especially among these groups, for even more perverse impacts on blacks and male Latin Americans. Data from McKinsey, described by Fadulu (2017), once again corroborates the tendency for this phenomenon to replicate, at least in the United States, where research points out that as more vulnerable to Industry 4.0, Latino men (60%), followed by blacks (50%), Asians (40%) and whites (25%).

Chui, Manyika, Miremadi (2015) signals that Revolution 4.0 does not tend to affect only tasks performed by low complexity workers. For it is the nature of the technology also threatens those higher skill levels, including managers, accountants, doctors, lawyers and financial analysts. Likewise, Brynjolfsson and McAfee (2011) predict gloomy prospects for not only blue-collar occupations, but also white-collar occupations, including specialists, middle managers, and self-employed professionals. According to the authors, the main cause of this dissociation is directly linked to new technologies.

By analyzing relationships between productivity and employment, Rotman (2013) questions the extent to which such a relationship may be explained, directly, by the technology. According to this author, however, positions that demand lower levels of complexity and compensation, particularly in the service sector, will have greater difficulty in automation - waiters, health aides, elderly caregivers, drivers. In any case, it incorporates into the discussion the issue of polarization between occupations, suggesting a greater emptying of the middle class.

Also, according to the view of this author, the occupations may undergo changes technological without, however, major changes in overall employment rates. The most likely would be a temporary shock that while painful tends to dissipate the way that adjust workers in their abilities and entrepreneurs create new opportunities based on emerging technologies. For him this has always been the default. The question, however, is whether with Industry 4.0 technologies the situation will be no different, with involuntary and long-term unemployment emerging.

Notwithstanding divergences, both economic theory and empirical perception converge on a future in which a small minority will be able to produce all the goods and services indispensable to mankind, cheaper and on a large scale. This while the rest could be focused on idleness, the arts or offering personalized services to each other.

At the organizational level, the movement around Revolution 4.0 is driven by resource allocation in managerial and process innovations, allowing for successive cost reductions and the availability of cheaper products and services, compensating for lower wages and class income middle and lower. As is clear, the industrial sector seems to be directed to incorporate increasingly smaller share of the expenses of these classes. In other words, the more productive it becomes and the more it benefits from economies of scale, the less its relative share in the economy increases.

At the individual level, data from the World Organization indicates that more than 300 million people are already suffering from depression, many of them concomitantly showing symptoms of anxiety, with economic impacts exceeding the US\$ 1 trillion annual figure. Several risk factors for work related mental health in the context of Revolution 4.0 can be evidenced from the reviewed studies. Data point as causes of psychic suffering incompatibilities between required competences and organizational support necessary for their exercise. Also indicate living with forms of emerging and archaic of work, expanding the dichotomies between discourse and practice (WHO, 2017).

Nevertheless, the potentialities of application of human subjectivity, findings also indicate trends in prevalence vis-à-vis the introduction of new technologies, impoverished content associated with excessive workloads. The bullying, psychological harassment - also known as mobbing - are also increasingly reported as new sources of stress related to work. Other studies also indicate that unemployment, particularly long-term, tends to intensify the impact on mental health.

1.2. Revolution 4.0 and professional women

Not so long before, work outside the home was the prerogative for men as well as to study (ROCHA-COUTINHO, 2015; PRIORE; FONSECA, 2018). Even nowadays, women's participation in the job market still seems to do roughly in professions socially accepted for women and commonly linked to characteristics considered feminine: sweetness, fragility, care (HIRATA; KERGOAT, 2007; MIES, 2016).

The separation between 'masculine' and 'feminine' jobs in the labor market has been questioned by social movements on and on, especially the international feminist movement during the twentieth century, based on the point of view that the choice of the area of female performance is not aimed at the professional achievement of women. On the contrary, the need for socioeconomic acceptance is what dictates the presence and permanence of women in the world of work.

In addition to the actions of the feminist movements (SOUSA; GUEDES, 2016), other factors such as advances in industrialization (WOLF, 2003; HIRATA; KERGOAT, 2007; MADALOZZO; BLOFIELD, 2017) and the process of globalization point to the expansion of the women's work, resulting in a more intense women participation in the labor market in several previously predominant male professions, such as Engineering, Law (BRUSCHINI, 2007; SUSSKIND; SUSSKIND, 2017). In other words, the profile of the woman who works is changing. It not only tends to be characterized by young, unmarried women, but also for older ones, married, and with children (ROCHA-COUTINHO, 2015).

