Building the “Business Case” for Hiring People with Disabilities: A Financial Cost-Benefit Analysis Methodology and Example

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Abstract
This paper demonstrates a technique to empirically estimate the financial costs (or savings) of employing people with disabilities, in order to provide a mechanism for organizations to develop a “business case” for hiring these employees. We conducted a utility analysis, a technique common in Human Resources Management (HRM), to illustrate how the financial net value can be calculated based on the difference between service costs and service value. Employment costs include those related to wages, health benefits, pensions, life insurance, vacation pay, training, safety, absences, lateness, turnover, and disability accommodations. Service value estimates are based on wages and are adjusted for performance levels. The data used for our example is drawn from a food services company in Canada. Employees with disabilities in this example provided higher net value to the organization because of their average to above-average performance and lower turnover costs. More importantly, we demonstrate a process that can be used to assess the financial value of hiring workers with disabilities. Given the negative preconceptions often associated with hiring workers with disabilities, this method and example can provide evidence that will be useful for managers and disability advocates for assisting people who wish to join the workforce.

Keywords: business case, utility analysis, financial costs, financial savings, net benefits, accommodations
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Introduction

Work is beneficial for a broad array of reasons; it provides structure, meaning, an opportunity for social interactions, as well as a salary (Lastuka & Cottingham, 2016). Despite some stereotypes to the contrary, people with disabilities seek employment at approximately the same rate as the non-disabled workforce, and place a similar value on job security, income, promotion opportunities, having an interesting job, and having a job that contributes to society (Ali et al., 2011; Lindsay et al., 2016). Employment is not the only way in which people with disabilities can add value to society (e.g., Graby, 2015) but is a path desired by many.

Unfortunately, people with disabilities routinely have difficulty finding and maintaining employment, resulting in high unemployment rates around the world (Houtenville & Boege, 2019; Mavranezouli et al., 2014). Some disabilities may limit some people’s abilities to perform certain jobs. However, much of this employment disparity is attributed to biases or misunderstandings by hiring organizations and managers. There is evidence that hiring managers hold negative perceptions and stereotypes about the ability of people with disabilities to perform work (Bonaccio et al., 2020). There is evidence that many employers are concerned that people with disabilities are not qualified for the available jobs (e.g., Kaye et al., 2011) or will have lower performance than employees without documented disabilities (Lengnick-Hall et al., 2008; Scott et al., 2017). However, based on social exchange theory (Blau, 1964), workers with disabilities may feel greater obligation to a company that gives them the opportunity for
employment, leading to increased service value. Further, many hiring managers are aware of the requirement to create reasonable accommodations that would allow a person with a disability to perform a job and have concern about potentially higher costs of employing such individuals (Domzal et al., 2008; Scott et al., 2017).

Human resource management offers a technique, utility analysis, that allows organizations to evaluate the financial costs and benefits of different HR practices. Variations on utility analysis have been performed to determine the financial benefits of different approaches to pay-for-performance (Klaas & McClendon, 1996; Sturman et al., 2003) and to examine the financial costs of workplace phenomena such as sexual harassment and substandard performance (Faley et al., 1999; Griffeth et al., 2011).

Utility analysis requires that the organization estimate the financial value of each worker’s performance, the extent to which his or her performance improves or diminishes if the new initiative is put into place, and the costs of the proposed initiative. For example, if an employer were considering a new training program for warehouse employees, estimates would be required of the average value of the employees’ performance, the extent to which their performance might improve as a result of the training program, and all the costs of the program, including worker time away from the job, the program development costs, and the salary of the trainer. If the total costs of the program are estimated to be higher than the prospective gains, the organization may decide against implementing the program, or find ways to either enhance the effectiveness of the training or decrease its costs. Thus, utility analysis gives managers a way to discuss advantages and disadvantages of HR initiatives in financial terms, which can provide a common language and framework for decision making.
Purpose of the paper

The purpose of this paper is to demonstrate a technique for empirically estimating the true costs involved in employing people with disabilities, thereby providing a mechanism for the development of the “business case” for hiring these employees. This technique can provide evidence for managers and rehabilitation professionals, helping them to demonstrate the potential impact (or lack of impact) of hiring people with disabilities. Our goal is to provide a useful tool for people who are pushing back against a stereotype that people with disabilities cannot work, cannot work productively, or should only be hired for charitable reasons. Similar to the above example of training, we can build a financial model showing the value and added costs (i.e., net value) of workers with disabilities and compare that to workers without disabilities.

