

Are Workers with a Disability Less Productive? An Empirical Challenge to a Suspect Axiom

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ABSTRACT

This study investigated selected work-performance data of a large call centre using the entrepreneurial business planning paradigm as a theoretical framework and tested the hypothesis that mean levels of productivity would be different for workers with a disability and workers without a disability. On five measures of productivity, no significant differences were discernible. On one measure, workers with a disability performed significantly better. These results strongly refute the 'intuitive wisdom' that workers with a disability are less productive. The results enhance a growing body of corporate experience and descriptive research indicating that workers with a disability perform as well as or better than their non-disability colleagues. Yet they remain disproportionately under-employed. The key to translating the findings of this and related research into higher levels of employment of workers with disabilities will depend upon employers adopting an entrepreneurial approach to the planning of human resource management.

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The Research Problem

Despite a growing body of academic research and corporate evidence to the contrary, many employers seem to hold it as axiomatic that workers with a disability are less productive than workers without a disability. If this seemingly self-evident proposition is both strongly believed and demonstrably wrong, workers with a disability are an under-utilised human resource offering an entrepreneurial opportunity to employers prepared to utilise their skills through sensitive planning. Existing research has indicated that the 'less productive' axiom is probably a myth but no one has yet formally tested the proposition.

The purpose of this study was to investigate selected work-performance data of a large call centre to detect any significant productivity differences between workers with a disability and workers without a disability. The research was conducted from an entrepreneurial business planning perspective in order to enhance both ability to understand and capacity to utilise a possibly misunderstood human resource. The null hypothesis was that there are no differences in average productivity between the two groups of workers.

A call centre is defined as a 'managed environment where telephone is used systematically to provide value added contact with customers and suppliers'. Disability is defined as 'a condition caused either by accident, trauma, genetics or disease that may restrict a person's mental, sensory or mobility functions to undertake or perform a job in the same way as a person who does not have a disability'.

The Literature. 'If you've tried you believe but ...'

American and Australian figures suffice to demonstrate that workers with a disability constitute a heavily under-utilised resource in developed countries. In the USA there is a 13.4% unemployment rate among jobseekers with a disability - more than twice as high as the 5.6% unemployment rate for people without disabilities (LaPlante, Kennedy, Kaye and Wenger 1998). In Australia, the workforce participation rate of people with a disability is 46.5% compared to the participation rate of 76.9% of people without a disability (ABS 1993).

This is despite some established corporations - notably including Sears Roebuck, IBM and DuPont - possessing long histories of expressing and acting on strong belief in the capacities of workers with disabilities. DuPont Corporation's descriptive studies span 40 years and indicate that, for employees with a disability, diversity of impairment does not adversely effect safety, job duties or attendance (DuPont 1981: 5-8). A small volume of academic research supports the faith of pro-disability employers. A clear theme to emerge is that 'you have to try it to appreciate it': that ability to judge the capacities and productivity potential of workers with a disability is a function of actually experiencing their performance in the work environment (Wolfe 1973; Smith et al 1985; Levy, Jones, Jessop and Levy 1992; Reisman and Reisman 1993; Zemans, and Voelckers 1994; Rusch, Wilson, Hughes and Heal 1994; Zivolich 1997). In the absence of experience, the assumed axiom of lower productivity takes over and neither existing research nor comforting corporate chronicle is yet powerful enough to dispel risk aversion (Johnson, Greenwood and Schriener 1988). All the extant studies come from large corporations and are either qualitative or descriptive. The literature does not record any willingness on the part of small, early-stage or entrepreneurial businesses to try using workers with a disability. This is unfortunate because it is well established that the majority of job growth in an economy will come from entrepreneurship: high-growth-potential new ventures.

It is a reasonable inference that entrepreneurs may be making the judgement that, with so many risk factors already militating against new venture success, it would be foolhardy to add *any* risk of lower employee productivity. So, under-utilisation of disability workers might be explained by employers' - and especially entrepreneurial employers' - unwillingness to take the alleged risk of employing people with a disability *in the first place*. Research to date has not provided truly hard, *tested* evidence of the desirability of 'taking the plunge'. Existing research does not encourage the entrepreneur to be entrepreneurial. Entrepreneurs are attracted to challenges not risks. It seems safer to hold it as axiomatic that workers with a disability are less productive. And no study until this one has formally challenged this suspect axiom by dispassionate hypothesis testing. A successful challenge might have profound consequences for employment attitudes and behaviour beyond the year 2000.