It is important to note, however, that this approach applies to urban women, with higher education, white, from media and high social classes. The reality of belonging to the lower classes remains still means domestic activities, inclusive outside home as domestic servants, workers in hospitals, schools, industries and factories (BRUSCHINI, 2007; SUSSKIND; SUSSKIND, 2017).

In Brazil, according to data from the Brazilian Institute of Geography and Statistics (IBGE, 2018), even among individuals with higher education, comparatively to men women still face inequality in the labor market. In terms of income, between 2012 and 2016 women received, on average, 75% of men's salaries. In addition, the time devoted to home care is higher among women (18.1 hours per week) than among men (10.5 hours per week). The data also suggests that by taking that divide between the profession and household chores, women tend to exercise flexible works, often in more precarious conditions.

International literature on work-family conflict points to the women's difficulty of reconciling work and household activities. According to data of different authors, besides influencing the choice by the type of occupation, such conflict causes suffering in women and renunciation of professional

careers (BERKMAN; ROCHA-COUTINHO, 2015; ALMEIDA; MOTA-SANTOS, 2018; POWELL et al., 2018).

Data from IBGE (2018) indicate that women are underrepresented in several areas: politics, police, managerial positions in public and private positions. In 2016, males held 62.2% of managerial positions, against 37.8% of woman. This percentage is reduced, even if not that significantly, in the younger age brackets. Among 16-29 years-old women there were 43.4% in those positions against 56.6% men. It is noteworthy that even in the face of achievements in schooling and professionalization women still have income inferior to men, being in smaller numbers in more strategic positions in the organizations.

The difficulty in occupying hierarchical positions is another phenomenon presented in the “glass ceiling”, literature which constitutes a subtle barrier, transparent as glass, invisible, yet strong and therefore difficult of being perceived and overcome. Originating in the USA, the concept of glass ceiling is also used in studies on professional growth barriers of blacks and other minorities (TANURE; CARVALHO NETO; MOTA-SANTOS, 2014; EZZEEDEN; BUDWORTH; BAKER, 2015).

In Brazilian surveys regarding the rise of women to senior executive positions, the glass ceiling not only describes the disproportionality of the number of women in relation to men in these higher positions (23% in top positions in private corporations), but also discusses the barriers they face to overcome better positions (TANURE; CARVALHO NETO; MOTA-SANTOS, 2014; PINHO; PINA, 2018). Either some theoretical aspects seek to explain this phenomenon by the bias of prejudice or by men and women behavior. Discrimination based on preference, which is when the employer chooses to hire a man even if a woman also carries out the activity, and cultural discrimination that involves the presupposition that women’s productivity is lower than male in more strategic positions (CAPPELIN, 2012).

In relation to the difference in behavior, research show that the fact that women have more activities outside work, for example taking care of their children, would lead to job instability (BERKMAN et al., 2015; POWELL et al., 2018). In contrast, some suggest that when the highly qualified women lose interest in dedicating to home cores, if it also enforces the phenomenon of glass ceiling, it enforces also the growth of professional women (MELLO, 2012).

The literature on career and maternity conflict questions whether the failure to reach the top positions in the organizational hierarchy would no longer be a woman’s choice because she is still the one that has to prioritize motherhood over career (BELTRAME; DONELLI, 2012). International studies have shown exactly this movement: women choose not to take on higher positions in order to try to balance personal and professional life (HATAM et al., 2016; SMITH et al., 2018).

There are several perspectives of analysis. In general, literature shows that women face various types of exclusion in the labor market, such as the vertical segregation, in which women do not occupy posts involving decision-making power; and the horizontal segregation, which refers to the gender issue in the division of labor, determining the place of woman in occupations (MIES, 2016).

When investigating male and woman executives of the 500 largest corporations in Brazil, Tanure, Carvalho Neto and Mota-Santos (2014) identified as barriers faced by women who reached high positions the need to demonstrate more competence and greater effort at work than men. Other studies indicate that, in order to reach higher positions, they have to work “as a man”, that is, to behave in a masculine way (MELLO, 2012; GUIMARÃES, 2016; MOTA-SANTOS et al., 2019).

In another survey on women in management positions, in Brazil, Ferreira, Silva and Souza (2017) even indicated an increase in their participation in managerial positions, but the authors highlight difficulties with the triple journey (work, home cores and study to improve qualification) and the resistance by subordinates to the leadership exercised by women, reflecting on patriarchy and its influences.

