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LOWER COST OR JUST LOWER VALUE? MODELING THE ORGANIZATIONAL COSTS AND BENEFITS OF CONTINGENT WORK

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Although many managers assume that the use of contingent workers helps organizations lower their costs, it is unclear if these anticipated savings actually materialize once these workers' productivity and indirect costs are taken into account. The purpose of this paper is to identify the conditions under which contingent workers may (or may not) be a cost-effective solution for organizations. We develop a theoretical framework of the financial costs and benefits of three different contingent work arrangements, taking into account direct and indirect costs as well as the value of both task performance and organizational citizenship behaviors. This framework suggests that costs associated with lower performance and higher turnover substantially reduce the overall value of temporary agency workers. We then use a simulation approach with six scenarios representing different organizational strategies to examine how organizational circumstances may further affect the likelihood that the use of contingent workers actually represents a significant cost savings. Our results suggest that although temporary workers were less cost-effective (and independent contractors were more cost-effective) in each scenario, the cost-effectiveness of each worker type also varies depending on the strategy, with the "Temp-to-Perm" approach being most cost-effective overall.

Editor's Comment

Fisher and Connelly's paper shows us how simulations can help us avoid making theoretical and practical errors. The topic is contingent work, and the most recent research suggests that contingent employment has continued to grow since the Bureau of Labor Statistics last collected data on the contingent labor force in 2005. What is so useful about

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Fisher and Connelly's cost-benefit simulation is that it undermines simple homilies such as "temporary workers reduce labor costs" and "temporary workers are cheaper than independent contractors." Given that empirical data of the sort that the authors simulate are difficult to acquire and, given the detrimental effects of the trend toward replacing permanent jobs with contingent workers on the welfare of the labor force, simulations such Fisher and Connelly's urge us to stop and question whether recent developments in employment relations are based more on myth and ideology than on fact.

Stephen R. Barley, Action Editor

The use of contingent labor, where workers are employed on a fixed-term basis, is increasing worldwide and has changed the nature of the work relationship for many people (e.g., Bidwell, Briscoe, Fernandez-Mateo, & Sterling, 2013). Various reasons have been suggested for why firms use contingent workers, such as to enhance flexibility, to accommodate fluctuations in production and service requirements, to bring in specialized skills for a short period of time, to create an extended screening process of applicants for permanent positions, and to reduce the need for training (Bonet, Cappelli, & Hamori, 2013). Other organizations use contingent labor to help them manage within tightly defined head count limitations, because contingent workers are often not counted under the human resources budget or when estimating a firm's productivity figures (Barley & Kunda, 2004). However, the dominant viewpoint suggests that most firms use contingent workers primarily to reduce their labor costs (Ashford, George, & Blatt, 2007; Davis-Blake & Broschak, 2009; Kalleberg & Marsden, 2005).

It is surprising, then, that little research has examined the extent to which using contingent labor actually reduces firm costs and under what circumstances this reduction might occur. There is some evidence that the use of contingent workers may increase gross profit margins at the firm level (Nayar & Willinger, 2001), but the mechanism behind this effect is unclear. Other research suggests that the cost–value relationship of contingent work varies across organizations based on the specific type of contingent work (Nollen & Axel, 1996). As noted by Connelly and Gallagher (2004), there are distinct forms of contingent work [e.g., independent contractors (ICs), temporary agency workers (TAWs)] that should not be used interchangeably. Indeed, some arrangements may be more cost-effective than others.

In this paper, we examine the net costs of the widespread practice of using contingent labor in organizations. We build and test a theoretical model of the relative costs and benefits of contingent labor in order to identify the circumstances under which it makes sense to hire these workers. Our analysis takes into account the service value [e.g., value brought to the organization through task productivity and organizational citizenship behaviors (OCBs)] and both direct and indirect service costs. We then compare simulated organizational scenarios that reflect different strategies for using contingent workers. We have chosen this approach because simulations offer useful advantages for examining complex management phenomena and building theory (Harrison, Lin, Carroll, & Carley, 2007), allowing researchers to isolate individual effects and identify boundary conditions. Our simulations illustrate the circumstances under which different contingent work arrangements can be more cost-effective than others.

MODEL DEVELOPMENT

Contingent Labor Costs and Benefits

As noted earlier, one of the most frequently stated reasons for hiring contingent workers instead of permanent employees is that doing so is said to provide a significant cost savings. Given the frequency of this claim, it is surprising that the evidence behind it is relatively weak. Direct labor costs for contingent workers are typically lower than for permanent workers (DiNatale, 2001; Kalleberg, Reskin, & Hudson, 2000). However, it is unclear if these lower costs result in overall savings once the productivity of contingent workers is taken into account. Some research suggests that there are situations in which temporary workers may be more expensive than permanent employees. For example, the use of overtime has been suggested as a more effective way to reduce costs than the use of temporary workers, given that overtime can be paid 1 hour at a time while temporary workers in many jurisdictions must be paid for

at least 4 hours (Easton & Goodale, 2005). Another paper examined the effects of turnover and subsequent learning curves on the productivity of temporary workers compared to permanent employees (Stratman, Roth, & Gilland, 2004). They found that the higher indirect costs created by turnover made temporary workers a more expensive solution in spite of the lower direct labor cost. However, neither of these studies examined multiple types of contingent workers, nor did they consider the full range of performance outcomes (i.e., task performance, citizenship behaviors).

In the practitioner literature, Nollen and Axel (1996) developed an early model of the costs and benefits of contingent work. They questioned the extent to which lower pay and benefits would actually result in superior value overall, concluding that the cost-effectiveness of contingent workers is situationally dependent. These authors described one situation in which a bank used contingent workers with variable schedules who could be called in at any time as workload increased. Because of high training costs for the job in question, this organization did not recoup those costs when the contingent workers quit or had their contracts end. Nollen and Axel then presented a second scenario in which a different bank was able to profit from the use of temporary workers because of a combination of lower wages and training expenses. We therefore take into account both direct (e.g., wages, benefits, and fees to temporary agencies) and indirect (e.g., turnover, the impact of OCBs) labor costs.

Types of Contingent Work

The claims that contingent workers are necessarily more cost-effective than permanent employees fail to take into account that there are many different types of contingent work arrangements, that different types of contingent workers are hired for different strategic reasons, and different costs and benefits are associated with these arrangements. In our framework, we include two popular forms of contingent work: TAWs and ICs, and we further refine our analysis to consider two types of independent contracting arrangements. In doing so, we incorporate research that has examined differences in these workers' attitudes and behaviors.

TAWs are legally employed by a temporary help service or agency, but they work at a client organization (Connelly & Gallagher, 2004). TAWs are distinct from direct-hire temporary workers in that there is a third party, the agency, involved in the employment relationship (Aletraris, 2010). The agency recruits and selects workers, and then matches them with clients for relatively short-term assignments where the individual is supervised by a local manager (Galais & Moser, 2009). Because of their relationship with the agency, TAWs can often be identified and brought onboard quite rapidly.

ICs can be broadly characterized as self-employed workers who offer their services to a "client" organization on an hourly or per-project basis (Pink, 2001). When an assignment is complete, the relationship between the IC and the client ends unless the parties begin a new contract. These workers have considerable control over how the work is done (McLean Parks, Kidder, & Gallagher, 1998) and are often expected to have contracts with multiple clients simultaneously (Fragoso & Kleiner, 2005). The primary reason for hiring ICs is to acquire skills, knowledge, and abilities that are "needed immediately but for a limited time" (Barley & Kunda, 2004: 40). Unlike TAWs, many ICs sign contracts directly with the client (Barley & Kunda, 2006). However, in an effort to improve compliance with tax and labor laws, many client companies require ICs to be hired through an "agent of record" (AOR) arrangement where the contractors retain their autonomy but a third party conducts a compliance review, takes care of the billing or invoicing process, and may provide additional services related to dispute resolution, drug testing, onboarding, and document storage (HireGenics, 2016; SIA, 2014). We include both direct-hire ICs (IC-D) and AOR ICs (IC-AR) in our analyses.

The existing analyses of the costs of hiring contingent workers also fail to take into account the effect that hiring these workers has on the attitudes and behaviors of the permanent employees in the organization. Because contractors and TAWs are hired for different strategic reasons at different companies (e.g., as a long-term temp-to-perm recruiting strategy, to protect job security for core employees, short-term replacement), the effects of hiring them are likely to vary. We first calculate the overall net costs or savings for the different types of contingent workers, and then use these findings to calculate the net costs or savings at companies with different contingent worker hiring strategies.

One feature of the employment landscape for contingent workers is that there is a tendency for different occupational groups to be clustered in different contingent work arrangements. For example, most administrative professionals are hired as TAWs, and most graphic design artists are hired as ICs.[1] As such, it is difficult to make comparisons without confounding the influence of job characteristics or occupational norms. We therefore use

Author's voice:
What was the most difficult or challenging aspect of this research project and paper?

