THE EFFECTS OF A HUMAN RESOURCES INFORMATION TECHNOLOGY INTERVENTION ON BACKGROUND CHECK PROCESSING IN A FINANCIAL INSTITUTION: A PROCESS LEVEL ANALYSIS

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The human resources department of a financial institution implemented a multi-component intervention to replace a paper-based hiring system. Organization-wide impacts included changes in the background check operations. To support changes, training was conducted and procedure manuals distributed. Turn time for background checks decreased, but a combination of factors may be responsible. Other metrics are either inconclusive or suggest a confounding variable, yet quality of work did not suffer was maintained. Desired system use was achieved, accompanied by improvements in time-to-fill, voluntary turnover, and quality of applicants. Considerations for analysis and challenges faced are discussed, along with suggestions for further clarification and improvements.
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Employees are important to the success of a company; it is the employees who perform the work, who create the culture, and are ultimately responsible for production. Thus, the employee selection process is an integral part of any company’s operations. Open positions represent opportunities for growth; the faster an employee is hired, the sooner he or she can contribute to the company’s productivity and profitability. If hiring a candidate takes a great deal of time, the company suffers. The applicant may lose interest, potentially finding employment elsewhere—possibly even with a competitor—and the vacant position remains unproductive until an employee is hired. However, expediting the process and hiring the wrong employee can be devastating to the company; integrity of work can be compromised, culture can be transformed, and the organization’s reputation may be damaged—not to mention the costs related to turnover, which include recruiting and training. Changes that may help a company identify top talent and process applications more quickly without sacrificing the quality of applicants can be a source of a competitive advantage and are highly valued in the business world. For an institution dealing with finances and handling personal information, the hiring process is extremely crucial to identify top candidates with unquestionable backgrounds in volatile market conditions; attempts to improve the process, such as those described herein, warrant scrutiny to determine the areas of impact.
The industry in which this financial institution operates is cyclic in nature, with fluctuating interest rates affecting the demand and supply of certain financial products such as loans (Kaufman, 1998). With higher demand for a product, companies in the industry look to increase staffing in order to handle the anticipated increase in processing work; conversely, with lower demand and subsequent decreases in workload, companies may instate hiring freezes and reduce the workforce through centralization (Fernandez, 2003). It is in the company’s best interest to, in cases of anticipating higher work volumes, find the most capable prospective employees who can learn quickly and begin to produce at optimal levels. With competitors in the industry, companies often do not have the luxury of taking a very deliberate and methodical approach to locating top prospects. Finding the right balance between the speed of filling vacant positions and locating the best overall candidate has proven to be a challenge; however, even though a top candidate may be identified and hired, success is not guaranteed.

A survey of selected companies by Kinsman (2005) showed that 46% of new hires were released within the first year and a half of employment in those positions. The survey, administered to over 5,000 hiring managers, showed that a majority of this turnover was due to an improper fit in the organization: a lack of integrity of character, inability to accept and respond to feedback, or personal characteristics. These failed hirings may cost the business not just costs associated with turnover—with some estimates as high as 150% of the position’s yearly salary—but also the costs of decreased productivity, which can lead to customer dissatisfaction, and consequently lower customer retention. These findings suggest that the process should entail more
than interviewing and checking references, two of the main steps in the process. The hiring process is intended to provide insight into both the skill set and fit of the employee, but some companies appear to make the sacrifice of hasty hiring to implant a warm body into the position, costing them in the long run.

Other studies have shown the positive impact of different pre-screening tests during the hiring process. One organization instituted a written pre-screening test in an attempt to reduce the number of employee dismissals related to stealing, violent outbursts, and drug use while working. Brown, Jones, Terris, and Steffy (1987) utilized a time-series design to investigate the changes in turnover due to the aforementioned counterproductive behaviors that followed an implementation of the Personnel Selection Inventory (PSI), a test that measures attitudes toward dishonest, violent, and substance-abuse behaviors. After an initial three-year baseline observation period, the test was administered to approximately 1600 candidates who fulfilled requirements as specified in the job description, over half of which gained employment with the company. In a comparison of baseline and intervention data, statistical tests showed that turnover due to counterproductive behaviors declined to approximately half of the level prior to the prescreening involving the PSI. Graphical examination of rolling three-month averages supported the argument of the reduced turnover following the use of the written test. Additionally, a reduction in shrinkage (theft) costs was observed, although the shrinkage data only examined the last year before the PSI test was instituted.