This issue of double and triple workday is singled out by the international literature as a significant factor in women’s professional climbing. According to studies, the exhaustion generated by the accumulation of activities has caused, in addition to illness, the abandonment of the career by the woman (BERKMAN et al., 2015; HATAM et al., 2016; POWELL et al., 2018; SMITH et al., 2018).

Feminist movement in Brazil has suggested that women must negotiate the number of domestic tasks to be performed with their male counterparts according to the size of their financial participation in the family budget. This would decrease the workload and mitigate the effects of double or triple workday (MALADOZZO ; BLOFIELD, 2017).

It is observed, therefore, that if the configurations of women’s engagement in the labor market do not change, it will not be possible to establish equitable spaces for men and women. (GUIMARÃES, 2016; ALBUQUERQUE; OLIVEIRA, 2017). The glass ceiling remains a reality in any setting: men are the majority in higher management positions- including the most required for the Fourth Industrial Revolution - and earn more than women in virtually every situation despite the higher educational level of women.

2. Method

The research that subsidized the accomplishment of this study was quantitative, developed from data provided by twelve companies operating in Brazil, participants of the Alliance for Women’s

Empowerment Brazil (UN Women), comprising a universe of 45,217 professionals (men and women) (KERLINGER, 1980). The “Alliance for Women’s Empowerment Brazil” brings together a small group of twelve national and multinational companies operating in Brazil that are notable for having already traveled a significant path towards gender equality and that, through shared governance, work to deepen the understanding of practices and obstacles that still remain and produce results.

With support from UN Women, the Alliance produces studies and research in conjunction with Brazilian higher education institutions to provide subsidies to improve the living and working conditions of Brazilian professionals.

For the purposes of this article, research data agreed upon by all member companies of the Alliance are presented, based on discussions and reflections of the presidents and those responsible for their HR areas regarding the relevance of better understanding the reality of policies and practices of inclusion, remuneration and professional advancement of women.

Thus, the study comprised the universe of the companies that are members of the network, which are recognized as members of the elite of Brazilian companies in the performance of women’s empowerment, with the objective of identifying, in the set of these organizations, gaps and challenges still present, as well as insights on new issues not considered or not yet properly addressed.

As for the data collection strategy, the survey counted on the participation of researchers from an important Brazilian executive education school, who coordinated all the processes of data collection, treatment, and analysis. It is important to emphasize, in order to obtain the data, that the researchers send templates to the contacts of the areas of HR of the twelve target companies of the research to insert the set of variables of interest of the study.

The data provided by all twelve companies included information about individual characteristics of the professionals (age, sex, education, number of children, admission year to the corporations, admission year to the current position, compensation, current position, functional area, level of authority) and characteristics of the organizations in which they work (size, sector, nature of control, host country, headquarter in Brazil or not). The data regarded the year of 2016.

After consolidated at Excel for further treatment using the statistical package SPSS 20.0, the data allowed to calculate descriptive statistics as well as crossing the variables of interest of the study with those of socio-demographic, professional and organizational nature. Additional information on the performance, corporate participation, governance and type of production of each corporation was obtained from the companies’ websites and in the Brazilian publication Melhores & Maiores (2017), which includes an annual list of Brazilian companies with the highest annual performances in their respective sectors. Table 1 provides an overview of the profile of the thirteen companies involved in the study.

Table 1 - Characterization of Respondent's Corporations

| | | | | | |
|--|---------------|----------------|-------------|---------|--------|
| Sector | Industry | Services | | | |
| | 50% | 50% | | | |
| Nature of Control | Multinational | National | | | |
| | 92% | 8% | | | |
| Origin of Capital | USA | UK | Netherlands | Denmark | Brazil |
| | 43% | 33% | 8% | 8% | 8% |
| Headquarters in Brazil (Department) | São Paulo | Santa Catarina | | | |
| | 92% | 8% | | | |

Source: Research data.

3. Findings

As for the findings, at Alliance for Women's Empowerment Brazil, the participation of men and women in the labor market follow the same proportion recorded for Brazil (IBGE, 2016): men (58%) and women (42%). Globally, ILO (2016) indicates a proportion of 61% of men and 39% of women.

Regarding the participation in top positions, the gap between men and women obtained by the survey is 65%, having 74% of these positions held by men and 26% by women. Considering the participation of men and women in managerial positions, the data also accompanies the Brazilian proportion indicated by IBGE (2016). At the national level, the participation of men in managerial positions is 62% and women 38%. Among Alliance companies, the percentage of men in such positions is 66% and women 34%.

As far as participation in managerial positions is concerned, research data show that the difference between the number of men and women decreases as they move away from top positions.