Methodology

The general utility model

The general utility model is based on a framework of estimating the total “service value” that an employee or class of employees brings to an organization, then subtracting out the estimated “service costs” incurred by employing that person (Sturman et al., 2003; Fisher & Connelly, 2017) as shown in Table 1. This analysis can be conducted with actual employee data or with estimates for subgroups of employees in different jobs, work teams, or other classifications. Employee subgroups can be compared to determine if there are significant differences. For example, workers with and without disabilities could be compared to determine if there are differences in any of the three categories: service costs, service value, or net value.
Table 1: General Utility Analysis Model

<table>
<thead>
<tr>
<th></th>
<th>Definition</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net value</td>
<td>The overall value an employee brings to the organization</td>
<td>Net value = [Service value] – [Service costs]</td>
</tr>
<tr>
<td>Service value</td>
<td>The financial value that an employee brings to an organization</td>
<td>Service value = [Annual wages * 1.754] ± [Performance adjustment]</td>
</tr>
<tr>
<td>Service costs</td>
<td>The costs, direct or indirect, employees create for an organization</td>
<td>Service costs = [Direct salary costs] + [Benefits costs] + [Behavioral costs] + [Turnover costs] + [Accommodation costs]</td>
</tr>
</tbody>
</table>

**Service costs** include all costs of employing an individual (see Table 2). We look at five different types of costs:

a) Direct salary can be an annual salary or hourly wages multiplied by the annual hours worked. Any overtime wages are included here as well.

b) Benefits include statutory and voluntary benefits provided by the employer, including taxes, health insurance, and retirement benefits. These costs are often relatively constant within a job grouping, as employees within a workgroup are typically all eligible for a certain set of benefits.

c) Behavioral costs are additional costs incurred based on how employees behave over the year, including costs of absences and safety-related incidents. These can vary significantly between individuals.

d) Turnover costs appear when an employee leaves the organization. These costs include reduced productivity before departure, hiring costs for a replacement employee, and other transitional costs (Allen, 2008; Tracey & Hinkin, 2008).

e) We also include specific costs for accommodating workers with disabilities (e.g., additional equipment or materials). These costs could be incurred once (e.g., specialized software or a modification to a workstation) or repeatedly (e.g., a sign-language translator).
Table 2: Potential Service Costs

<table>
<thead>
<tr>
<th>a) Direct wages</th>
<th>Hourly rate * actual hours worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Benefits</td>
<td>Health benefits</td>
</tr>
<tr>
<td></td>
<td>Pension</td>
</tr>
<tr>
<td></td>
<td>Mandatory benefits (government pension, employment insurance)</td>
</tr>
<tr>
<td></td>
<td>Life insurance</td>
</tr>
<tr>
<td></td>
<td>Vacation pay</td>
</tr>
<tr>
<td></td>
<td>Training (new hire training, on-the-job training)</td>
</tr>
<tr>
<td></td>
<td>Bereavement and jury duty pay</td>
</tr>
<tr>
<td>c) Behavioral costs</td>
<td>Absences</td>
</tr>
<tr>
<td></td>
<td>Lateness</td>
</tr>
<tr>
<td></td>
<td>Safety incidents</td>
</tr>
<tr>
<td>d) Turnover</td>
<td>Costs involved in replacing an employee</td>
</tr>
<tr>
<td>e) Disability accommodation</td>
<td>Initial accommodation upon hiring</td>
</tr>
<tr>
<td></td>
<td>Continued annual accommodation costs</td>
</tr>
</tbody>
</table>

**Service value** is the total financial value each employee brings to an organization (Sturman et al., 2003; Fisher & Connelly, 2017). It is estimated from the performance of the employee. The value of any given worker to an organization is partially indicated by the wages paid to that employee. Wages and value are positively correlated but wages are an imperfect measure of value, partially because two employees making the same wage may perform at different levels and thus have a different level of contribution.

We make two adjustments to wages to create a more refined estimate of value.

1) We apply an established salary multiplier of 1.754 (Schmidt & Hunter, 1983; Sturman et al., 2003) to convert wages into value. This multiplier recognizes that in general, employers expect to gain more value from an employee than they pay out in direct wages (i.e., each employee is assumed to generate value to the organization equal to 1.754 times their salaries). This value was established by examining productivity data across a variety of occupations in the United States in the mid-twentieth century. While this value may need updating due to productivity improvements due to more advanced technologies in the
workplace, this multiplier has been judged in the research literature (Sturman et al., 2003) as superior to other approaches for estimating value such as using average work group salary as an indicator of value.

2) We adjust this estimate by taking into account the performance of the employee. High performing employees bring much more value to a company than do low performing employees (Griffith et al., 2011). Therefore, we adjust service value estimates for different levels of performance, adding more value for high performers and reducing value for low performers.