Although the previous study involved psychological rather than strictly behavioral methods, it does suggest that process improvement focusing on the hiring process may
be made to achieve desirable results, in both operational and financial terms. Rummler and Brache’s (1995) approach to performance improvement targets three levels of performance: organization, process, and job/performer. Set in a matrix with goals, design, and management practices, nine variables are created that highlight possible areas of change. Governed by the performance needs, these three levels of performance work together in a system; a change in one variable will thus affect the other variables. Though all levels of performance are important, it is perhaps the process level that gets the least attention—even though work processes are vital to an organization. The processes are the means by which organizational goals are achieved. Process improvement efforts first begin with goals for the process, which are determined by larger organizational aims, industry exemplars, and customer specifications. Once goals are in place, current processes are outlined with inefficiencies highlighted, and a future state is designed to direct performance toward the goals. When the new process is in place, it must then be managed in various ways: organizational goals must be considered and approximations toward those goals established; data should be collected and feedback provided on performance; resources must be allocated to enable performance; and interactions between groups involved in the process must be facilitated.

LaFleur, Smalley, and Austin (2005) put Rummler and Brache’s ideas into action in a performance improvement effort in a nuclear cardiology department found to be performing at levels below industry benchmarks. In the study, LaFleur and colleagues created a picture of the company as a Total Performance System (Brethower, as cited in LaFleur et al., 2005) to show the major components that make up the performance
system, and to highlight areas where further research was needed. They used the diagram to guide a series of interviews to first gain an overview of the organization as a whole and its goals, and then to obtain more detailed information about process specifics for the nuclear testing. Initial findings led to the development of questions for the next round of interviews about organizational and process goals, resources used in the process, steps in the process itself, and products of the process. Additional questions involved what types of data are collected and how this data was used to provide feedback, who the customers of the department are, and how the value of the products for the consumer is determined. The authors developed a relationship map to show where the various processes fit into the organization’s operation and show interactions between processes, and then proceeded to analyze the performance of local and national competitor practices. Following these analyses, a process map was developed to visually display how inputs are converted to outputs, and how these inputs and outputs are related to other processes within the company. LaFleur and colleagues then developed a chain of measures for the products of the process focusing on number of outputs, quality, expenses, and timeliness to emphasize performance that affects these specified metrics. A gap analysis was performed to show current processes and the future state of processes; result of this analysis displayed that a change in equipment to a dual-head camera would substantially increase capacity, thus augmenting profits. Recommendations were made to define a mission and operational goals, establish a system for goal-monitoring and feedback on the nuclear testing process, and gradually move toward a balance of focus on quality, quantity, costs, and timeliness, and away from a heavy focus on quality at the expense of other aspects.
This study by LaFleur et al. exemplifies the institution of a performance improvement effort with a focus on a particular process within an organization.

With developments in information technology, process improvement has found a new avenue to capitalize on opportunities for efficiency; for example, information technology was used to improve performance at a valve-manufacturing company (Bartel, Ichniowski, & Shaw, 2007). Preliminary investigation into the company’s industry and performance found that the valve-manufacturing process is a highly automated process in which a machine cuts the valve according to specifications received from the machine’s control box, and that two keys to success are emphasized: the ability to complete orders quickly, and the ability to develop new products and fill custom orders. Developments in programming have automated setup, made it easier to program the control boxes, and enabled test runs to be performed more quickly, resulting in a decrease in overall setup time. Advances in the machines themselves eliminate the need to reconfigure machines in order to make various cuts that previously required additional adjustments, which results in reduced run time for the valves. Software improvements have facilitated transitions between different programs for the control boxes and helped the machines to cut more precisely. With the purchase of these newer machines and utilization of some of the advances in information technology, operators in the plant have reduced manual setup labor and been more able to handle customized valve orders. The number of machines used to produce the various types of valves showed a 10% decrease with the use of the new machine with more advanced technology. More importantly, the advanced technology has resulted in a 9.4% reduction in setup time, and a 6.2% reduction in run time in the valve-production
process. This study provides another example of how the company’s strategy to remain competitive, by focusing on filling orders and customizing valves, resulted in process changes, and the way people performed their jobs.