The EBP Paradigm as a Theoretical Framework

Any examination of the productivity of workers with a disability is in danger of being embroiled in some highly emotive issues. The emerging theory of entrepreneurial business planning (EBP) offers a framework both for constructive measurement of productivity and focused interpretation of results. The current state of the EBP paradigm is described in detail in Legge and Hindle (pp 68-94) as a complex network of research-derived relationships involving seven boundary conditions, twelve laws, six success rules and two primary instrumentation requirements. However, what is most important for this study is not any intricacy of specific detail but the overall managerial perspective that EBP provides on the issue of resource evaluation. At its essence, EBP is focused on assessing, acquiring and managing resources in the context of opportunity management.

METHOD

The empirical study was a comparison of means design using t-tests, supported by the non-parametric Mann-Whitney U test as a precaution against the distribution of results not coming from normally distributed populations. The mean performance of two samples (one representing a call centre's population of workers with a disability and one the population of workers without a disability) were compared on six variables. The analytical aim was the same for each performance variable: to gather evidence against the null hypothesis that there was no difference between the mean performance of workers with a disability and

workers without a disability: H_0 was $\mu_1 = \mu_2$; H_1 was $\mu_1 \neq \mu_2$. A significance level of .05 was set.

Sampling and Variables

In a non-random selection, Telstra Australia* nominated its Burwood call centre (population 400 workers including a substantial minority with a disability) as a sample frame, calling it a 'typical, large, metropolitan call centre'. Within the Burwood call centre, three samples were drawn at random. Taking three samples instead of one was motivated in part by ethical considerations by Telstra management to help ensure respondents' anonymity and in part by sheer convenience: the normal reporting cycle of the centre. A sample of 230 names was drawn to supply data for the first variable, 'length of service'. This resulted in 196 useable cases ('with a disability', $n=30$; without, $n=166$). A separate sample of 200 names was drawn to supply data for the second variable, 'absent days'. This resulted in 188 useable cases ('with a disability', $n=30$; without, $n=158$). Finally, a sample of 65 employees was used to provide data for the final four variables. This resulted in 63 useable cases ('with a disability', $n=21$; without, $n=43$).

The construct of productivity was derived from the EBP framework. There was one variable of experience - *Length of Service*. This measured the amount of time the respondent had been employed at Burwood. There was one variable of attendance - *Absentee Days*. This was the number of absentee days the respondent had logged in the calendar year preceding July 8, 1999. Raw data for the months of May and June 1998 were used to construct four composite variables. There was one variable of task engagement - *Logon Ratio*. This was the subject's total hours spent logged on (ie. actually making phone calls) for the months of May and June as a percentage of the total paid hours of every worker in the sample. There was one variable of efficiency - *Contact Efficiency*. This was the subject's percentage of total customer contact hours for the period. There were two variables of effectiveness - *Upgrade Effectiveness Index* and *Newsale Effectiveness Index*. An 'upgrade' was defined as the sale of additional features of a service to a client already subscribing to that service at a more basic level. A 'newsale' was defined as the sale of a completely new service or product to someone not currently using it. Each index consisted of the subject's average sales-per-100-calls in May and June divided by the averaged total of sales-per-100-calls for May and June of the whole group.

RESULTS

Data were analysed using both the SPSS (version 9) and the Stata (version 5) packages. The non-directional independent samples t-test using pooled variance estimates was used because it can effectively measure whether difference in the *means* of two groups is significant, even when sample sizes are relatively small, providing certain assumptions are met. After normality testing, the non-parametric Mann-Whitney U test for independent samples was also used in all cases as a precaution against any possible violation of the t-test assumptions. The normality tests applied were based first on skewness then on kurtosis and finally combined into an overall test statistic of normality (Stata Reference Manual 1997: pp 223-4 and D'Agostino, Balanger and D'Agostino, Jr 1990: p 228). Levene's test for equality of variances was used. The final four variables were also analysed in combination using a multivariate test. The authors will supply detailed descriptive statistics, analysis and data plots upon request. Space restrictions have confined reporting of results to a Spartan minimum.

* The authors gratefully acknowledge Telstra Australia for the provision of raw data without which the study could not have been conducted. Telstra provided data only and are not otherwise associated with the research.

Length of Service. The means were significantly different, $t = 3.442$ on 224 df, $p = 0.0007$. The non-parametric results supported the t-test findings, $U = 1,773.5$, $z = 3.516$ $p = 0.00044$. This suggested a significant difference. Workers with a disability serve longer.