Service costs are summed and then subtracted from service value to determine the overall net value for each employee.

**The case study method**

We conducted a case study within a small department of a large Canadian hospitality service organization to test our model. All values are presented in Canadian dollars. The department had 46 workers, seven of whom had a documented disability (in this case cognitive or sensory). The anonymized data were provided to us directly by the company’s human resources department in spreadsheet format.

We first calculated the *service costs* for each employee. We did not include all of the components listed in Table 2 because some of the benefits were not provided to employees by the case study organization.

a) Direct Wages: We used hourly pay rates and annualized hours worked to calculate the salary paid to each worker during the year.
b) Benefits: Data on vacation pay were not provided by the employer and are assumed to have been paid in addition to direct wages at 4%. Employer contributions for federally mandated benefits (Canada Pension Plan [CPP] and employment insurance [EI]) were estimated using published contribution rates for 2015, the year in which employee data were recorded. CPP was 4.95% of wages and EI was 1.88% of wages multiplied by 1.4 for the employer contribution.

c) Behavioral costs: We then had to convert many of the company’s human capital metrics (e.g., turnover, absences, lateness, safety incidents) into financial metrics using information derived from our prior research, publicly available datasets, and best practices estimates. For example, we assumed that the cost of turnover (an employee leaving and having to be replaced) was equivalent to one year of wages for that position (Allen, 2008) to represent the costs involved in hiring, training, and reduced performance levels during transition periods. Lateness and absences were both estimated to result in costs of one hour of wages due to work disruptions. There are many different approaches to costing worker absences depending on the impact on the work unit and approach for covering the absence. In this organization, employees are considered full time at 37.5 hours per week and provincial law in Ontario requires that workers be paid overtime after 44 working hours within one week (i.e., the hours of work cannot be averaged over a pay period). Thus, workers could be called in for one extra shift per week without incurring overtime costs. In the event of an absence, management would simply call in another worker, resulting in some disruption at the beginning of the shift similar to what would occur with a lateness.

d) Turnover costs: Estimates of turnover costs generally range from 1 to 2.5 times the annual salary (Sturman et al., 2003). Here we use the lower estimate to be conservative and because
of the relatively low job complexity (Tracey & Hinkin, 2008). We estimated the average cost of a safety incident at $800 based on hospitality industry data from governmental centers in the United States and Canada (OSHA, WorkSafeBC).

e) Disability accommodation costs: The accommodation provided was the supervisor’s estimate of the cost of additional paper towels needed to write down food orders for the cooks who were deaf. Employees without hearing disabilities received food orders orally.

The second step was to calculate the service value for each employee. To calculate service value, we computed the annualized wage for each employee and multiplied that by the 1.754 standard multiplier.

We then adjusted each employee’s service value for performance differences using an SDy model (Schmidt & Hunter, 1983) that estimates the monetary value of one standard deviation difference in performance, either above or below the mean. Performance ratings were on a scale from 1-10 with an average rating of 6.8 and standard deviation of .96. For employees with an above average performance rating, we added one standard deviation of service value ($9,783) to their score. For employees with a below average rating, we subtracted one standard deviation of service value. Employees at the average performance rating of 7 had no adjustment. Four employees with disabilities had above average performance and three had average performance. Six employees without disabilities had above average performance, 16 had average performance, and 17 had below average performance.

We then calculated net value by subtracting service costs from service value for each employee. We calculated both the regular net value and the adjusted net value. Adjusted net value takes into account the adjustments for high and low levels of performance, such that employees with high levels of performance add more value to the organization. Finally, we
compared employee groups on the three primary variables (service costs, service value, and net value) as well as many of the individual measures so we could understand the source of the variance.

**Results**

The results of our analysis indicated that while workers without disabilities had higher initial service value on average than workers with disabilities ($44,347 compared to $34,524), the workers with disabilities had higher net value than non-disabled workers by an average of $868 annually before considering performance adjustments, and $15,483 annually when considering performance.

This differential is explained primarily by higher performance ratings and lower turnover for workers with disabilities. Average wage costs were lower for workers with disabilities. This was due to differences in hourly wage rates ($13.50 for workers without disabilities and $12.25 for workers with disabilities, primarily because of lower seniority) and because two of the workers with disabilities worked part-time while all of the workers without disabilities were full-time. Seven workers without disabilities (18%) left the organization during the case study year and none with disabilities left. We estimate this turnover cost the organization an average of $23,370 per departing employee (total annual cost of $163,594) in all factors related to turnover such as disruption due to an employee leaving, recruiting and hiring costs, new employee orientation costs, and lower productivity of the new employee (Allen, 2008; Hillmer et al., 2004).