Rummler and Brache’s (1995) approach to improving performance is not targeted specifically at any area of operations. Buckley, Minette, Joy, and Michaels (2004) applied process improvement strategies in the HR division of an organization. Buckley and colleagues examined effects of a technological intervention on the hiring process of a company that publishes educational materials. The efforts were focused on the 14 test-scoring locations responsible for grading approximately 80 million tests per year; employees at these centers are contract workers who receive two days of training, with three-fourths working full-time hours and the other quarter working part-time. Changes were made in the screening process that automated the application process, allowing applicants to complete applications and screening questions at their convenience, as well as set up interviews if they were qualified, as determined by their answers to the screening questions designed to test fitness for positions. Hiring managers were automatically sent candidate information and interview schedules at designated times, which reduced the managers’ necessity to place calls to set up interviews; the automated process also produced information that helped hiring managers reduce time spent in interviews. The company reported reductions in turnover by 35%, while spending only 65% of previous hiring expenses and slightly increasing the number of new hires. Reductions in time to fill and reductions in the temporary workforce were also reported, and an overall return on investment was calculated. By comparing savings resulting from reduced turnover, staffing, and process improvements to
expenses to implement the intervention, a 6:1 return on investment was calculated. This estimate is conservative, as the figure for turnover savings were projected to be actually higher.

Further delving into the realm of financial impacts, Snell (2007) discussed four areas on which to focus improvement efforts to reduce administrative costs. She suggests that organizations wishing to cut down on HR expenses should target a reduction in the time to hire, as industry benchmarks for costs associated with the hiring process estimate these expenses at about 15% of a new hire’s annual salary. Snell also states that turnover should be targeted, as each vacancy can cost the organization thousands of dollars in productivity opportunities lost, and that managers spend approximately one-eighth of their time dealing with employees performing at sub-par levels. She advises that legal implications of hiring practices should be monitored to avoid potential legal actions, and that costs for temporary employees should be minimized. Snell cites a case study in which an insurance company looked to expand the use of technology in an HR division responsible for approximately 29,000 employees. The intervention facilitated tracking of metrics and collaboration between recruitment and various HR functions by automating the requisition approval process. The intervention also facilitated HR’s transition to go paperless, and helped centralize the source of job postings. In a discussion of financial effects of HR interventions, Snell reported the company was able to save approximately $7 million on marketing and agency fees, and recruiters were able to increase annual numbers of new hires by 42%.

With training and technology aiming to improve the overall hiring process, there are various portions of the process that may be affected. One significant part of the
hiring process in more and more companies is the conducting of background checks. There are numerous reasons for reviewing an applicant’s history, as Lam and Kleiner (2001) discuss; like many others before them, they discuss the general activities and costs involved in the hiring process to portray the impact on the company. Losey (as cited in Lam and Kleiner, 2001) states that termination costs can range between three and six times higher than the cost per hire, which was estimated to be over $9,000. Lam and Kleiner proceed to review several instances in which further investigation into applicants’ criminal histories would have helped to flag certain applicants who were hired but engaged in behavior detrimental to the company, resulting in legal consequences. Possible criminal histories, as well as increased application and resume falsification, warrant that inquiries into applicant histories should be an integral part of the hiring process, but there are also challenges to this type of investigation. Applicants protecting privacy (including a degree of legal protection from the government), the possibility of discrimination claims in response to actions based on findings, and the lack of centralized background information are all obstacles encountered when conducting background investigations. Employers should thus run searches on all applicants rather than singling out one characteristic of applicants, examine criminal findings in relation to the position for which the applicant applies, follow a documented recruitment process, and remain up-to-date with federal and state legal policies for the use of criminal records in making hiring decisions.

Wood (1995) adds to the legal arguments of Lam and Kleiner, particularly in circumstances in which employees will be working with large amounts of computerized information; in a society where increasing numbers of people are becoming computer
literate, it is inevitable that the risk for computer-related crimes also increases. He echoes previous sentiments about the hiring carefully, as the best way to reduce costs associated with employees who cause trouble is to prevent them from being employed with the company. Employment liability is primarily governed by two doctrines: 1) respondent superior, which states that an employee who breaks a law acts as an agent of the employer, who is then legally responsible; and 2) negligent hiring, which states that an employer is held liable for harmful behavior of an employee hired after a lack of due diligence in the hiring process.