Table 2 - Participation in Management Positions

| Hierarchical Level | Men | Women | Variation |
|--|------------|--------------|------------------|
| | (%) | (%) | (%) |
| Presidency / Vice Presidency / Senior Executive Office | 74 | 26 | 65 |
| Board of Directors / Superintendency | 69 | 31 | 55 |
| Senior Management | 58 | 42 | 27 |
| Management | 63 | 37 | 41 |
| Coordination / Supervision | 46 | 54 | -15 |

Source: Research data.

The Revolution 4.0 innovations brought the intense incorporation of robotics, information and telecommunications technologies and artificial intelligence in the organizational and business environment. Performing a functional group analysis, the greater participation of men in jobs of greater value in this context (SCHWAB, 2016; FREY ; OSBORNE, 2017) also tends to corroborate with the phenomenon of the 'professions polarization' (BRUSCHINI, 2007; SUSSKIND; SUSSKIND, 2017) associated with the intensification of the sexual division of labor.

Table 3 - Participation by Functional Areas

| Functional Areas | Men | Women | Variation |
|---|-----|-------|-----------|
| | (%) | (%) | (%) |
| Sales, Marketing and Advertising | 43 | 57 | -24 |
| Technical, Production and Quality | 58 | 42 | 27 |
| Economics, Finance and Administration | 38 | 62 | -38 |
| Purchasing, Logistics and Materials | 46 | 54 | -13 |
| Human Resources | 26 | 74 | -65 |
| Information Technology (IT) | 62 | 38 | 38 |
| Research and Product Development | 54 | 46 | 16 |
| Planning, Communication and Information | 39 | 61 | -35 |

Source: Research data.

Data shows the predominance of women in the areas of sales, marketing and advertising, in the areas of economics, finance and administration, in the areas of logistics and materials procurement, in the areas of planning, communication and information, in the areas of human resources and organizational development. However, the male presence preponderates in areas that are more valued, in particular in the context of the Revolution 4.0 (SCHWAB, 2016; FREY; OSBORNE, 2017), such as information technology, product research and development and quality (SUSSKIND; SUSSKIND, 2017).

Regarding the wages, data from the IBGE (2016) indicate the wage gap between men and women in Brazil of 22%. OECD data (2016) indicate that among the European Union countries, Germany has the largest disparity, of 22% (in the United Kingdom, the gap is of 16%). In the United States, data from the OECD (2016) indicate a gap of 18%. Among the Alliance companies, the percentage is 16%, with a significant difference in top positions (presidency, vice-presidency and junior executive office) of 27%.

In other words, our research showed that at top positions women earn on average 27% less than their male peers. Such percentage may still be higher, insofar as the data collected incorporated only the base salary, not including variable wage, profit sharing and bonuses. According to the

data, the difference between the largest men wages and women at the top is 38%. The difference, however, decreases when comparing the difference between lower wages of men and women at the top (18%). In the tactical-level positions, the wages of men and women tends to be equal to those of managerial level. Already the wage gap between men and women widens in the technical and operational levels (Table 4).

Table 4 - Wage Difference in Management Positions

| Hierarchical Level | Variation |
|----------------------------|------------------|
| | (%) |
| Senior Management | 22 |
| Management | 22 |
| Coordination / Supervision | 55 |

Source: Research data.

Already the wage gap between men and women widens in the technical and operational levels.

Table 5 - Wage Difference in Management Positions

| Hierarchical Level | Variation |
|---------------------------|------------------|
| | (%) |
| Administrative | 19 |
| Operational | 24 |
| Commercial | 45 |

Source: Research data.

In fact, the only functional area in which women have higher wages than men is Economics Finance and Administration as indicated in Table 6. This area has been indicated a great attraction for women. However, potentially, this is one of the functional groups that tend to experience more impact by the adoption of new technologies of the digital 4.0 age (SCHWAB, 2016; FREY; OSBORNE, 2017).

Table 6 - Wage Difference in Functional Areas

| Functional Areas | Variation |
|---|-----------|
| | (%) |
| Sales, Marketing and Advertising | 21 |
| Technical, Production and Quality | 10 |
| Economics, Finance and Administration | -43 |
| Purchasing, Logistics and Materials | 20 |
| Human Resources | 7 |
| Information Technology (IT) | 6 |
| Research and Product Development | 20 |
| Planning, Communication and Information | 22 |

Source: Research data.