Similarly, absences were lower among workers with disabilities, with 6.5 absences per year for workers without disabilities and 3.0 for workers with disabilities. This contributed to the
lower behavioral costs for workers with disabilities ($169.93 compared to $375.86).

Accommodation costs were low in this sample. Four of the workers with disabilities had no accommodation costs at all, and the other three had only a $5 cost for accommodation during the year. Table 3 shows the average service costs for each element by employee group.

Table 3: Average Service Costs for Employees with and without Disabilities

<table>
<thead>
<tr>
<th></th>
<th>Average wage costs</th>
<th>Average benefits costs</th>
<th>Average behavioral costs</th>
<th>Average turnover costs</th>
<th>Average accommodation costs</th>
<th>Total average costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees with disabilities</td>
<td>$19,683</td>
<td>$2,525</td>
<td>$170</td>
<td>$0</td>
<td>$2.14</td>
<td>$22,380</td>
</tr>
<tr>
<td>Employees without disabilities</td>
<td>$25,300</td>
<td>$3,200</td>
<td>$376</td>
<td>$4,195</td>
<td>$0</td>
<td>$33,071</td>
</tr>
</tbody>
</table>

The average service values for employees with and without disabilities are shown in Table 4.

Table 4: Service Value for Employees with and without Disabilities

<table>
<thead>
<tr>
<th></th>
<th>Average service value (annual wage * multiplier)</th>
<th>Average service value including performance adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees with disabilities</td>
<td>$34,524</td>
<td>$44,329</td>
</tr>
<tr>
<td>Employees without disabilities</td>
<td>$44,347</td>
<td>$39,537</td>
</tr>
</tbody>
</table>

Table 5 shows the net value calculations for employees with and without disabilities.
Table 5: Net Value for Employees with and without Disabilities

<table>
<thead>
<tr>
<th>Employees with disabilities</th>
<th>Average service value</th>
<th>Adjusted average service value</th>
<th>Average service costs</th>
<th>Average net value</th>
<th>Adjusted average net value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees without disabilities</td>
<td>$44,347</td>
<td>$39,537</td>
<td>$33,071</td>
<td>$11,276</td>
<td>$6,466</td>
</tr>
</tbody>
</table>

Note: Adjusted service value and adjusted net value include adjustments to service value based on the relative monetary value of higher or lower performance.

Discussion

This case study demonstrates use of a methodology to analyze the relative costs and financial benefits of employing workers with disabilities. We show that in one organization employing people with disabilities, there is evidence of positive financial impact primarily due to above average performance and lower turnover. The workers with disabilities exhibited higher net value on average than the workers without disabilities, in contrast with expectations of managers as expressed in the literature (Scott et al., 2017). Results of this analysis could be used as evidence to suggest to managers that hiring people with disabilities, as long as they are qualified to perform the job, is likely to have benefits for the organization. Accumulating evidence of this type may make it easier for people with disabilities to find and maintain employment.

It is important to recognize that these results may be different in other organizations depending on a number of factors. Workers in our case study received few employment benefits, which is typical for the hospitality service industry. As a result, the service costs were lower for all workers, not just those with disabilities, but these lower costs may have resulted in higher net value than we might see in other organizations. The workers with disabilities in this sample also required no expensive accommodations. The HRM literature consistently reports that most
accommodations are either zero or quite small, with managers reporting upfront costs of less
than $500 in nearly 60% of cases (Schur et al., 2014), with on-going accommodation costs being
much lower. Higher accommodation costs could reduce the net value of workers with
disabilities, although employees receiving accommodation tend to have more positive attitudes
toward the organization and are less likely to turnover (Schur et al., 2014) suggesting that
accommodations may pay for themselves over time. Other accommodations may have been
unreported, although this can be the case with employees both with and without disabilities. For
example, employees may receive accommodations in work scheduling to allow employees
flexibility for family needs such as taking care of children or elderly parents. There are typically
no direct costs for such accommodations but any indirect costs that may be incurred for such
schedule changes are not accounted for in our analysis. Further, the financial costs for absences
in this particular job were estimated to be quite low, equivalent to having an employee report to
work late. Workers without disabilities had over twice as many absences as workers with
disabilities (6.5 absences per year compared to 3.0). In organizations or jobs where overtime or
temporary worker costs would be incurred due to an absence, the costs associated with absences
would have a larger impact on the results.