While there has been practical, theoretical, and legal discussion about conducting background checks, studies targeting and measuring improvements specifically to the background check process have not been well-documented. One organization reported that the process of reviewing the histories of prospective foreign employees who were attempting to obtain visas was reduced from an average of over two months to an average of two weeks within approximately one year ("American express?" 2005). Another organization, after receiving criticism for slow processing, improved its background check processing to more than double capacity in ten months, with a downside of increased costs for clients ("CRB steps up its workload," 2003). However, in neither case was the intervention disclosed. The current study aims to detail the impact of hiring process changes involving information technology on the performance of employees involved in one part of the process, in addition to system-wide effects.
Method

Setting

This study was conducted in the Background Check department that is a part of the Human Resources operations for a financial institution with diversified interests. The primary involvements of the institution include banking, mortgages, loan servicing, and insurance. Various subdivisions of Human Resources are headquartered at a single facility that acts as the center of Human Resources operations for employees distributed throughout the country. Data used in the study was collected from January 2006 to September 2007.

The team operates in a large workspace shared with other Human Resources sections; in the workspace, cubicles are arranged in rows that are two cubicles wide by nine cubicles long. The background check team is stationed on one of the outside rows. To one side of the row is another row of cubicles; to the other side of the row is a walkway and a wall with a table, storage cabinets, and access to a supply/mail room, additional storage, or other areas of the secure building. A network printer is located in one of the end cubicles, and another printer that also operates as a fax machine is located on a table along the wall. Both of these printers are located closer to one end of the row but are used by all members of the background check team for a variety of printing needs. A second standalone fax machine is on a wall near the supervisor’s cubicle, which is located on the end of the row near the printers.

One Assistant Vice-President oversees the function of the background check department, with a supervisor for the team working more directly with the processors.
Over the course of the study, between six to seventeen employees worked in the background check department. Some employees contracted through employment agencies, some originally contracted through agencies and became full-time employees, and others had been a part of the department since the operations migrated there in November 2004. Graduation from high school or equivalent is a prerequisite for employment with the company; thus, all processors have high school diplomas, with some having college degrees as well.

Primary duties of the background check team include monitoring and scoring background checks for both full-time and contract employees, sending rejections letters to denied applicants, providing assistance on background check-related issue for inquiries received via phone call or self-service case creation, and preparing applications and background check results for review by management as needed. Training during baseline is essentially performed the same way as it was during intervention, save the training sessions that were a part of the intervention. A new hire sits with a senior member of the team and observes the senior member retrieve background reports online using information from a list provided by the team supervisor. The senior member assigns points to any violations or records with different information than that appearing on the application according to the category under which the record falls as determined by management and the Legal department; then the senior member places a hard copy (baseline) or soft copy (intervention) of the scored results in the applicant’s folder. During this time, the new hire may also ask any questions about procedures or interpretation of guidelines. There is no set time period of observation for new hires.
When the new hire states he or she is comfortable attempting to assign points, the senior member and the new hire then switch roles; the new hire proceeds through the scoring process while the senior member observes to ensure correct processing. Once the new hire feels comfortable with scoring, the senior member returns to scoring as well; however, if a new hire completes scoring all sections, and the applicant is cleared, he or she is required to contact a senior member or the supervisor to double-check the scoring before changing the status until the supervisor approves the new hire to score background checks without being reviewed. This period of observation typically takes several sessions, again with no distinct time limits.

Each processor is provided with a computer in the cubicle and printed guidelines for scoring background check results, with online access to procedure guides and other instructional documents; envelopes, paper, and other miscellaneous supplies may be obtained in the supply room or storage cabinets. Workers are distributed between two eight-hour working shifts with hour-long lunches and two 15-minute breaks scheduled by a coordinator. Work is completed Monday through Friday, closing on Federal holidays and occasionally working on Saturdays at management’s discretion if workload necessitates.

Procedure

Baseline process. In this process, recruiters or hiring managers could browse through applicant résumés in an electronic database; upon finding an applicant of interest, the recruiter sent the candidate a paper application. Once the candidate returned the application, the recruiter decided whether to proceed with a background check request. To initiate a background check, the recruiter faxed a request form, the
application, the résumé, and signed authorizations to the background check processors, who reviewed the requests for completion and legibility. If incomplete or illegible, a processor contacted the recruiter or hiring manager to obtain any missing information and ask him or her to resubmit the corrected request. If the request was legible and complete, a processor reviewed the employment and criminal history sections to determine if a possible conflict of interest existed, requiring approval from recruitment management to proceed. If a decision was made not to proceed, the recruiter could request an exception from management for permission to run a background check. If further review by management was not needed, or if management decided to proceed, the complete background check request was faxed to the vendor. The processor was also responsible for creating the applicant record in the online human capital management (HCM) system by entering applicant and position information and selecting a status to indicate the beginning of background check processing.