In relation to schooling, it is worth noting that 79% of men and women have higher education in management areas (Administration, Economics and Accounting), and just 8% of men and 5% of women in Engineering. In other areas, there are 9% of men and 11% of women. The low percentage of men and, above all, of women graduates of Engineering courses, once again tending towards more valuable careers in the context of the digital age (SCHWAB, 2016; FREY; OSBORNE, 2017).

In a wage's analysis, however, there are no significant differences in academic training between men and women. The salary differences are of the order of 3% among professionals of both sexes coming from engineering courses and of 7% between the graduates of management courses and of 9% between the other courses.

Regarding marital status, 41% of men are married, 43% are single and 16% divorced or widowed. Among women, 48% are married, 32% single and 20% divorced/widowed. With regard to wages, the wage gaps are all favorable to men in these situations: between married men and married women (9%); between single men and single women (10%); between married men and single women (25%). No surprises here, once the labor market still is men dominated.

On the other hand, still with regard to wages, the wage gaps are all favorable to women in these situations: among divorced/widowed men and divorced/widowed women (5%); among married men and divorced/widowed women (7%); between single men and married women (8%). This suggests that men tend not to do well when divorced, widowed or single. In opposition, we can say that women on their own (without the burden of a husband to carry if this is the case) seem to become stronger than men facing the same situation. This can be a new contribution to the literature. Even married women tend to do better than single men.

Adding the children variable to the analysis, the situation is still worst for women as showed in profusion in the literature. Comparing men with and without children and women with and without

children, the wage difference, in both cases, is 16%. The wage gap between men without children and women with children is 10%. In turn, the wage gap between men with children and women without children is 15%; between men and women with children and women is 17% and between men without children and women without children is 7%. In all cases, favorable to men.

Data shows also that 52% of men and 56% of women do not have children. That is an interesting and somehow challenging result if it indicates that more women are renouncing maternity and not only delaying it (this delay is already present in the literature).

As far as the age group is concerned, 12% of men and 10% of women are less than 20 years old, 13% of men and 11% of women are in the range between 21-25 years, with a mean wage gap of 23%. Between 26 and 30 years of age, 16% are men and 19% are women, with a wage gap between them of 18%. Between 31-35 years, the percentage of men is 16% and women 13%, with a wage difference of 0.2%.

Between the ages of 36 and 40 years old, 13% are men and 14% are women, with a wage gap of 15%. In turn, in the 41-45 age group, 9% are men and 15% women, and the wage gap is 16%. Among the respondents, aged 46-50, men and women represent, respectively, 8%, with an average wage gap of 25%. Already 6% of the men and 4% of the women have age between 51-55 years. In this range, the average wage gap is 24%. Between 55-60 years, the percentage of men is 5% and of women 4% and the average wage gap is 29%. Finally, 2% of men and 2% of women are over 60 years old. In this range, the average wage gap is 58%.

Thus, the data set suggests that wage gaps have declined over the generations quite possibly given the greater degree and speed of younger women schooling admitted to higher wages than men. However, the politics of professional growth among corporations seems over time to restrict the possibilities of promotions and wage gains that allow women to maintain the levels of initial career, corroborating previous studies that point to the glass ceilings in career of women (SMITH; SMITH; VERNER, 2010).

Regarding the relation between time working in the corporation and wages, the wage gaps are favorable to men in all ranges: 14% of men and 19% of women have less than one year in their actual corporations, with a wage gap of 3% between them. In addition, with 1 to 5 years of company, 45% are men and 41% women, with a wage gap of 5%. Between 6 to 10 years, 21% are men and 23% women, with a wage gap of 11%. Already 12% of men and 11% of women with between 11-25 years in institution present wage gap of 11%. Finally, over 35 years of company, there is a percentage of 3% of men and 2% of women with a wage gap of 64%. In this study, it is clear that the longer a man stays in a corporation, the more the wage gap increases in relation to women in the same condition. The discrimination against women here is blatant.

Examining the relationship between current job position and wages, the wage gaps are also favorable to men in all ranges. 19% of men and 25% of women with less than a year in the current position showed a wage gap of 15%; 56% of men and 54% of women with 1 to 5 years in their current position presented a wage gap of 3%; between 6 and 10 years, 17% are men and 12% are women, with a wage gap of 29%. In turn, 4% of men and 3% of women with 11-25 years presented a wage gap of 41%. In the group between 26-35 years, 1% are men and 2% women, and the salary difference is 47%. Finally, with 35 years or more in the same position, 3% is men and 4% are women. In this range, the average wage gap is 6%. In average, again the longer a man stays in a determined job position in a corporation, the more the wage gap increases in relation to women in the same condition.

