Job accommodation of people with disabilities in the construction industry: analysis of production and absence

Bruno Guimarães\textsuperscript{a}, Laura Bezerra Martins\textsuperscript{b}, Béda Barkokébas Junior\textsuperscript{c}

\textsuperscript{a,b}Design department, Federal University of Pernambuco, Recife, Pernambuco, Brazil; \textsuperscript{c}Civil Engineering Department of the University of Pernambuco, Recife, Pernambuco, Brazil

The purpose of this research was to evaluate production and absence of workers with and without disabilities in a construction work of a building. The survey was applied in the metropolitan region of Recife, in the state of Pernambuco, Brazil and there were eight workers with disabilities, one being a bricklayer and seven servants. The methods used in the field study were: direct observation of the activities and the environment, a video and photographic record of the tasks, semi-structured interviews with the workers with disabilities and their supervisor, and data was collected from the company about absences and worker's production, with and without disabilities in order to make a comparative analysis. The results of the research show that in all cases, individuals with disabilities had lower production and more absences at work than individuals without disabilities.

Keywords: Job accommodation, people with disabilities, construction industry, production, absence.

1. Introduction

People with disabilities (PD) represent about 15% of the world population, or one billion people (WHO, 2011). While in Brazil this figure is 23.9% of the population, i.e. there are 45.6 million PDs in Brazil (IBGE, 2011). The inclusion of this population in the social-labor environment has been discussed and encouraged in many countries through various laws, for example from quotas set for the employment of people with disabilities. In Brazil, laws establish a quota of 20% for public sector enterprises and 2% to 5% for private companies with over 100 employees.

Despite the attempts to include PD at work, the number of such people seeking employment and of those receiving job opportunities remains low. A recent study showed that in 27 countries, working-age persons with disabilities experienced significant labor market disadvantage and worse labor market outcomes than working-age persons without disabilities. On average, their employment rate, at 44%, was over half than for persons without disability (75%) (OECD, 2010). In the meantime, in Brazil, of 48.5 million people employed in 2013, only 357.797 were declared as people with disabilities, representing 0.7% of total (BRAZIL, 2013).

Some companies have hired workers with disabilities without using appropriate methods to do so. Thus, there was no prior analysis of accessibility conditions, neither of the demands of their jobs, nor of these people’s potential (Simonelli and Camarotto, 2005). In a survey conducted by Chi et al. (2004), of the 540 case studies that were analysed, in only 3 of them did employers conduct an analysis of the tasks and the functional abilities of disabled workers with regard to jobs under an inclusion program.

Therefore, there is a need to compare the demands of the job and the PD’s capabilities. The goal is that the demands of work do not exceed the functional capacities of the worker with a disability and that the workplace is accessible and safe. PD’s jobs should allow or facilitate the development of their individual skills and abilities, while also preventing the progression of their existing deficiencies and/or the emergence of new ones (Tortosa et al, 1997). Thus, this prevents the worker with disabilities from having to make a great effort to adapt to the job or the job’s falling far short of their professional qualifications (Martins, Barkokébas Junior and Guimarães, 2012).

Consequently, it is essential to understand the interaction between PD and the elements of the work system since, through the knowledge of the task, the physical, intellectual and organizational demands of jobs, and functional capabilities of workers with disabilities, jobs can be properly adapted (Guimarães, Martins and Barkokébas Junior, 2012).

The construction industry is the fifth largest employer in Brazil between the sectors of economic activity, with about 2.8 million workers. Between the years 2009 and 2010, it was the sector that had the biggest
increase in workers (BRAZIL, 2013). Despite the importance of this economic sector in Brazil, there is a lack of publications on labor inclusion of PD in this sector in the country (Guimarães, 2011). This occurs not only in Brazil, because according to Newton and Ormerod (2005), there has been no previous research on construction industry employment and people with disabilities.