Upon receiving the faxed request, the vendor reviewed the application to ensure all necessary information was provided and contacted the background check processor or applicant if any information was not included. Then the vendor conducted the background check in seven different areas of interest according to a specific, previously negotiated protocol that outlines desired follow-up to non-responsive parties. The vendor posted a background check report online with the findings once a section of the report was completed.

Each processor was assigned a list of background check requests to work on based on a query that had been run to determine the incomplete background check requests in the HCM system. Using these lists, the processor retrieved the candidate’s
report from the vendor website. If there were any violations or points of concern that appeared on the report once a section was completed, the background check processor printed the section and physically recorded the score on the printout based on a scoring matrix developed by management and the Legal department. The scoring matrix assigns different values to certain discrepancies that may appear on the background report. The printout was stapled to the paper application and placed with other applications pending completion of background checks. The processor also entered applicant background check results into the candidate record on the HCM system.

Once all sections of the background check were completed, and points were assessed, a hiring decision was made based on the cumulative point level. An applicant’s background check was cleared, sent for review, or rejected outright. Background checks that were to be sent for review or rejected were subjected to audit by a senior team member for scoring verification; the last processor to score the background check printed a copy of the record and physically delivered it to the auditor. If an applicant was rejected, the recruiter could request an exception to policy. Those background checks sent for review or requesting an exception required additional preparation to assemble the materials for review prior to submission through electronic means (e-mail or electronic case management systems) to those making the decision. A printout with the final disposition in the HCM system (cleared or rejected) was stapled to the candidate’s application. The paper applications were stored on-site for six months, and then off-site for another three years. The final decision was also updated in the HCM system. See Table 1 for a general outline of steps.
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1)</td>
<td>Recruiter faxes request</td>
</tr>
<tr>
<td>2)</td>
<td>Processor reviews request</td>
</tr>
<tr>
<td>3)</td>
<td>If missing information, contact recruiter</td>
</tr>
<tr>
<td>4)</td>
<td>If employment shows possible conflict of interest, send for manager review</td>
</tr>
<tr>
<td>5)</td>
<td>Fax completed request to vendor</td>
</tr>
<tr>
<td>6)</td>
<td>Create page in HCM system</td>
</tr>
<tr>
<td>7)</td>
<td>Vendor conducts check and posts completed sections of report online</td>
</tr>
<tr>
<td>8)</td>
<td>Processor retrieves report</td>
</tr>
<tr>
<td>9)</td>
<td>Processor prints completed section(s) of report with violations</td>
</tr>
<tr>
<td>10)</td>
<td>Processor records score and attaches to application</td>
</tr>
<tr>
<td>11)</td>
<td>Once background check report is completed, calculate score</td>
</tr>
<tr>
<td>12)</td>
<td>Take appropriate action based on score</td>
</tr>
<tr>
<td>13)</td>
<td>If cleared, update system</td>
</tr>
<tr>
<td>14)</td>
<td>If needing manager review, submit to auditor; auditor reviews, prepares for manager review, and updates system</td>
</tr>
<tr>
<td>15)</td>
<td>If rejected, submit to auditor; auditor reviews and updates system</td>
</tr>
<tr>
<td>16)</td>
<td>Staple final decision printout to application and file</td>
</tr>
<tr>
<td>17)</td>
<td>If exception is requested following denial, prepare appeal for manager review and update system</td>
</tr>
</tbody>
</table>
**Intervention.** The primary component of the intervention was a new applicant management software system designed to consolidate applicant information and enable tracking of candidates through the hiring process. Features of the system include electronic application and authorization forms with the capacity for storage, as well as automated background check requesting and integrations with the HCM system that create applicant records, previously a manual task for processors.

Another part of the intervention involved training sessions for the background check processors on process changes as a result of the new system. The training sessions took place in a training room apart from the typical work environment and involved distribution of procedure manuals for the process changes; the trainer then modeled performance using fictitious data and then allowed the trainees to use fictitious data of their own to navigate through an example of the process. The trainer remained in the room to troubleshoot or answer any questions that might arise during the processors’ trial runs. The training sessions lasted approximately three hours, and the processors were allowed to keep the manuals as job aids, which contained screenshots from the process. At the end of the training sessions, processors were given a written quiz to assess learning; feedback on quiz scores was given, but mastery levels were not established.