As for promotion policies, 7% of men and 5% of women had promotions in the previous year, representing a gap of 29% between the sexes. Specifically among those workers promoted, the wage gap between men and woman was 18%. Already the percentage of eligible for promotion is 11% among men and 13% among women. However, it is worth noting that in the plans for succession the percentage of participation of men is 41% higher than of women. Besides, the career growth potential for men is 33% higher than for women. It probably suggests challenges to greater presence of women in more strategic job positions over time. Again, the discrimination against women is blatant. Finally, in relation to the turnover, the voluntary turnover among men is 44% and among women is 46%. Even the involuntary turnover among men is 56% and among women is 54%.

Discussion and conclusions

The growing debate around the Revolution 4.0 points to significant changes in individual-work-organization relationships and highlight the urgency of further consideration, particularly regarding initiatives aimed at the development of new generations of individuals and organizations. In this scenario, Kelly (2016) broadens the questions about the role of the human and ways of developing and exercising their competences. For the author, in the super connected world, different thinking will be the main attribute of the Human. Being smart will no longer be enough, notably as you advance the development of new types of intelligence and other ways of articulating it. Also, according to this author, in the next three decades the human being will experience a new identity crisis, wondering mainly about what would be - as a human - effectively good and distinctive. In addition to changes in the field of work and professions, the author also questions how advanced robotics may change industries and their forms of organizing.

The data set seems to converge to significant impacts not only on the intensification of the international division of labor, but also on business, management and welfare factors of individuals

in and with their work. Of concern are the movements and trends associated with the expansion in the number of accidents and sick leave due to psychic disorders, which demand greater attention from governmental, business, union and civil society leaders.

Findings in Brazilian companies allow to make a systematic and comprehensive overview of women's work. It is possible to verify that in the transition to the fourth industrial revolution, women are still underrepresented at the top level of organizations; they are underrepresented in areas more valuable in the context of the fourth industrial revolution; men in top positions have higher wages than their woman counterparts; women in tactical-level and in operational-level positions have higher wages gaps.

As conclusion, the findings indicate that despite the advances made, and in particular, the concern of the companies participating of the Alliance on the issue of women, there is still much to be done. The findings also corroborate considerations of authors such as Bruschini and Ridenti (2007), Madalozzo and Blofield (2017), which point to the elitist character of most studies. Besides, they do not take into account the 'intersection' (Devine, 1989), among the multiple differentiation factors underlying the construct Woman - ethnicity, social class, physical appearance, age. These factors make the challenges experienced by women in Brazil and for extension to other emerging economies countries much more complex, considering the historical context of social inequalities.

In this direction, the data reinforce the need for expansion of actions aimed at reversing strategies - conscious, or unconscious - associated with the "glass ceiling" noted on the top positions as well as elimination of wage differences still significant at the top (BERTRAND; GOLDIN; KATZ, 2009). The data also show the presence of an U-inverted curve (LAUSTEN, 2016), according to which women tend to have an earlier career advancement faster than men, which, however, is reversed, no longer to be given again, around 35-45 years of age. This is possibly due to the absence of policies and practices that favor the retention of women during and after maternity.

The discussions of the findings and results also reinforce the signs of 'professions polarization' (SUSKIND; SUSKIND, 2017), even more emphatic when considering the prevalence of an discourse that do not encourage to women the developing of careers in science, mathematics, engineering, information technology, robotics, and others associated with the labor market in the digital age (SCHWAB, 2016; FREY; OSBORNE, 2017).

Concurrently, the results bring more contributions to the dimension of the challenges relating to 'stereotypes' and 'sticky floors', striking particularly in the analysis of potentials and in promotion processes (Smith, Smith, Verner, 2010). The prevalence of men in succession plans as well as the greater probabilities of a man being promoted, compared to women, deserves attention.

Finally, the findings and results point to permanencies and changes, which coexist and demand continuous (re-)significations according to the complexity and rhythm of the transformations that characterize the contemporary world. In this direction, in addition to the dissemination of policies and practices and their monitoring in a systematic and continuous way by the top of the organizations, the outline outlined by our study suggest a greater involvement and commitment of the boards of administration. This is not only due to the 'sticky floors' and due to biases - conscious and/or unconscious - inherent to the operationalization of the theme, but also due to the need to sustain the improvement indicators more aligned with changes in the contemporary labor market, in particular considering the movements around the fourth industrial revolution. Otherwise, even advances already registered could be in danger.

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