Days Absent. The means were significantly different, $t = 2.181$ on 186 df, $p = 0.0305$. The non-parametric results did not support the t-test findings, $U = 1940.5$, $z = 1.573$ $p = 0.116$. This different result may have been due to the t-test assumptions not being satisfied and/or the large differences in sample sizes, 158 and 30. Thus, conservatively, it is safer to infer no difference in average performance than be tempted by the t-test finding.

Logon Ratio. The means were not significantly different, $t = 1.164$ on 62 df, $p = 0.249$. The non-parametric results supported the t-test findings, $U = 389$, $z = 0.894$, $p = 0.372$.

Contact Efficiency. Means were not significantly different, $t = 0.0664$ on 62 df, $p = 0.947$. The non-parametric results supported the t-test findings, $U = 446$, $z = 0.0787$, $p = 0.937$.

Upgrade Sales Effectiveness. Means were not significantly different, $t = 0.376$ on 62 df, $p = 0.7086$. Non-parametric results concurred $U = 427.5$, $z = 0.3432$, $p = 0.731$.

New Sales Effectiveness.

Multivariate Test. It was considered prudent to examine the four efficiency-effectiveness variables in combination using a multivariate technique. This was done as a safeguard in case using four t-tests, one at a time, may have increased the chance of making a Type 1 error. Before executing the multivariate test, the inter-correlations between the four variables were examined. The only significant relationships found were a weak correlation between *Contact* and *Logon*, $r = 0.264$, $p = .035$ and a moderate correlation between *Newsale* and *Upgrade*, $r = .558$, $p < 0.0005$. Finally, Hotelling's multivariate test was applied to compare the four performance variables in combination across the two groups. The results were $H = 0.35$, $F = .514$, ($df = 4, 59$), $p = 0.726$. The result added further strong support to the proposition that there was no difference in the performance of the two groups on any of the four variables. Furthermore, the SPSS output from multivariate test provided results from each dependent variable used in the test. These also supported the earlier results that none of the indices were significantly different between the groups (*Logon* $p = 0.249$, *Contact* $p = 0.947$, *Upgrade* $p = 0.709$, *Newsale* $p = 0.386$).

In Summary. Workers with a disability were significantly longer serving. There was no difference between the measured productivity of disability and non-disability workers in attendance, task engagement, efficiency or effectiveness.

DISCUSSION

As far as the authors have been able to ascertain, this study is the first empirical test of the proposition that there are no productivity differences between workers with or without a disability. Of course, the temptation to over-claim must be resisted on at least four obvious grounds. (1) Perhaps the convenience choice of Burwood introduced unknown biases. (2) There was no distinction of the type, magnitude and variability of disabilities among affected workers. (3) Perhaps Telstra is an atypically sensitive and astute employer. (4) Maybe the cost of sensitive management (in supervision, higher-standard facilities etc) should be brought to measurement. However, for all its limitations, this study has achieved what others have not. It has effectively destroyed the credibility of any universal

assumption that workers with a disability are less productive. The only difference found through a rigorous regime of inferential statistical analysis was *in favour* of workers with a disability. The study was conducted in a test environment of high illustrative value because call centres constitute one of the fastest growing industries in the world and the features of the call centre work environment are similar irrespective of nation, language or culture.

The axiom that workers with a disability are less productive is dead. It is no longer an axiom. It is a myth. The role of future research will be two-fold. First will come the conduct of a post mortem inquiry into the *reasons* that there were no productivity differences in this case. Next must be the preparation of a prognosis for making more employers more willing to take the initial critical decision to employ workers with a disability. In anticipation of continuing their research in this field, the authors permit themselves one conservative speculation. Their hypothesis is that the key both to explaining the past productivity of workers with a disability and to increasing their future employment will be skilled application of entrepreneurial business planning. Employers at the leading edge of the new century will be willing to replace reliance upon a dead myth with a vibrant entrepreneurial approach to the planning of human resource management. They will both reap self-interested benefits and enrich society. Enhanced employment of workers with a disability will create a more diversified, harmonious and productive workforce beyond the year 2000.

ABBREVIATED REFERENCE LIST

Full references are available from the authors (and are provided for reviewers overleaf).

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Note: the paper to this point comports with the conference limitations of 'six pages not including the cover. This fuller list of references may be discarded or retained as an aid to the refereeing process.

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