The accuracy of performance evaluation data will also impact the analysis. Given that
many managers have pessimistic expectations about the abilities of workers with disabilities
(Stone & Colella, 1996), performance evaluations could be negatively biased and erroneously
suggest that service value is low. Research suggests that workers with and without disabilities
tend to have comparable performance ratings in many jobs. For example, a study by Lee and
Newman (1995) found that HR managers who had accommodated needs of workers with
disabilities rated their performance as average, above average, or excellent, in 72% of cases.
Similarly, Kaletta et al. (2012) found that workers with and without disabilities had comparable performance in 18 of 31 locations; where differences in productivity were found, workers with disabilities were more productive in 10 locations, and non-disabled employees were more productive in the remaining three. There is also some evidence that ratings for workers with disabilities may be somewhat inflated (Miller & Werner, 2005) as supervisors can be more lenient in ratings of workers with disabilities. Inaccuracy of performance ratings in either direction (inflation or deflation) would make the utility analysis results less accurate. We do find in this dataset a small negative correlation between employee absences and performance ratings (-.18, ns) and between lateness and performance ratings (-.19, ns). This increases our confidence that the performance ratings here are based on some objective data rather than disability-related bias, suggesting that supervisors considered these counterproductive behaviors when making performance ratings, or the absences and latenesses are related to other aspects of performance.

From a practical point of view, we do caution managers and rehabilitation professionals to interpret and implement the results of this technique with care. Utility analysis can be a powerful tool, but as with any other analytic technique it is only as good as the input data (e.g., Klaas & McClendon, 1996). We have worked with organizations that do not have all of the necessary data to conduct the analysis, and in these cases have advised they not conduct the analysis at all rather than conducting it with missing values (e.g., incomplete records of which employees have disabilities, no performance appraisal data). We have also worked with other organizations that have inconsistent data across different organizational units. For example, one organization that wanted to conduct the utility analysis had slightly different performance evaluation systems (e.g., a 5-point rating scale vs. a 7-point rating scale) for different work units.
This required a statistical conversion procedure to allow direct comparison among the different units.

The example that we have shown here demonstrated that workers with disabilities provided net cost savings to the organization that employed them. However, the question remains: if a cost-benefit analysis demonstrates a net cost increase for workers with disabilities, how should the organization proceed? We would argue that the workers with disabilities should not be fired; rather the organization should investigate the underlying causes for the disparity and proceed accordingly. For example, if the workers with disabilities have lower performance than their non-disabled counterparts, the manager should consider if the employees may require accommodations that would enable them to perform at a higher level (e.g., a better chair to prevent back pain, scheduling changes to avoid fatigue or to attend medical appointments). Likewise, the manager should consider if any of his or her own actions are exacerbating the problem (e.g., low expectations that are then fulfilled, training opportunities that are only available to some employees) and if these can be adjusted. Conversely, if the net costs from hiring workers with disabilities are accrued from higher accommodation costs, perhaps these can be reduced (e.g., government subsidies could be considered, one-time expenses should be depreciated over the tenure of the employee).

We acknowledge several limitations of our study. Our data were from a single department of one organization and there was a small number of workers with disabilities represented in this department. This limits the generalizability of our results. We also have only estimates of the cost of certain parameters such as injuries and absences, and we used a generic multiplier for determining financial value of performance. It would be interesting to determine if the service value would differ by job or by industry, similar to how Tracey and Hinkin (2008)
suggested that turnover costs would be lower for low complexity jobs. We did run the model with the lower turnover costs suggested by Tracey and Hinkin for hospitality industry jobs and found the same pattern of results, although the difference in net service value between employees with and without disabilities was smaller. Similarly, the salary multiplier was developed many years ago (published in 1983) and assumptions about productivity may have changed in the intervening years. Further, the type of organization studied, where workers with disabilities were performing the same jobs as the non-disabled employees, does not generalize to the employment situation of all people with disabilities. We recognize that some people with disabilities find employment through community organizations where they are provided with extra supports, are largely separated from and perform different tasks than non-disabled employees, and may be supervised by non-organizational members (Modini et al., 2016). While supported employment is an effective strategy for some people with disabilities, job duties and performance conditions must be comparable in order to conduct a rigorous utility analysis.

In conclusion, this case study illustrates a technique that companies can use to analyze the financial impact of hiring people with disabilities into jobs and work units that also include people without disabilities. The utility analysis approach can help overcome biases managers may have about the relative contribution of people with disabilities in the workplace. The business case can be an important part of an organization’s total decision-making process, including community integration and corporate social responsibility, about appropriate hiring of people with disabilities.

Acknowledgments

This work was supported by a Partnership Grant from the Social Sciences and Humanities Research Council of Canada (grant number 895-2013-1021) for the Canadian Disability Participation Project (www.cdpp.ca).
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