According to the survey results of Newton and Ormerod (2005), typically, workers with disabilities work in offices rather than on construction sites, in most construction companies. Furthermore, it is not known the types of impairment that they have, the relationship between environment and impairment and the impacts of that environment, such as the type of work.

In this context, there is a need to determine which jobs can be performed by PDs and what adaptations are needed. Besides is also important to verify, in construction work industry, if the workers with disabilities present production similar to workers without any disability. Thus, the purpose of this research was to evaluate production and absence of workers with and without disabilities in a construction work of a building.

2. Method

The survey was applied in November 2014 in a building construction site in the metropolitan region of Recife, in the state of Pernambuco, Brazil. The construction was in its finishing phase and there were 130 workers, of which eight presented disabilities, being one bricklayer and seven servants.

The methods used in the field study were: direct observation of the activities and the environment; a video and photographic record of the tasks. Following that, there were semi-structured interviews with the workers with disabilities and their supervisor, with the intent of identify the tasks performed. The employees with disabilities answered a socio-demographic questionnaire and data was collected from the company about absences and worker's production, with and without disabilities, that performed the same tasks in order to make a comparative analysis. The employees without disabilities that would have their data compared were determined randomly and according to tasks performed, because it would be necessary to compare the production of similar activities.

This study was submitted to and approved by the Ethics Committee in Research of the Federal University of Pernambuco and given the registration number 674.220/2014. The jobs evaluated were selected according to the following criteria: the jobs should be active throughout the period of the work and should be typical of the construction field sector.

3. Result

All workers were male and had physical disability with an average age of 41.12 years old, the average time for the onset of the disability was 25.25 years, whereas the average time the workers had exercised the function in the company was 1.3 years. Only one of the eight workers used orthesis, who was one of the servants. Only one of the eight workers used orthesis, who was one of the servants. Regarding the origin of deficiencies, four workers said they were from accidents, three said they were caused by disease and only one said it was caused by an accident at work.

In addition, 50% of workers had completed high school and 50% had not completed high school. When starting the work activities, the company made organizational adjustments at work for all workers to carry on activities. In the case of the seven servants, adjustment was conducted by the company distributing tasks in which it was not necessary to carry weight during the work, while for the bricklayer he was not allowed to work at heights, such as on scaffolding and slabs of buildings, for example. Thus, financial investments for those accommodations were not necessary.

By questioning the workers if their disability hindered the performance of their duties, seven workers answered it did not and only one said it disturbed him little. The same question was made to their supervisor, who stated that their disability did not hinder 5 workers, though it hindered 2 workers a little and moderately one worker.

Concerning the attendance at work in the last 12 months, it was found a monthly average of 1.4 absences to the servants with disabilities (n=7) and 1.3 absences to the servants without disabilities (n=13). While the bricklayer with disabilities (n=1) had a monthly average of 1.3 absence and bricklayers without disabilities (n=4) an average of 1.2 absence in the last year. The attendance at work by the workers, with and without disabilities, is presented in Table 1.
The Production was measured by the company according to the amount of tasks performed for each function, the results in "Reais" (R$), the Brazilian currency, that is added to the employee’s paycheck. Data was collected from the company about worker’s production. In the last 10 months, the servants with disabilities (n=7) received an average of R$ 306.50 while the servants without disabilities (n=7) received an average of R$ 607.8. Meanwhile, the bricklayer with disabilities (n=4) received an average of R$ 179.75 and the masons without disabilities (n=3) R$ 591.

The amount of production received in "Reais" (R$) by the workers, with and without disabilities, is presented in Table 2.

Table 2. Amount of production received in "Reais" (R$) per month.