[1] We are grateful to an anonymous reviewer for this useful example.

a single occupational group, IT help desk support staff, because these workers are frequently hired in all of these groups: permanent employees, TAWs, and ICs. We look at help desk support jobs broadly, including aspects of front-line hardware and software support to end users within the organization. Typically, these positions are structured in the generalist model, where a pool of help desk generalists field incoming requests, resolve issues when possible, and escalate the more specialized problems to a different technical support group or to an outside vendor (Computer Economics, 2016; Giva, 2016). More skilled workers are able to handle a broader range of calls. Although most help desk support workers rely on instructions and pre-established guidelines to perform their assigned tasks and work under immediate supervision (salary.com), they retain sufficient autonomy to engage in varying levels of performance and OCBs.

THEORETICAL FRAMEWORK

In our analysis, we consider the quantifiable costs and benefits of hiring permanent employees or engaging the services of contingent workers. The framework we develop is broadly based on the utility analysis approach to evaluating the relative economic costs and benefits of HR interventions (Cascio, 2000; Sturman, Trevor, Boudreau, & Gerhart, 2003). This approach requires an estimation of *service costs*, or the costs the organization bears to employ the workers, and *service value*, the value an employee brings to the organization through his or her services.

Service Costs

Service costs are the organizational expenses of acquiring and maintaining the labor needed to produce goods and services. These expenses include direct costs such as wages, benefits, and transaction costs, as well as indirect costs such as training. In this section, we provide an overview of the various service costs; more specific estimates are provided in the following section.

Direct wages. The primary cost associated with using contingent workers is wages. Depending on the type of contingent worker, wage costs may be higher or lower than those for permanent employees. Although there is some variation across industries and organizations, ICs are usually paid more than permanent employees, partially due to the added expertise that they are perceived to bring to the client organization. Estimates range from wages being 19 percent higher (DiNatale, 2001) to 25–30 percent higher (Ang & Slaughter, 2001) based on worker demography (age, experience, and gender) and the lower indirect costs due to the lack of health insurance and retirement benefits (Barley & Kunda, 2006). Permanent employees are generally paid more than TAWs who perform similar tasks (DiNatale, 2001; Marler, Barringer, & Milkovich, 2002), and ICs are paid more than TAWs (Kalleberg et al., 2000).

Benefits. One reason contingent workers are often viewed as less expensive than permanent employees is because contingent workers do not typically receive employment benefits such as pensions, dental care, and health insurance (Houseman, 2001). Indeed, the percentage of contingent workers with low-wage jobs and no access to health or pension benefits is much higher than for permanent employees (Kalleberg et al., 2000). In this regard, TAWs and ICs produce similar savings for the client organization, although ICs may price their work to include their own costs for obtaining health insurance or retirement benefits on the open market.

Transaction costs. Organizations incur indirect costs each time a new worker is brought into the organization. Transaction costs for permanent employees are typically reflected in the cost of turnover and will be addressed below. For contingent workers, transaction costs include fees paid to agencies to cover their costs for recruiting and managing the workers, payment of employment taxes, and agency profits (SIA, n.d.). The use of a temporary agency typically has the highest direct transaction costs, with fees that cover the agency's expenses (such as initial candidate screening) and profit margins. Estimates for agency fees range from 24 to 30 percent of the worker's salary, with some reaching as high as 45–150 percent of the TAW's wages (Grossman, 2012; Nollen & Axel, 1996). ICs generally incur few direct transaction costs because they find clients via referrals and their own professional networks. The transaction costs for direct ICs are similar to replacement costs in employee turnover and will be addressed below. Transaction costs for ICs with an AOR engagement will include the costs for vetting the IC for compliance with relevant regulations, helping the IC to become compliant if necessary, and other services that may be provided by the agency (SIA, 2014). These will be substantially lower than the fees charged by temporary agencies.

Training. With average annual training costs in the United States reaching over $1,100 per employee (American Society for Training and Development [ASTD], 2010; Miller, 2012), organizations may view the use of contingent workers as a way to minimize costs by obtaining immediate access to specific skills that they need (Matusik & Hill, 1998). Contingent workers do still receive training that is required for all people working in a facility, such as legally required training for safety or information security (Halbesleben & Clark, 2010) but generally receive 1 day or less of training each year (Virtanen, Kivimäki, Virtanen, Elovainio, &

Vahtera, 2003), compared to nearly 4 days per year for permanent employees (Miller, 2012). Thus, regular training for most contractors would be kept to a minimum. We treat training required in the onboarding process (e.g., to become familiar with information technology systems and organization-specific procedures) as a component of turnover costs (see below) rather than on-going training costs.

Turnover. Estimates for the cost of turnover for permanent employees range from one to two times an employee's salary and typically include direct and indirect costs for the separation of the departing employee and the recruitment, selection, onboarding, and training of new employees (Allen, 2008; Sturman et al., 2003). With contingent workers, there is often an assumption that turnover costs are negligible, but there is some evidence that even when considering contingent workers, "turnover remains a major threat to employers' continuity and efficiency" (Grossman, 2012: 34). We argue that there is variability in the cost of turnover among different types of contingent workers based on duration of the assignment and their integration with the client's staff and work processes (Fisher, Wasserman, Wolf, & Wears, 2008). TAWs who are brought in for a day or two are unlikely to result in turnover costs, but when assignments last for longer (e.g., 6–9 months), clients will incur costs related to the departure of the worker, the hiring of a new worker, and the integration of the new worker into the organization. Longer term placements, such as those held by ICs, may entail greater disruptions and costs.

Service Value

We examine two elements of service value: task performance and OCBs, and consider the theoretical foundations for estimating values for permanent employees, TAWs, and ICs. We also consider how the presence of contingent workers may affect the behaviors of permanent employees. Once again, we provide a broad overview of service value considerations in this section, and a more specific illustration of how it can be estimated is in the following section.

Task performance. Research on contingent labor has suggested that contingent worker task performance varies considerably depending on the type of worker (Feldman, 2006). Nollen and Axel (1996) determined that TAWs were 7–30 percent less productive, depending on the job and organization. Stratman et al. (2004) found that TAWs in a manufacturing setting performed less effectively due to the learning curve required for the work. ICs, in contrast, are often hired because they bring better or unique skills to the organization (Barley & Kunda, 2006). In an extensive study, Bidwell and Briscoe (2009) conducted computer-assisted interviews of workers in the IT field. They found that ICs had significantly higher levels of skills than permanent employees, as measured by formal education, past experience working in the high-technology industry, and past job titles. Because contractors are likely to have more knowledge, skills, and abilities, we expect that they will generally perform more effectively than permanent employees. Although these examples are not specific to the help desk context, they are indicative of a general tendency of differing performance levels for contingent workers and we extrapolate from them to develop our framework.

Interestingly, a variety of moderators have been identified that suggest that contingent worker performance may be low in some situations but comparable to permanent employees in other instances. For example, Lautsch (2002) found wide variability in the performance of contingent workers when compared to permanent employees in the same organizations. In some situations contingent workers were significantly less productive, but in other situations, such as when contingents received almost the same amount of training as permanent employees and were paid well, performance levels were similar. Likewise, in a study of IS professionals at a large transportation firm, Ang and Slaughter (2001) found significant differences between ICs and permanent employees on a range of dimensions, including loyalty, obedience, trustworthiness, and overall performance, with ICs scoring lower on each dimension. From a series of in-depth interviews, it was revealed that the differences were due to job design and the types of tasks that were assigned to the contractors. We believe that this may be reflective of the organizational HR strategy and how both the permanent workers and contingent workers are used in the organization. This perspective informs the development of our scenario comparisons, where we compare the implications of different HR strategic approaches.

Organizational citizenship behaviors. In addition to lower task performance, many studies have shown that contingent workers display fewer OCBs than permanent employees, further reducing the value brought to the organization. Social exchange theory (Blau, 1964) can be used to better understand how organizations can gain additional value by managing relationships with contingent workers. As noted by Blau (1964), "only *social* exchange tends to engender feelings of personal obligation, gratitude, and trust; purely economic exchange as such does not" (p. 94, emphasis added).

Contingent workers generally have less of a social exchange relationship with the client firm, and they consequently engage in fewer OCBs than do permanent workers (Liden, Wayne, Kraimer, & Sparrowe, 2003; Van Dyne & Ang, 1998). Contingent workers have been

shown to perform OCBs under the right circumstances (e.g., if they are treated fairly and perceive high levels of organizational support: Connelly, Gallagher, & Webster, 2011; Coyle-Shapiro, Morrow, & Kessler, 2006), but they are often less committed to the organization and have a more transactional psychological contract (Ashford et al., 2007; Marler et al., 2002).