Additionally, an electronic template was created to replace hard copies of background check scoring; any records that warranted points on the applicant’s report were copied from the report and pasted into the electronic file. These files allowed for online storage in electronic folders that processors created for applicants; the folders also contained any incoming or outgoing written correspondence with the applicant,
including contents of denial mailings, or accompanying materials for background checks to be reviewed by management.

The intervention was implemented on the first Monday in November of 2006; hence, data for November includes three business days of performance data from the previous process. However, separating the data was not feasible using the data given, so for purposes of presentation, the intervention is shown to begin with November data.

**New process.** In the post-implementation process, if a recruiter or hiring manager located a candidate of interest, he or she had the applicant fill out an online application; the application was stored in the talent management system. If the interest was substantial, the recruiter sent the applicant a link to the authorization forms, which the applicant could electronically sign. When the applicant completed the authorization forms, the recruiter requested a background check through the system, without manually sending a paper request to the background check team; the system was configured so that the background check cannot be requested until the application and necessary electronic signatures have been completed. Once the recruiter initiated the background check electronically, scheduled hourly integrations occurred to send information from the talent acquisition system to the HCM system, and then from the HCM system to the background check vendor. When the applicant information was sent to the HCM system in the integration, the applicant records were automatically created. If the application or authorization forms were incomplete, an error message was sent to the recruiter, and the request was not sent to the vendor; the HCM system record was still created, however.
The processor received a list of applicants and retrieved the background check report online, as in the previous process; if the vendor completed a portion of the background check report, the processor copied and pasted the section into a spreadsheet, assigned and recorded points in the spreadsheet according to the scoring matrix, and saved the file in the candidate’s electronic folder. Once the background check was completed, the processors followed the same steps as before, with exception requests and manager-reviewed applicants being internally audited for accuracy. However, the final decision only was updated in the HCM system; as there was no paper application, there was also no need for a printout to be stapled. Refer to Table 2 for a list of steps.

With such a large process change, it is important to know whether changes to variables which could affect employee behavior were made in conjunction with the process changes. Gilbert’s (1978/1996) Behavior Engineering Model suggested that antecedents such as goals, stated expectations for performance, feedback, consequences and training were the most important variables to consider. Unfortunately, it was difficult in this study to obtain detailed information about those variables. Call handling, defined as answering inquiries from people calling with questions about background check status, exception requests, and other questions, reportedly is the only metric for which expectations are conveyed in writing and regularly-scheduled feedback is provided. It is also anecdotally reported that some expectations, goals, and feedback were conveyed verbally, mainly regarding number of requests processed, but no consistent schedule for providing such information could be identified. Much of the information was more relevant in the short-term, rather than a
Table 2

Post-Intervention Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Recruiter initiates request through system</td>
</tr>
<tr>
<td>2)</td>
<td>Integration creates page in HCM system and sends electronic information to vendor</td>
</tr>
<tr>
<td>3)</td>
<td>If employment shows possible conflict of interest, systems sends notification e-mail</td>
</tr>
<tr>
<td>4)</td>
<td>Processor retrieves report</td>
</tr>
<tr>
<td>5)</td>
<td>Processor copies section(s) with violations into spreadsheet</td>
</tr>
<tr>
<td>6)</td>
<td>Processor records score in spreadsheet</td>
</tr>
<tr>
<td>7)</td>
<td>Processor creates electronic file to store spreadsheet</td>
</tr>
<tr>
<td>8)</td>
<td>Once background check report is completed, calculate score</td>
</tr>
<tr>
<td>9)</td>
<td>Take appropriate action based on score</td>
</tr>
<tr>
<td>10)</td>
<td>If cleared, update system</td>
</tr>
<tr>
<td>11)</td>
<td>If needing manager review, submit to auditor; auditor reviews, prepares for manager review, and updates system</td>
</tr>
<tr>
<td>12)</td>
<td>If rejected, submit to auditor; auditor reviews and updates system</td>
</tr>
<tr>
<td>13)</td>
<td>If exception is requested following denial, prepare appeal for manager review and update system</td>
</tr>
</tbody>
</table>

focus on the larger goals, and how the processors’ performance affected performance of others within the hiring process. Feedback was also sent in the form of electronic mail, going to the team members and HR executives when sent, but again, no specific schedule was identified. The only information received regarding consequences
involved incentives and recognition for excellent performance on cost-cutting initiatives, but none were clearly identified for everyday processing.