<table>
<thead>
<tr>
<th>Worker</th>
<th>Jan/14</th>
<th>Feb/14</th>
<th>Mar/14</th>
<th>Apr/14</th>
<th>May/14</th>
<th>Jun/14</th>
<th>Jul/14</th>
<th>Aug/14</th>
<th>Sep/14</th>
<th>Oct/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servant 1*</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>100,00</td>
<td>70,00</td>
<td>869,28</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 2*</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>200,00</td>
<td>988,65</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 3*</td>
<td>339,49</td>
<td>594,05</td>
<td>388,00</td>
<td>460,94</td>
<td>321,45</td>
<td>575,00</td>
<td>656,99</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 4*</td>
<td>200,00</td>
<td>380,48</td>
<td>304,90</td>
<td>200,00</td>
<td>551,56</td>
<td>398,15</td>
<td>887,45</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 5*</td>
<td>150,00</td>
<td>100,00</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>100,00</td>
<td>883,08</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 6*</td>
<td>200,00</td>
<td>200,00</td>
<td>200,00</td>
<td>200,00</td>
<td>200,00</td>
<td>200,00</td>
<td>737,72</td>
<td>329,96</td>
<td>1,530,00</td>
<td>-</td>
</tr>
<tr>
<td>Servant 7*</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>150,00</td>
<td>100,00</td>
<td>418,02</td>
<td>353,00</td>
<td>297,80</td>
<td>-</td>
</tr>
<tr>
<td>Servant 8</td>
<td>250,00</td>
<td>250,00</td>
<td>800,00</td>
<td>380,95</td>
<td>476,98</td>
<td>304,76</td>
<td>350,00</td>
<td>1,627,36</td>
<td>500,00</td>
<td>450,00</td>
</tr>
<tr>
<td>Servant 9</td>
<td>538,35</td>
<td>881,26</td>
<td>690,63</td>
<td>899,11</td>
<td>738,01</td>
<td>697,02</td>
<td>742,00</td>
<td>1,375,97</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 10</td>
<td>501,14</td>
<td>691,78</td>
<td>677,85</td>
<td>566,55</td>
<td>620,32</td>
<td>578,00</td>
<td>1,091,00</td>
<td>987,98</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 11</td>
<td>598,07</td>
<td>1,494,36</td>
<td>1,715,98</td>
<td>2,199,68</td>
<td>600,00</td>
<td>600,00</td>
<td>835,00</td>
<td>1,090,08</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 12</td>
<td>631,96</td>
<td>400,00</td>
<td>600,00</td>
<td>728,00</td>
<td>700,00</td>
<td>600,00</td>
<td>746,92</td>
<td>700,00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 13</td>
<td>250,00</td>
<td>256,39</td>
<td>238,64</td>
<td>226,19</td>
<td>100,00</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Servant 14</td>
<td>0</td>
<td>1,559,80</td>
<td>1,244,80</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bricklayer 1*</td>
<td>0</td>
<td>0</td>
<td>200,00</td>
<td>104,76</td>
<td>200,00</td>
<td>333,33</td>
<td>300,00</td>
<td>299,91</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bricklayer 2</td>
<td>365,26</td>
<td>670,36</td>
<td>500,00</td>
<td>914,22</td>
<td>400,00</td>
<td>480,00</td>
<td>795,00</td>
<td>1,160,11</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: (*) Workers with disabilities.
adapt the workplace to an

make major physical changes in the work environment nor to provide sophisticated, technological aids to

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during the work, while for the bricklayer he was not allowed to work at heights, such as on scaffolding and

of the seven servants,

positions in civil construction companies.

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participants, the decreased functional capacity as a result of the disability and also because of prejudice and

lower wages and are less valued. This result may

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allowing a productive life at work.

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or 6,385 workers.

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qualification limits their chances of being allocated to new types of work, which can lead to difficulty in

inclusion or reintegration of these individuals in the labor market. However, this factor did not appear to be a

limiting factor in this study, since the data of 2013 year shows that 57.22% RAIS or 56.85% of workers (with

and without disabilities) of the construction industry sector in Brazil and in the state of Pernambuco, respectively, had not completed high school (BRAZIL, 2013).