To promote increased commitment and OCBs, organizations can strengthen attachments with contingent workers by offering them support, treating them fairly, and avoiding psychological contract breach (Connelly, Gallagher, & Gilley, 2007; Coyle-Shapiro et al., 2006; Lapalme, Simard, & Tremblay, 2011). Although much of the research on the treatment of contingent workers and their OCBs has been conducted in the context of TAWs, we expect that all types of contingent workers would benefit from fair treatment and support.

One potential difference, however, lies in the fact that different types of contingent workers may have different expectations about the extent to which their psychological contract with the client should be relational (Guest, Isaksson, & De Witte, 2010). For example, TAWs may minimize social exchanges with the client to avoid feeling obligated to provide additional services that are not specified in their contracts. Conversely, some contingent workers may show higher commitment and engage in higher levels of OCBs to maximize their opportunities for continued work with the organization (Felfe, Schmook, Schyns, & Six, 2008). Contingent workers who strive to be hired on as a permanent employee are more likely to demonstrate high task performance and OCBs regardless of perceived fairness (de Jong & Schalk, 2010).

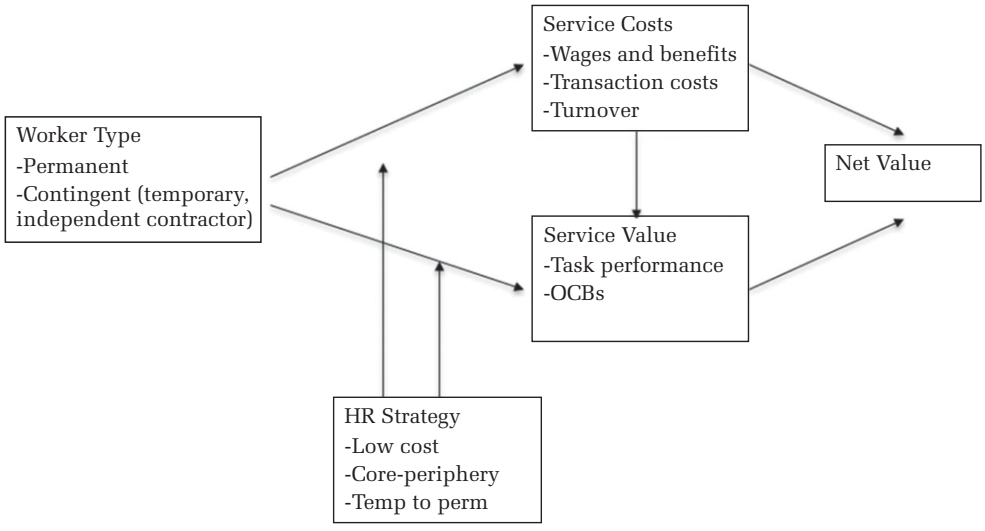
The presence of contingent workers may also affect the task performance and OCBs of the permanent employees who work alongside them. Permanent employees who work with contingent workers tend to engage in fewer helping behaviors (Broschak & Davis-Blake, 2006; Chattopadhyay & George, 2001), perhaps because the presence of contingent workers can negatively affect permanent employees' perceptions of the trustworthiness of their employer (e.g., Pearce, 1993). Permanent employees report lower loyalty toward the organization and higher intentions to leave (Davis-Blake, Broschak, & George, 2003) when they work with TAWs. Even though organizations may report using contingent workers to protect permanent employees from fluctuations in demand, permanent employees with high levels of job insecurity are more likely to see TAWs as a threat to their jobs (Kraimer, Wayne, Liden, & Sparrowe, 2005). Figure 1 depicts our framework of costs and benefits for different types of contingent workers.

Author's voice:
If you were able to do this study again, what if anything would you do differently?

AN ILLUSTRATION OF THE FRAMEWORK

In this section, we illustrate the impact of different circumstances on the relative cost-effectiveness of contingent work. We use estimates of the various parameters drawn from the literature and publicly available sources. This approach allows us to systematically vary the input values to test a range of situations and conduct some "what-if" modeling. For

FIGURE 1
A Framework of Contingent Worker Costs and Benefits



example, we can see the impact of high versus low levels of OCBs and the potential impact of offering temp-to-perm employment versus only short-term temporary assignments. To estimate the parameters and the marginal cost of different work arrangements, we focused on a single job category frequently staffed by both permanent and contingent workers: IT help desk support. We assume that all workers are providing generalist front-line IT support to the employees of a large company that does not have IT as a core competency (e.g., retail, manufacturing). We place our simulation in a single country (the United States). In the section below, we include values for the most critical data points. More details on the analyses are available from the first author.

Determining Service Costs

Salary and benefits. Data for salary costs of a help desk support worker are available from salary.com, a commercial website that provides salary data across jobs and geographic regions. Salary.com only uses employer-reported salary data, which is considered more accurate than self-reported salary data. In 2013, the mean annual salary for a US-based help desk support worker was $47,295. We used this value as the base salary for permanent employees and the benchmark for estimating salary costs for contingent workers.

We estimated direct salary costs for both types of ICs to be 27.5 percent higher than permanent workers (Ang & Slaughter, 2001; Kunda, Barley, & Evans, 2002), which are commensurate with ICs' generally higher levels of experience (Bidwell & Briscoe, 2009) and lack of employer-provided benefits. Direct salary costs for TAWs (the amount paid to the worker, excluding agency fees which are discussed as a separate cost below) were estimated to be 16 percent lower than permanent workers (Nollen & Axel, 1996). This results in an average salary of $60,301 for ICs and $39,728 for TAWs. To help us examine costs across a range of organizational situations, we developed estimates for organizations paying higher than average and lower than average wages. We used the 25th and 75th percentile wages from salary.com to represent high- and low-salary categories. These estimates are shown in Table 1.

We used the Bureau of Labor Statistics (2013) estimate of 29.6 percent of salary as the cost of benefits, which includes all legally required benefits such as payroll taxes as well as voluntary benefits such as paid leave, insurance benefits, and retirement benefits. This cost applies only to permanent employees, because contingent workers typically do not receive benefits. We estimate the cost of benefits for a permanent help desk support worker as ranging from $12,431 to $15,949, with $13,999 representing the cost of benefits at the average salary level (see Table 1 for more details).

Transaction costs. Transaction costs include the agency fees for TAWs, representing the agency's gross margin and statutory expenses such as employment taxes (Staffing Industry Analysts, n.d.). We use the midpoint of the more conservative range discussed in the literature, 27 percent of salary. At average salary, transaction costs for TAWs are $10,727. Transaction costs also include the fees

TABLE 1
Service Costs at Three Salary Levels

Employee Type	Low Salary (25th percentile) ($)	Average Salary ($)	High Salary (75th percentile) ($)
Permanent employees			
Direct salary	41,998	47,295	53,883
Benefits/transaction costs (29.6% of salary)	12,431	13,999	15,949
Training costs	1,808	1,887	1,985
Turnover	41,998	47,295	53,883
ICs, direct			
Direct salary (27.5% higher)	53,547	60,301	68,701
Benefits/transaction costs	0	0	0
Training costs	192	201	213
Turnover (30% of salary)	16,064	18,090	20,610
ICs, agent of record			
Direct salary (27.5% higher)	53,547	60,301	68,701
Benefits/transaction costs (5%)	2,677	3,015	3,435
Training costs	192	201	213
Turnover (30% of salary)	16,064	18,090	20,610
Temporary workers			
Direct salary (16% lower)	35,278	39,728	45,262
Benefits/transaction costs (27% of salary)	9,525	10,727	12,221
Training costs	165	172	180
Turnover (30% of salary)	10,583	11,918	13,579

associated with ICs who have an AOR (IC-AR) arrangement with a third party. Based on industry norms, we estimate IC-AR fees as 5 percent of salary.

Training. We estimate training costs using a combination of direct and indirect hourly costs. The 2012 ASTD State of the Industry report indicates that on average, firms provided 31 hours of training per employee at an average cost of $1,182 in 2011 (Miller, 2012) for a direct hourly cost of $38.13. Indirect costs are the hourly salary costs of the employee being trained. For the help desk position, we estimated 3 hours of training for all contingent workers. These conservative estimates are consistent with research suggesting that contingent workers receive 1 day or less of training each year (Virtanen et al., 2003). Thus, routine training costs, such as safety training and information security protocols, are relatively low for contingent employees. At average salary, we estimate training costs at $1,887 for permanent employees, $201 for ICs and $172 for TAWs.

Turnover. Consistent with conservative estimates in the literature, we estimate turnover costs for permanent employees at 1× salary (Sturman et al., 2003). This estimate includes a wide variety of direct and indirect costs in the departure of the employee (i.e., cost of lost productivity by the employee and the employee's co-workers before and during departure, cost of overtime while the position is vacant), hiring a new employee (recruiting, screening, interviewing), and integrating the new employee into the organization (reduced productivity for the new employee and the new employee's co-workers as they provide support, increased supervision while the employee is new).