Regarding the school education of disabled workers, it was found in the survey that 50% of them had

not completed high school. This result was similar to research Farias or Lucca (2013), in which 55% of the

study population had not completed high school. According Selander et al (2002), in the increasingly

competitive labor market, vocational skills becomes essential, since the lack of workers' technical

qualification limits their chances of being allocated to new types of work, which can lead to difficulty in

inclusion or reintegration of these individuals in the labor market. However, this factor did not appear to be a

limiting factor in this study, since the data of 2013 year shows that 57.22% RAIS or 56.85% of workers (with

and without disabilities) of the construction industry sector in Brazil and in the state of Pernambuco, respectively, had not completed high school (BRAZIL, 2013).

All workers of the research had disabilities, with higher percentage of individuals with physical

disabilities than the data from the 2013 RAIS, in which the number of workers with disabilities in the labor

market in Brazil was 50.71% or 181.464 PD, also higher than in the state of Pernambuco, which was 50.73%

or 6,385 workers.

The survey data showed that the use of prosthesis by the workers was 12.5% (n = 1). According to

Langton and Ramseur (2001) and Schwanke and Smith (2005), the use of assistive technology equipment

may enable the carrying out of tasks at the job locations, increasing employment opportunities for people

with disabilities. Thus, it is believed that the use of the prosthesis enabled the individual to perform activities,

allowing a productive life at work.

Regarding the distribution of the functions performed by the population which was studied, we found

that 87.5% (n = 7) were servants and 12.5% (n = 1) was a bricklayer. Thus, it is noticed that most workers

performed auxiliary functions in construction, requiring less professional training, besides that, they generate

lower wages and are less valued. This result may have occurred because of the low educational level of the

participants, the decreased functional capacity as a result of the disability and also because of prejudice and

ignorance of the capabilities of the person. According to Tshobotlwane, Haupt and Chileshe (2006) and Kaye

(2009), disabled workers take low-skilled jobs and low wages and are not adequately represented in valued

positions in civil construction companies.

The company made organizational adjustments at work for all workers carrying on activities. In the case of

the seven servants, the adjustment was distribution of tasks in which it was not necessary to carry weight

during the work, while for the bricklayer he was not allowed to work at heights, such as on scaffolding and

slabs of buildings, for example. This result is different from the one found by Hartnett et al (2011), in which

43.9% of employers made accommodations for employees with disabilities while on the study of Stoddard

(2006), 12.2% of DP received from the workstation adjustments.

In addition, financial investments for those accommodations were not necessary. Schartz et al (2006)
published the results of 259 companies that had made adaptations in the jobs for PDs and found that in the

first year after the accommodation, 49.4% of the employers said they had not spent anything on adaptations.

As to the others, the average cost in the first year was $600. Additionally, the estimates for the direct benefits

obtained, such as increased productivity and a decrease in absenteeism from 0 to $116,000. Thus, according to Guimarães, Martins and Barkokébas Junior (2015) it is verified that is not always necessary to make major physical changes in the work environment nor to provide sophisticated, technological aids to adapt the workplace to an individual with disability. Starting with organizational changes, such as the

| Bricklayer 3 | 500,00 | 500,00 | -  | 500,00 | 500,00 | 600,00 | 800,00 | 1,526,04 | - | - |
| Bricklayer 4 | 564,71 | 600,00 | 572,73 | 485,71 | 500,00 | - | 500,00 | 747,95 | - | - |
| Bricklayer 5 | 0 | 0 | 200,00 | 104,76 | 200,00 | 333,33 | 300,00 | 299,91 | - | - |

Note: (*) Workers with disabilities. (–) workers did not have production payment because they were on vocation, were fired or changed worksite.