Turnover costs for contingent workers need to be discounted due to their reduced integration into the workplace and subsequently reduced indirect costs for lost productivity by the employee and the employee's co-workers before and during departure, and for integrating the new employee into the organization. We estimated the turnover costs for each type of contingent worker based on a framework provided by Hillmer, Hillmer, and McRoberts (2004), which lists a wide range of direct and indirect turnover costs involved in a call center position and provides a percentage of total turnover costs that are due to each factor. We evaluated each of these costs for relevance to TAWs and both types of ICs, and adjusted them accordingly. For example, Hillmer et al. (2004) found that 19 percent of turnover costs for permanent employees were due to the need to train a replacement, with an additional 7.5 percent due to lower performance during the training period. They also found that 43 percent of the turnover costs were due to disruptions in the work environment following departure of the employee, including overtime costs to cover the workload in the time before a new employee can be hired and problems with knowledge management.

For a contingent worker, we suggest that turnover costs will be substantially lower. Temps and ICs are expected to start their work engagement with the skills needed for the job, thus there should be no direct training costs. However, there would still be some costs for onboarding to bring the new worker up to speed on organization-specific systems and procedures (Computer Economics, 2015), and somewhat of a learning curve for the contingent worker to get up to full working pace and quality in the new organization (Stratman et al., 2004). Following the Hillmer et al. (2004) framework (see Table 2), we assume that contingent workers receive the same amount of onboarding training as permanent employees, experience some reduced performance during the learning curve, and generate some costs for managing knowledge transfer at the end of the engagement (Computer Economics, 2015). Thus, we estimate that ICs and TAWs incur approximately 30 percent of the turnover costs of permanent employees, although the source of these costs varies somewhat. A very short-term TAW (i.e., one placed with a firm for only a few days) would not incur turnover costs at this level, but for this example, we assume that TAWs are staying for roughly the same period of time as the IC. Using these assumptions, at average salary, the turnover costs are $47,295 for a permanent employee, $18,090 for an IC, and $11,918 for a TAW (see Table 1).

Because turnover *rates* have a substantial impact on turnover costs, we also considered the effects of total workforce turnover costs in our analysis. We

TABLE 2
Turnover Cost Estimation

	Percentage of Turnover Costs by Category			
Employee Type	**Recruitment and Selection**	**Training/Onboarding**	**Learning Curve**	**Departure/KM**
Permanent	5	19	24	52
IC (direct and AR)	1	2	12	14
Temporary workers	0	2	12	15

Note. KM = knowledge management.

used expected annual turnover rates for each employee category and computed a "per employee" turnover cost that spreads the expenses across all employees in a category to provide a more accurate estimate of the impact of turnover across groups. The annualized turnover rate for jobs in the information industry (most similar to the help desk staff position) was 28 percent in 2012 (Stephens & Riley, 2005). We estimate that high levels of turnover within the industry would be 38 percent with low turnover at 18 percent. We use these percentages for our estimates of permanent employee turnover rates.

Turnover rates for contingent workers are likely to vary by type of worker. We estimate that most ICs will not stay longer than 1 year, partially due to contracting procedures and tax code requirements. ICs with an AOR relationship are likely to have somewhat shorter contracts, as the agency will advise them to have engagements with multiple clients within the calendar year, resulting in higher turnover rates. We therefore estimate average IC-D turnover at 100 percent annually, ranging from 125 to 75 percent. We estimate average IC-AR turnover will be 10 percent higher, with an annual average of 110 percent and ranging from 137.5 to 82.5 percent. We expect that TAWs will have the highest levels of turnover and will turn over more than once a year on average. Many organizations have become sensitive to the duration of temporary assignments in reaction to publicity around misclassification lawsuits (Wears & Fisher, 2012) and thus have adopted policies of keeping TAWs for 9–12 months or less to minimize the risk of them being classified as permanent or joint employees. Some TAWs are present for only 1 day or 1 week, but data from a major North American temporary agency show approximately half of its assignments lasted 30 days or less from 2007 to 2009. However, almost 30 percent of the assignments were 180 days or more, and the average assignment length was 195 days. To account for these factors, we estimate average turnover for TAWs at 200 percent. We estimate high turnover at 250 percent and low turnover at 150 percent. We used the above estimates of turnover rates in conjunction with the per-employee turnover costs to compute total turnover costs.

Summary of service costs. Table 3 displays total service costs for a single help desk worker in each category both with and without turnover costs included. Turnover costs are included at the average rates of turnover described above. Despite the turnover costs of individual TAWs being the lowest, the per-employee/position costs rise substantially once we consider the category turnover rates (from $50,626 without turnover to $74,463 with turnover).

Examining Table 3, we note two important trends. First, if we ignore turnover costs, it is evident why the use of contingent workers is attractive to organizations from a direct cost perspective. In the average salary condition, TAWs are 20 percent less costly than permanent workers, and it costs 4 percent less to hire a direct IC with specialized expertise than to use a permanent employee. Second, the impact of turnover costs in this analysis is substantial. TAWs become almost as expensive as permanent workers if we account for turnover costs, even when the turnover cost of a single TAW is less than half that of a permanent employee. This is due to the substantially higher turnover rate for TAWs.

Determining Service Value

Service value is defined as the value an employee brings to the organization through his or her services, and has two main components: task performance and OCB. We start our analysis of service value by estimating the monetary value of average performance. Following Sturman et al. (2003), we use a 1.754 salary multiplier to determine the monetary value of service value at average performance levels. This figure is normally based on salary costs rather than total service costs, assuming that for any group of workers the total salary costs will represent an approximation of the value that they bring to the organization. The use

TABLE 3
Data Summary for Service Costs

Employee Type	Low Salary (25th Percentile)	Average Salary	High Salary (75th Percentile)
Permanent employees	Avg. TO: $67,997 No TO: $56,237	Avg. TO: $76,424 No TO: $63,181	Avg. TO: $86,905 No TO: $71,817
Direct ICs	Avg. TO: $69,803 No TO: $53,739	Avg. TO: $78,593 No TO: $60,502	Avg. TO: $89,525 No TO: $68,914
Agent of record ICs	Avg. TO: $74,087 No TO: $56,416	Avg. TO: $83,417 No TO: $63,518	Avg. TO: $95,021 No TO: $72,349
Temporary workers	Avg. TO: $66,136 No TO: $44,969	Avg. TO: $74,463 No TO: $50,626	Avg. TO: $84,819 No TO: $57,662

Note. TO = turnover; Avg. TO = service costs including costs of turnover at average levels.

of this multiplier assumes that salaries are set with some logical basis in the value of the work. The value of a worker's productivity will not increase in perpetuity simply because he or she receives more salary. Eventually, the constraints of a particular position will place an upper limit on the value even the most productive worker can produce. In our help desk worker example, at average salary and performance, the total service value for permanent employees is therefore \$82,955. The total service value for ICs is \$105,768 (there is no difference between direct and AOR ICs) and for TAWs it is \$69,683.

Subcomponents of service value. The next step in computing service value is to divide total value into task performance and OCBs, which add considerable value to organizations and are positively related to both individual- and organizational-level performance indicators (Podsakoff, Whiting, Podsakoff, & Blume, 2009) but there has been little research on the specific economic value of these behaviors. Orr, Sackett, and Mercer (1989) conducted a policy-capturing study in which they asked managers to estimate the dollar value of citizenship behaviors relative to task performance. While not all of the managers considered OCBs, for those who did, 84 percent of the variance in dollar value of performance was explained by task performance while OCBs explained 16 percent. We use these estimates to divide overall service value into task performance (84 percent) and OCB (16 percent) for the three types of workers. For example, at average performance, the \$105,768 service value for an IC breaks down into \$88,845 for task performance and \$16,923 for OCBs.

The next step in our analysis is to account for variation in performance levels within and between assignment types. In essence, we take into consideration the fact that some workers will perform at higher levels than others who are paid the same wage. From the utility analysis perspective, this is typically done by modeling differences in value of performance using different values for SD_y, the dollar value of a standard deviation (SD) in performance [for information about the derivation of SD_y, see Schmidt and Hunter (1983) or Cascio (2000)]. We used performance values at 1 SD above and below the mean to model differences in the service value of performance at three estimations of SD_y: 30, 60, and 90 percent, meaning that the monetary value of performance would increase (or decrease) by that percentage. Workers would still be earning the same amount of money, but the value they create for the organization would change (i.e., service *value* would increase or decrease based on performance but service *costs* would remain the same). Thirty percent is considered to be conservative, but some authors consider the 90 percent value to be most accurate (Sturman et al., 2003). For example, consider the task value estimate for ICs at average performance of \$88,845. If we consider service value at +1 SD of performance, the value of task performance at $SD_y = 30$ percent becomes \$115,499 and at $SD_y = 90$ percent it goes up to \$168,806. Table 4 shows results of these calculations at the three salary levels, assuming average performance, for all three worker types. As noted in Table 4, we estimate the performance value of the IC-D and IC-AR as equivalent.

Summary of service value. Service value within each worker category can range widely depending on performance level and assumptions about the overall value of SD_y. Even at the most conservative level of SD_y (30 percent), there is a substantial difference in the service value contributed by a worker at different levels of performance. In our example, a TAW with high performance levels would contribute a task performance service value of \$76,093 but with low levels of task performance would contribute only \$40,973. Consistent with other performance value analyses (Sturman et al., 2003), annual service value at low performance levels in the 90 percent SD_y condition can be close to zero, and clearly far less than the associated service costs. For example, permanent employees performing 1 SD below the mean would create only \$8,295 in total

TABLE 4
Task Performance and OCB Service Value at Average Salary at Three Levels of SD_y

	Low Performance (−1 SD)		High Performance (+1 SD)	
Employee Type	**Task Performance**	**OCB**	**Task Performance**	**OCB**
Permanent employees	30% \$48,778	30% \$9,291	30% \$90,587	30% \$17,255
	60% \$27,873	60% \$5,309	60% \$111,492	60% \$21,237
	90% \$6,968	90% \$1,327	90% \$132,397	90% \$25,218
IC (IC-D/AR)	30% \$62,192	30% \$11,846	30% \$115,499	30% \$22,000
	60% \$35,538	60% \$6,769	60% \$142,152	60% \$27,077
	90% \$8,885	90% \$1,692	90% \$168,806	90% \$32,154
Temporary workers	30% \$40,973	30% \$7,804	30% \$76,093	30% \$14,494
	60% \$23,413	60% \$4,460	60% \$93,653	60% \$17,839
	90% \$5,853	90% \$1,115	90% \$111,213	90% \$21,183

TABLE 5
Basic Net Value for Three Worker Types

Worker Type	Service Value ($)	Service Costs (No TO Costs) ($)	Net Value per Worker (No TO Costs) ($)	Turnover Costs per Worker (n = 10) ($)	Total Service Costs (with TO Costs) ($)	Net Value per Worker (with TO Costs) ($)
Permanent employees	82,955	63,181	19,774	13,243	76,424	6,532
IC, direct	105,768	60,502	45,266	18,090	78,592	26,511
IC, AOR	105,768	63,518	42,250	19,899	83,417	21,686
Temporary workers	69,683	50,969	18,714	23,837	74,806	−5,561

Note. Net value estimates in this table assume average salary, average performance, and average turnover rates. TO = turnover; service costs = wages + benefits/transaction costs + training costs + turnover costs; service value = task performance value + OCB value; net value = service value, service costs.

service value while the average salary alone for this position is $47,295. When estimating the total value of workers in any of these categories, it is critical to understand average performance levels and the monetary value of variation in performance.

Net Value

The final step in the model is to use the estimates derived above to examine net value for workers in each category according to specified profile (see Table 5). We define net value as the service value the worker adds to the organization minus the service costs. In the simplest case, we can compare all four types of help desk workers, assuming that all have average costs and average performance levels (both task and OCB). Considering service costs and service value but ignoring turnover costs for the moment, the highest net value comes from the direct ICs at $45,266, followed by the agency ICs at $42,250. Assuming average salary and performance, permanent employees ($19,774) and TAWs ($18,714) are very close in net value, in spite of permanent employees' higher salary costs. In this case, it makes financial sense to use more temporary workers because there is little cost to the added flexibility.

However, it is important to include turnover costs. For this example, we assume that TAWs and ICs work at least 3 months with the organization and are well integrated with the permanent employees. Considering the average turnover cost per employee based on the turnover rates described above, the rank ordering of worker net value remains the same but we reach a different conclusion about cost-effectiveness. The direct IC arrangement is the most cost-effective but the net value is reduced to $26,511, with net value for the agency IC at $21,686. The permanent employee in this situation has much lower net value than ICs but is still positive ($6,532), whereas the TAW has a negative net value of −$5,561. These results would support the use of more permanent employees than contingent workers, and finding ways to minimize turnover costs.

The help desk example also shows how what-if modeling could help organizations make decisions about the best staffing mix for their situation. If we assume that permanent employees have average levels of task performance and OCBs and contingent workers demonstrate average task performance but low levels of OCBs (−1 SD), then at $SD_y = 30$ percent the net value of the direct IC is reduced to $40,189 and the value provided by the TAW is $15,369 (without considering turnover) while the net value of the permanent employee is still $19,774. At $SD_y = 90$ percent, we see the service value dropping further for the contingent workers under conditions of low OCBs, to $30,036 for direct ICs, $27,020 for agency ICs, and $8,679 for TAWs due to the higher monetary value placed on 1 SD of OCBs. This situation, in which contingent workers display fewer OCBs, would make a strong case for hiring more permanent employees while decreasing the use of temporary workers. However, the mix of these employee types is critical in conducting a cost–benefit analysis. We therefore develop a series of scenarios to allow us to examine more specific workforce conditions.

Scenario Modeling

Various frameworks of strategic human resource management suggest that organizations should make intentional choices about staffing options based on core competencies and long-term goals. For example, Lepak and Snell (1999) suggest that jobs requiring competencies that are unique and valuable should be staffed internally, whereas those requiring

Author's voice:
Why was this research important to you?

competencies that are widely available and of lower value should be staffed externally. Likewise, Kulkarni and Ramamoorthy (2005) suggest that firms take into account the required levels of commitment and flexibility when deciding what employment contract to offer. In a similar vein, Cappelli and Neumark (2004) describe the core and periphery distinction in HR strategy, and note that some organizations make part of their workforce peripheral (through contingent arrangements) to deal with variations in demand, meet short-term staffing requirements, and deal with stringent caps on head count.

These strategic choices have implications for the attitudes and behaviors of a firm's permanent employees. Overall, the presence of higher proportions of contingent workers in organizations is associated with permanent employees having less favorable attitudes toward supervisors and peers, increased turnover intentions, and decreased interpersonal helping (Broschak & Davis-Blake, 2006). When firms use contingent workers to reduce labor costs, permanent employees engage in more withdrawal behaviors (Way, Lepak, Fay, & Thacker, 2010). We consider how various strategic choices about staffing arrangements will affect overall value.

Scenarios

We created six scenarios to represent various organizational strategies for using contingent workers. These scenarios are not intended to be exhaustive, but they provide a starting point for meaningful comparisons. All our scenario firms have 10,000 employees and a help desk function with 33 co-located positions (the median help desk staffing ratio is 1 per 300 employees in an organization: Computer Economics, 2009). The help desk support job was chosen as the focus of our simulation because jobs in this occupation are typically staffed by a mix of permanent employees, TAWs, and ICs. It is easy to find direct-hire help desk job postings on sites such as Indeed or Monster.com, contract postings on websites such as jobs.yoh.com, and temporary agencies such as Adecco and Kelly advertising help desk services. Postings in these different sources generally include similar job responsibilities and specifications. Companies could pursue one of several different strategies, as described below, for how to staff the help desk function. These strategies may lead companies to focus more on permanent employees to build commitment and engagement, or use different types of contingent workers to maximize flexibility or minimize cost. Companies also vary in the extent to which they have an explicit contingent workforce strategy. For those that do, we suggest they require ICs to have an AOR arrangement to reduce risk due to misclassification.

The help desk position in each of our hypothetical firms is staffed by a mix of permanent employees and contingent workers. In each scenario, we specify the levels of pay, benefits, and training received by each employee type, as well as turnover rates. We also specify service value (i.e., task performance and OCBs) based on the assumptions described above. While we describe the levels of performance for both task performance and OCBs for each employee group in each scenario, it is also instructive to consider a performance distribution within each employee group. These are presented in Table 6. For example, in our first scenario (NormalCo), we have 27 permanent employees. Using a conservative performance distribution, we include 3 low performers, 21 average performers, and 3 high performers. To model differences in performance levels, we used the service values associated with + and − 1 SD to represent high and low performance, and selected the mid-level value of $SD_y = 60$ percent. Details about each scenario are provided below.

NormalCo. Our first scenario involves a company that uses contingent workers as needed to respond to fluctuations in staffing requirements, consistent with the core–periphery distinction (Cappelli & Neumark, 2004). Wages, benefits, and training for permanent employees and contingent workers are average, and all ICs are required to have an AOR. Performance, OCBs, and turnover are also average. This scenario represents a baseline condition.

MegaCo. This scenario involves a company that has pursued a low-cost HR strategy and uses contingent workers wherever possible to save money. Organizations that expect a ready supply of suitable employees avoid investing in training and retention; as noted by Cascio (2006a), they anticipate high turnover but accept this as a "cost of doing business." Wages, benefits, and training for all workers are low. ICs are required to have an AOR. Performance and OCBs are low, and turnover among all three employee groups is high.