4. Discussion

In the survey, it was found that all disabled workers were male. This result is different from the data of

RAIS (2013) in Brazil for people with disabilities to all sectors, for 64.84% (232 thousand) of workers were

male, while 35.15% (125.8 thousand) female. No data was found within Brazil about the difference of jobs

according to the economic sector or the gender of people with disabilities. This prevalence of males found in

the survey can be explained by the Brazilian general population data, as there were 2.8 million workers in

the construction sector in 2013, of which 2.6 million (90.7%) were males and 246.6 thousand (9.3 %) were

female. In the state of Pernambuco, of 145.2 thousand workers, 134,700 (92.75%) were male and 10.5

thousand (25.7%) females (BRAZIL, 2013).

In addition, financial investments for those accommodations were not necessary. Schartz et al (2006)
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obtained, such as increased productivity and a decrease in absenteeism from 0 to $116,000. Thus, according to Guimarães, Martins and Barkokébas Junior (2015) it is verified that is not always necessary to make major physical changes in the work environment nor to provide sophisticated, technological aids to adapt the workplace to an individual with disability. Starting with organizational changes, such as the
redistribution of tasks, changes in working hours and the provision of suitable prostheses and orthoses, it is possible to achieve the accommodation of workers with disabilities.

By analyzing the company data on the amount of absences the last 12 months, it was observed that the servants and the masons with disabilities increased by 7.6% and 8.33%, respectively, in the amount of absences for workers without disabilities who performed the same activities. This result is different from that found in Spechler's research (1996), Blanck (1999) and Raphael (2002), which the organizations have successfully integrated the employees with disabilities consistently report that these employees have above-average attendance. This might occur, because this research is included in a different context and because these workers know that companies in Brazil find it difficult to meet the quota law for people with disabilities, so they feel safe at work.

Considering the enterprise data on the production of the last 10 months, it was found that the servants with disabilities had a reduction of 49.5% and 69.58% masons reduction when compared with non-disabled workers who performed similar tasks. These results may have been found due to decreased functional capacity of workers, creating difficulties and/or delays in carrying out the tasks, even though it was made organizational adjustments for all workers. In addition, the higher average number of faults of individuals with disabilities may also have influenced the decrease in production.

Given this reduced production of the workers with disabilities compared to those without disabilities, there is a need for evaluation of job and tasks in order to ensure they are adequate to the functional capabilities of the PD and the possible need for further adjustments. According to Guimarães, Martins and Barkokébas Junior (2015), the knowledge of the tasks, the physical, intellectual and organizational demands of jobs besides knowing the functional capabilities of a worker with disability, it's possible to carry out reasonable adaptations to work environments adequately. To achieve this goal, it is important that this is done through an integration of a multidisciplinary team, which involves the areas of occupational safety and ergonomics.

However, this decrease in the production may have been lessened by positive factors deriving from the inclusion of disabled workers in the company. According to Solovieta et al (2009, 2011), the main benefits obtained by companies based on job accommodation to individuals with disabilities were: retaining skilled workers, an increase in worker productivity, eliminating the costs of training new employees, improving relations between workers, and an increase in the morale and general productivity of the company.

The survey results have some limitations, since it shows reality only at work, all workers were male, they had physical disabilities. Furthermore, according to Guimarães, Martins and Barkokébas Junior (2015) due to the lack of literature on the topic of the workplace accommodation of people with disabilities in the construction industry, it is recommended that further studies in this production sector would be undertaken and deepened, especially to focus on worker productivity, with the aim of fostering the process of employing individuals with disabilities and of facilitating compliance with the law on quotas. Thus, it is verified the need for further studies in this industry, but with greater amount of work, workers with disabilities and presenting different types of disabilities.

5. Conclusion

The results of the research show that in all cases, the work environment was adapted, in an organizational way, and financial investments weren't necessary. Although most workers and the supervisor claimed that disability does not hinder the performance of tasks, it was identified that individuals with disabilities received lower values in “Reais” (R$) for the production and they had more absences at work than individuals without disabilities.

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References