Temp-to-PermCo. This scenario represents organizations that use contingent employment as an extended screening or probationary process through which contingent workers may eventually become permanent employees. This approach is typical for organizations that use contingent workers and permanent employees interchangeably (Lautsch, 2002), and is common in accounting and engineering where skilled workers are scarce (Perlin, 2011). Wages, benefits, and training for permanent employees are high. Performance and OCBs are also high, and turnover rates are low. Contingent workers' wages are low, but their levels of performance and OCBs are high because they are motivated to obtain permanent employment with the firm (Broschak, Davis-Blake, & Block, 2008;

TABLE 6
Scenario Performance Distributions

			Performance Distributions					
			Task			OCB		
Scenario	**Employee Type**	**Number of Employees**	**Low**	**Avg**	**High**	**Low**	**Avg**	**High**
NormalCo	Perm	27	3	21	3	3	21	3
	IC-AR	3	—	3	—	—	3	—
	Temp	3	—	3	—	—	3	—
MegaCo	Perm	25	18	5	2	18	5	2
	IC-AR	1	—	1	—	—	1	—
	Temp	7	5	1	1	5	1	1
Temp-to-PermCo	Perm	26	2	6	18	2	6	18
	IC-AR	1	—	—	1	—	—	1
	Temp	6	—	2	4	—	2	4
CoreCompCo-A	Perm	3	—	3	—	—	3	—
	IC-D	7	1	5	1	1	5	1
	Temp	23	17	3	3	17	3	3
CoreCompCo-B	Perm	3	—	3	—	—	3	—
	IC-AR	7	1	5	1	1	5	1
	Temp	23	17	3	3	17	3	3
BlendedCo	Perm	24	2	20	2	20	2	2
	IC-D	2	—	2	—	—	2	—
	IC-AR	1	—	1	—	—	1	—
	Temp	6	—	6	—	—	6	—

Note. Perm = permanent employees; Temp = temporary workers; Task = task performance; help desk in each organization has 33 workers.

de Jong & Schalk, 2010). ICs in this company are required to have an AOR, and turnover among contingent workers is low.

CoreCompetencyCo. The next scenario represents organizations that staff noncore roles predominantly with contingent workers. This strategy is congruent with the core–periphery model (Cappelli & Neumark, 2004) and Matusik and Hill's (1998) suggestion that contingent worker roles be reserved for support functions that are not a source of competitive advantage. This scenario also reflects an HR strategy whereby core employees' job security is protected by the presence of contingent workers, who will be the first to be let go if financial exigencies demand it. Permanent employees' wages, training, and benefits are average. The task performance, OCBs, and turnover of these workers are also average. Contingent workers' wages and training levels OCBs and task performance levels are low. Turnover among contingent workers is high. To reflect the two different types of ICs in our analysis, we show two versions of CoreCompetencyCo. In CoreCompetencyCo-A, the firm hires ICs directly, but in CoreCompetencyCo-B, the organization has a policy requiring all contractors to be hired through an AOR. These two scenarios directly illustrate the typical financial implications of these two approaches.

BlendedCo. Our final scenario represents companies that do not have an *a priori* strategy for using contingent workers, and use a combination of contingent workers and permanent employees working together. An unintended consequence of this strategy is that permanent employees' perceptions of job security are reduced (Davis-Blake et al., 2003; Kraimer et al., 2005), leading to lower OCBs and performance levels. In this scenario, wages, benefits, and training for all workers are average. Permanent employees' task performance is average but OCBs are low and turnover is high. Contingent workers' task performance, OCBs, and turnover levels are average. Note that this scenario includes both direct and agency-based ICs. A company without an existing strategy for using contingent workers is unlikely to require the AOR relationship from its ICs.

Results: Scenario Comparisons

Table 7 shows the interim results of calculations for each major component of net value (service costs, turnover costs, total costs, and service value) in each scenario, and Table 8 shows the results summarized across worker types for each scenario. The ICs (direct and AR) were the most cost-effective across the different scenarios, never producing negative net value. The use of permanent employees resulted in positive net value in three of the six scenarios. The TAWs produced positive net value in only one scenario, Temp-to-PermCo, where they were motivated to perform well in order to gain permanent employment. Two of the scenarios created an overall

TABLE 7
Interim Components of Net Value Computations for Scenarios

Employee Type	Number of Employees	Service Costs per employee ($)	Turnover Costs per Employee ($)	Total Costs Per Employee ($)	Service Value per Employee ($)	Total Value per Employee ($)
Scenario 1: NormalCo						
Permanent	27	63,181	13,243	76,424	82,955	6,531
IC-AR	3	63,518	19,899	83,417	105,768	22,351
Temp	3	50,626	23,836	74,462	69,683	−4,779
Scenario 2: MegaCo						
Permanent	25	56,237	15,959	72,197	45,377	−26,820
IC-AR	1	56,416	22,088	78,504	88,779	10,275
Temp	7	44,969	26,458	71,426	37,834	−42,413
Scenario 3: Temp-to-PermCo						
Permanent	26	71,817	9,699	81,516	123,679	42,163
IC-AR	1	56,416	13,253	69,669	150,276	80,607
Temp	6	44,969	15,875	60,843	76,316	15,473
Scenario 4a: CoreCompetencyCo-A (IC-D)						
Permanent	3	63,181	13,243	76,424	82,955	6,531
IC-D	7	53,739	20,080	73,819	93,922	20,103
Temp	23	44,969	26,458	71,426	39,279	−32,147
Scenario 4b: CoreCompetencyCo-B (IC-AR)						
Permanent	3	63,181	13,243	76,424	82,955	6,531
IC-AR	7	56,416	22,088	78,504	93,922	15,418
Temp	23	44,969	26,458	71,426	39,279	−32,147
Scenario 5: BlendedCo						
Permanent	24	63,181	17,972	81,153	76,983	−4,170
IC-D	2	60,502	18,090	78,592	105,768	27,176
IC-AR	1	63,518	19,899	83,417	105,768	22,351
Temp	6	50,626	23,836	74,462	69,683	−4,779

Note. Temp = Temporary Workers; help desk in each organization has 33 workers.

positive net value for the entire workforce segment we examined, with a spread of over $2 million from the highest to lowest net value in this workgroup of 33 employees. Clearly, including performance and turnover in cost–benefit analyses of contingent workers is important.

We then conducted what-if modeling akin to a break-even analysis to see how the lowest

TABLE 8
Results from Scenario Simulations

Scenario		Net Value ($): Per Employee	Net Value ($): Employee Type	Net Value ($): Workforce
MegaCo	Perm (n = 25)	−26,819	−670,482	−895,352
	IC-AR (n = 1)	10,275	10,274	
	Temp (n = 7)	−33,592	−235,145	
NormalCo	Perm (n = 27)	6,532	176,353	229,068
	IC-AR (n = 3)	22,351	67,054	
	Temp (n = 3)	−4,779	−14,338	
Temp-to-PermCo	Perm (n = 26)	42,163	1,096,232	1,269,678
	IC-AR (n = 1)	80,607	80,607	
	Temp (n = 6)	15,473	92,839	
CoreCompCo-A	Perm (n = 3)	6,532	19,595	−579,065
	IC-D (n = 7)	20,103	140,722	
	Temp (n = 23)	−32,147	−739,382	
CoreCompCo-B	Perm (n = 3)	6,532	19,595	−611,860
	IC-AR (n = 7)	33,953	107,927	
	Temp (n = 23)	−32,147	−739,382	
BlendedCo	Perm (n = 24)	−4,171	−100,097	−52,071
	IC-D (n = 2)	27,176	54,351	
	IC-AR (n = 1)	22,351	22,351	
	Temp (n = 6)	−4,779	−28,677	

Perm = permanent employees; Temp = temporary workers; help desk in each organization has 33 workers.

performing firm (MegaCo) could improve employee net value to at least zero. For MegaCo, reducing turnover to average levels does not reach the desired effect. Assuming that turnover for permanent and contingent workers is average instead of low, the net value of the workforce increases from −$895,352 to −$584,551 but is still negative. Performance also needs to be addressed to approach a net value of zero. Keeping turnover average and improving performance to a normal distribution around average results in a positive net value of $122,628. Note this what-if scenario maintains the below-average wages from the original analysis, so it assumes there are other programs to improve performance and reduce turnover (e.g., employee engagement) in spite of the low wages. Further, this analysis does not include the presumed added cost of these programs.

DISCUSSION

There have been many claims that contingent work is financially beneficial for organizations, but there have been few systematic reviews of the overall cost/benefit trade-offs of using contingent workers. This paper provides a conceptual foundation (see Figure 1) for examining these costs, estimates parameters for analyzing costs across four types of work arrangements for the occupation of help desk workers, and then examines differential costs across a range of strategic scenarios. Our model suggests that employers should look beyond immediate savings accrued from wage costs when they decide how to structure their workforce; contingent workers may represent a false economy when all costs and benefits are considered. We first discuss issues related to service costs and value with different types of workers. We then discuss the impact of different organizational strategies on the use of contingent work, followed by future research directions, limitations, and practical implications of the paper.

Service Costs and Value

The model and scenarios show how various components of worker service value and service costs affect overall net value for different contingent workers and organizational strategies. A central element of our framework is the identification of how different types of workers are associated with different service costs and value. The type of employment arrangement chosen (i.e., permanent employees, TAWs, IC-Ds, and IC-ARs) will determine many employment costs, in terms of wages, benefits, transaction costs, and turnover, as well as the value provided, in terms of performance and OCBs. It is critical to recognize here that there are turnover costs for contingent workers, and these costs may, when averaged across employment groups, be highest when using TAWs on engagements of 3–6 months. Our results suggest that TAWs may be the least cost-effective contingent employment arrangement in this context because of their combined lower productivity and higher turnover. Direct ICs appear to be more cost-effective than the AOR ICs due to the increased transaction costs and higher turnover associated with AOR contracting.

While the specific scenarios and model parameters created in this paper are firmly based in a single occupation (IT help desk work), the overall framework of breaking down and examining the different sources of cost and value provides a contribution to both research and practice in contingent labor more broadly. For example, we can see how the net value created by the forms of contingent work is quite different. Permanent employees are paid more but they are also more likely to have higher levels of task performance and engage in more OCBs in comparison to workers who are paid less and who turn over more rapidly. However, our scenarios clearly demonstrate that this relationship between service costs and service value can also be negative, such as when high turnover costs lead to lower task performance because new workers must be trained or customer relationships are strained. The costs incurred by IC-Ds, IC-ARs, and TAWs vary only moderately, with service costs for IC-ARs $8,954 higher than for TAWs at average salary, and costs for IC-Ds only $4,130 higher than for TAWs. However, with average levels of OCBs and task performance, the basic difference in net value is more substantial with TAWs showing negative net value under these assumptions (−$5,561) and both types of ICs showing net value exceeding $20,000. When we model expected variation in levels of OCBs and performance, we see even greater variation in net value. These differences underscore the importance for both research and practice of considering each employment status individually rather than using "contingent worker" as a homogenous category (Connelly & Gallagher, 2004). Although recent research has shown that ICs and TAWs have significantly different levels of job satisfaction, organizational commitment, and OCBs (Ashford et al., 2007), this research is the first to model the financial consequences of these differences. Ultimately, our framework is flexible and can be adapted to different occupations in which fewer or different types of contingent workers are represented.

The strong impact of performance on net value to the firm extends the utility analysis results presented by Griffith, Witt, Polk, Robinson, Thacker, and Callison (2011). They demonstrated that a high-performing computer programmer has a net value of

nearly $22,000 more than he or she is paid, while an underperforming programmer has a negative net value of approximately $20,000. Much evidence in the literature suggests that TAWs have lower performance than permanent employees or ICs (Nollen & Axel, 1996; Stratman et al., 2004). To the extent that contingent workers perform less effectively than permanent employees due to lower skills, lower motivation, or simply lack of experience, our results reinforce that they will also bring substantially less value to the company. Our framework suggests that it is only when we can expect contingent workers to perform as or more effectively than permanent employees that they are more cost-effective. We may expect this type of over performance with ICs who bring unique skills to the client organization (Marler et al., 2002), or with TAWs hoping to be hired into permanent positions.

Strategic Perspectives on Contingent Labor

Our scenario analysis helped to illustrate the impact of different strategies for using contingent workers on their cost-effectiveness. For example, using a core competency strategy (Cappelli & Neumark, 2004; Matusik & Hill, 1998) increased service costs among permanent workers because of higher salaries, and among TAWs due to higher turnover. Temp-to-perm staffing will positively influence the value accrued with TAWs as they are more likely to perform OCBs when there is the possibility of being converted to a permanent position. Thus, even when considering the use of contingent workers, we still find that organizational strategies that emphasize investments in both permanent employees and contingent workers (e.g., Temp-to-PermCo, NormalCo) resulted in greater value and lower costs than did strategies that lead to high turnover (e.g., MegaCo).

It is interesting to note that the scenario representing the most extensive use of TAWs, CoreCompetencyCo, had among the lowest net value even though the scenario was designed to be consistent with the recommendations of the strategic HR literature. Lepak and Snell (1999) suggest that when human capital is easily available on the open market and of little strategic value, it should be contracted from the outside. For a retail organization, help desk services are of limited strategic value, and these services are readily available. Regardless, these TAWs had a negative net value in our simulation, suggesting that organizations might be better off outsourcing an ongoing function such as help desk services rather than staffing it internally with TAWs. A fully outsourced relationship would allow the client to contract for services that would be provided by permanent employees of that service provider, and thus not incur the costs associated with TAWs.

From our scenario comparison, we also observe that the superficially similar Temp-to-PermCo and BlendedCo strategies result in markedly different outcomes. In both organizations, there are relatively few contingent workers. However, in Temp-to-PermCo, contingent workers are seen as future permanent colleagues while in BlendedCo, contingent workers are viewed as potential competition for a dwindling number of permanent jobs. These perceptions have significant effects on worker performance, with financial consequences at the organizational level. This finding suggests that organizations need to ensure that contingent workers are viewed positively within the workplace. Possible ways to achieve this are to establish a track record of using contingent workers only for entry-level positions and then promoting from within, avoiding internal messaging to permanent employees that implies job insecurity, and involving permanent employees in internal mentorship and socialization processes.

The differences that we observe between MegaCo and NormalCo, while based on simulated data, reflect the effects of common business strategies. MegaCo's focus on low wages and benefits for permanent and contingent workers is, in many ways, analogous to the business strategy of firms such as Walmart. The consequences of this HR strategy are clear. Walmart's turnover rate, at 44 percent, is significantly higher than that of a primary competitor, Costco, which has turnover of only 17 percent overall, and just 6 percent in an employee's first year (Cascio, 2006a, 2006b). Costco's hourly labor rates are more than 40 percent higher than those at Sam's Club but when worker productivity is considered, Costco's net labor costs (5.55 percent) are lower than those at Sam's Club (6.25 percent; Cascio, 2006a: 35). While it may be possible to reduce the direct costs of temporary workers to the point where it seems that an organization could achieve positive net value, it is critical to consider the effect that lower costs have on performance and turnover.

Future Research Directions and Limitations

We see a number of future research directions for further exploration of our framework and simulation,

Author's voice:
Was there anything that surprised you about the findings? If so, what?

Author's voice:
Would there be any changes to your parameters in future research?

and to address limitations inherent in our approach. First, it would be useful to test the framework with organizational data. Even though the parameters in our model are based on reliable sources such as ASTD (now the Association for Talent Development), salary.com, and the Bureau of Labor Statistics, it is important to see how the model holds up under real world conditions. Collecting employee data would enable us to measure actual behaviors (e.g., OCBs, performance) as well as the underlying attitudes. For example, we could measure contingent and permanent employees' expectations or psychological contracts as well as how well the organization is meeting their needs. Empirical data would also enable us to distinguish between the added value of different types of OCBs (e.g., interpersonal helping vs. civic virtue), which we were unable to do in this paper. Although there is evidence that contingent workers do engage in OCBs, it would be particularly interesting to examine whether different types of contingent workers engage in different types of OCBs. For example, ICs may be reluctant to engage in too much interpersonal helping if it may mean that a permanent employee learns enough so that the services of the IC are no longer needed. As part of this analysis, it would be useful to uncover if and whether some of OCBs are generally more valuable than others.

It would also be useful for future research to consider the financial impact of some of the organizational-level advantages of using contingent workers instead of permanent employees. For example, Barley and Kunda (2006) describe how some managers prefer to hire contingent workers because doing so avoids increasing departmental "head-count," thereby making the unit appear to be more efficient in the eyes of top management or potential investors. In this situation, there are additional external benefits that could be added to the overall model. It might be worth taking a short-term loss for using TAWs if there is a longer term goal that can be met with this staffing model.

One of the assumptions in our analysis is that permanent employees and contingent workers who turn over are replaced. Our model provides a baseline analysis of the routine day-to-day employment costs; it uses one occupation, help desk support worker that has more stable organizational requirements than occupations related to banking, resource extraction (e.g., mining, oil & gas, forestry), retail sales, or other cyclical or seasonal industries. However, many organizations say that they hire contingent workers because of the increased flexibility to terminate workers, avoiding expensive termination costs such as severance packages and saving money when the position is not needed for a period of time (Bidwell, 2009).

In the IT help desk context, for example, an organization may hire additional staff specifically for the duration of a particular initiative, such as the introduction of a software upgrade, but then reduce staffing levels when most employees are comfortable using the new software. Instead of always having the 33 employees assumed to be staffing the help desk in our scenarios, an organization could staff up to 36 or 40 during periods of heavy demand. When reducing staffing levels to 33, turnover costs would be even less than the 30 percent suggested in our analysis. This kind of turnover would involve some disruption and knowledge management concerns during the departure (e.g., trying to make sure any organization-specific knowledge is somehow retained when the temporary workers leave) but there would be no replacement costs. In the United States, the principle of employment at will generally reduce the costs of downsizing unless employees have specific contractual protections. In other regions such as Europe, however, this type of flexibility is even more important because it can be extremely difficult to terminate workers who have long-term contracts (Mitlacher, 2006).[2]

We did not explicitly account for staffing flexibility in our model, but the model could be used to examine the monetary effects of increased flexibility. For example, an organization could estimate the expected costs of downsizing and discount that by the probability of needing to downsize within a defined period of time.[3] These costs may be significant; as Bidwell (2009) notes in his analysis of a bank's use of contractors, severance benefits can amount to 60–70 percent of a permanent employee's annual cost of employment under certain circumstances, although the payment of severance benefits varies widely by job type and industry. Those projected costs for downsizing would be added to the service costs of the permanent workers. There could also be decreases in service value for permanent employees as they anticipate potential downsizing or adjust emotionally after layoffs. It would be interesting to directly compare and attempt to quantify the impact on performance of the perceived threats of layoffs compared to perceived threats from contingent labor. Working alongside a temporary worker might be perceived as more threatening to the permanent employee's job than vague threats of a layoff.

Another approach to estimating the value of flexibility would be to examine it more generally using the concept of inventory optimization as described in the supply chain literature (Boudreau, 2010). It is well accepted that there are costs to carrying excess inventory. In the talent management context, this

[2] Estimating the probability and costs of layoffs for this model could not be included in our model because these estimates would have had weak empirical justifications.

[3] We thank an anonymous reviewer for this suggestion.

would mean that employees are sitting idle, resulting in an extremely low net value where service costs are normal but service value is negligible. Carrying an excess "inventory" of employees could be important if that employee has critical and unique skills that will be needed at some point, similar to maintaining "safety stocks" of material resources. However, if the employee has a noncritical set of skills that can be replaced on the contingent labor market, our model suggests it would make more sense to utilize a temporary employee to fill the position as needed rather than regularly carrying the excess capacity.

One unique contribution of this paper is that it examines the AOR model of contingent work, which has received little attention in the research literature to date. One reason that client firms use the AOR model is to reduce the risk of worker misclassification and the subsequent fines or lawsuits associated with misclassification as an IC when the worker might better fit the legal definition of employee. While we found that ICs in the AOR model were slightly more expensive in the short term, the value of avoiding fines and a lawsuit should be considered. In CoreCompetencyCo, the scenario with the largest number of ICs, we saw a cost differential of $32,795 for engaging seven direct ICs compared to seven ICs through an AOR. For small-to-medium-sized firms, the median fines and penalties in employment law cases that go to court are approximately $200,000, with many misclassification lawsuits resulting in awards more than $1 million (Hiscox, 2015; Reibstein, 2010). These estimates do not include the internal costs of defending the lawsuit (e.g., lost productivity because of time allocated to preparing for court, legal fees), which can exceed the cost of the fines and penalties. The small additional cost for the AOR serves as an insurance policy against the million-dollar payout. Further, if the client firm has enough power to shift payment of fees onto the IC, then the service costs may be further reduced. We assumed in our analysis that an IC would increase fees charged to the client to cover the 5 percent AOR fee, but this may not always be the case, especially if the IC has trouble finding clients. However, the specific impact of the AOR model on IC commitment, engagement, and performance should be studied in more detail.

We chose one focal job, IT help desk support worker, for the purposes of our analyses. Although focusing on a single occupation allowed us to develop a relatively parsimonious framework of costs and benefits, future research should examine the extent to which our framework and conclusions are generalizable to other occupations and organizational settings. We anticipate several adjustments that would need to be made to the framework in other settings. First, estimates of costs could change. For example, in high-demand occupations (e.g., statisticians, specialized truck drivers) it may be particularly difficult to recruit qualified candidates, which may lead to higher transaction costs or higher benefits compared to the national average. Training costs also vary by occupation, especially where regulations demand attention to safety standards (e.g., utilities). Similarly, we should note that in unionized environments (e.g., manufacturing), the transaction costs and employment benefit costs for permanent workers may be higher, which could affect the outcomes of our analyses. Second, some types of contingent labor may need to be deleted from the model. Many union contracts specifically limit the use of contingent workers, or could specify that only TAWs can be used and only for very limited periods of time. Third, other parameters may need to be added to better reflect the true cost or the true value of workers in certain occupations. In a manufacturing setting, for example, safety incidents could be added as another indicator of performance. Fourth, our use of a white-collar occupation where workers enjoy a certain degree of autonomy and discretion may mean that there is greater variation in performance than in an occupation where tasks are more mechanized or where there is closer scrutiny (e.g., call centers). More generally, it would also be interesting to see if the overall model is consistent across geographic regions, especially given the regional variations in client expectations and temporary firm HRM practices (Mitlacher, 2006).

An additional research question less directly related to the cost and benefit analysis is how organizations can maximize contingent worker performance without creating a co-employment relationship. This is a paradox of the contingent work relationship, in that the actions that promote more effective task performance and display of OCBs (enhancing satisfaction and social exchange) are also the actions that risk crossing the legal line from contingent worker to employee (Broschak & Davis-Blake, 2006; Fisher et al., 2008). Client firms seek to manage this risk through use of temporary agencies and the AOR and employer of record models, but use of such a triangular employment relationship may create confusion and conflict in employee commitment and engagement. Future research should examine how best to obtain the financial and performance benefits of using contractors while minimizing legal risks.

Although we focused on the prevalent types of contingent workers, ICs and TAWs, other forms of nonstandard work are becoming more common and could be incorporated into a more complex model. "Dependent" contractors, who typically only work for one client (often a former employer: Connelly & Gallagher, 2006) would have lower recruitment costs and may perform higher levels of OCBs, but might also expose the client organization to greater

misclassification risk unless engaged through an AOR or employer of record. Temporary foreign workers or "guest workers," noncitizens who are recruited from abroad for a short-term contract, may have higher recruitment costs but require lower salaries and benefits. Future research should examine the costs and benefits of these types of work arrangements and other new contingent work arrangements as they continue to evolve.

Practical Implications

We believe that HR, procurement, and supply chain managers can take the basic approach we used in this paper and customize the model with historical and current data specific to their organization. This approach offers a powerful tool to make informed, data-driven decisions about the use of contingent workers. Better decisions will give top management confidence to find the optimal matrix of contingent workers (both numbers and types) that balances the trade-off between cost and value. Such an analysis will provide managers the ability to justify to management, shareholders, employees, and other stakeholder such as unions, the specifics about when good human capital management supports, or does not support, contingent work.

As noted above, the ICs (direct and AOR) were the most cost-effective contingent work arrangement, across scenarios, never producing negative net value. In contrast, the TAWs produced positive net value in only one scenario, Temp-to-PermCo, where they were motivated to perform well in order to gain permanent employment. These findings suggest several practical implications for firms. First, where possible, firms that are seeking to hire contingent workers should engage the services of contractors rather than TAWs. Given that the AOR employment arrangement minimizes the potential for misclassification at minimal cost, this contracting arrangement is more advantageous. Second, the performance and OCBs of contingent workers should be monitored. These workers would not be subject to normal performance appraisal procedures, and we recognize that close supervision of ICs can contribute to them being reclassified as employees. However, expected performance levels should be defined in contracts, and the client must be able to check that standards are being maintained in terms of the quality and timeliness of the work, especially because very little training is provided and the recruitment and selection process is minimal. Third, the perceptions of permanent employees about the use of contingent workers are important, and should be measured and managed. If a temp-to-perm program is in place, managers should take care to make permanent employees aware that the presence of contingent workers is not a threat to their job security and that these workers are likely to become their future permanent colleagues.

In conclusion, this study models the costs and benefits of engaging the services of permanent workers, two types of ICs, and TAWs. We suggest that under a standard set of circumstances, ICs have the highest net value and permanent employees provide higher net value than TAWs in spite of the higher direct costs. Lower performance and higher turnover of TAWs mean that, in many situations, this category of contingent workers bears hidden costs that should cause managers to reconsider their use. In many ways, the use of contingent work is an attempt by companies to add value at a lower cost. We encourage researchers and managers to carefully examine all components of both cost and value when comparing different models of work.

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