Along with the intervention came certain expectations; one of the main goals of the intervention was to help the hiring process go paperless, reducing costs for paper, and more significantly, off-site storage. The intervention, as a whole, was intended to provide automation to the hiring process and allow for easier collaboration and candidate tracking among users, and to facilitate the search for candidates in the system. Expected changes in the number of full-time equivalents were analyzed; the intervention was expected to reduce the overall number of employees involved in the hiring process by two, and in the background check department specifically by one, assuming all else held constant.

Measures

The dependent variables affected by the intervention can be grouped into three main categories: productivity measures, quality measures, and systems effects. If the intervention has been effective, the background check processing would become faster and more efficient. Productivity measures such as turn time and number processed would show improvements, being able to process more in the same amount of time, and open positions would be closer to being filled. Quality measures such as audit variance would possibly improve, but at the very least, would show no effect. System effects such as time to fill and voluntary turnover would also show improvements, with quality improving or remaining at pre-intervention levels. Time to fill would be reduced, bringing on candidates more quickly, and the candidates found potentially could be of
better quality if the intervention improves the recruiters’ ability to locate exceptional candidates in the system.

Results

Pre-Analysis Considerations

Personnel needs of the background check team are determined by both current and anticipated volumes of background check requests. As such, the number of employees often varies from one month-end to another with employees hired or released; additionally, with vacation and sick days, not all employees were present on every workday. Detailed information regarding the number of employees present on each workday for the period would provide for the best calculation of the true effect on the background check department processes; however, due to confidentiality laws, only month-end data was obtained.

Using only month-end data may lead to a misrepresentation in determining the average number of requests completed in a month by each employee; using this figure assumes that the new hires come onboard at the same time and are proficient in processing requests at the start of employment. Thus, the month-end number of employees does not account for the learning curves of new employees, nor does it take into account that employees may start at different times of the month. When an employee is hired, it may take a new hire two to three weeks to go through on-the-job training sufficient to familiarize him or her with the processing guidelines. Additionally, as part of the training involves observing experienced team members process background check requests and then having the senior member observe the new hire,
those senior team members’ rates of processing may be slowed to allow more time for observation of new hire performance and answering of inquiries from the new hires.

When the workforce was reduced, reductions may not always have occurred on the first or last working day during the month. Also, when multiple employees were released during a month, they may or may not have been released on the same day. Because the timings of the layoffs cannot be determined from the end-of-month data, issues similar to dealing with new hires are encountered.

To accommodate for the fact that timings of these personnel changes were not captured in the month-end data, an average number is calculated; to obtain the prorated number of employees, the difference between the previous month-end personnel and the current month-end personnel was divided by the number of working days in the month to obtain a daily rate of change in the number of employees. The first day of the month was calculated by taking the previous month-end number of employees and adding the daily rate change, and for each working day, the daily rate change was added for each working day. Once the prorated number or employees for each day was calculated, an average number of employees per day over the span of the month was calculated using the prorated figures.

Such a calculation assumes linear contributions of each employee when the rate of learning may not best be represented as such. While not ideal for capturing the contributions of employees, this calculation does take into consideration the fact that a new hire, or a senior employee training a new hire, may not be able to complete the work that a dedicated employee might complete, but work is still being completed.
However, it also assumes that all employees are present and does not directly account for employee absences on a given day due to sickness or vacation.

Data provided by the company is discussed in terms of background check requests “completed” and “closed;” though related, they are not equivalent. “Completed” refers to requests in which the background check is either rejected or cleared. “Closed” refers to requests in which the background check is rejected, cleared, or cancelled. Completed background check requests are included in references to “closed” background check requests, but a closed background check is not necessarily completed. Examination of the findings should be made with this distinction in mind, as both are referenced in the results.

*Average Turn Time*

One of the key performance indicators of the background check team is average time to turn, or the average time that elapses from when the recruiter submits the request to the time when the status is changed to approved or rejected. The quicker a background check request is completed, the quicker a position can be filled, and the quicker a new hire can contribute to productivity and the company’s bottom line. Figure 1 shows the Average Turn Time for background check requests plotted with the number of background checks completed. The data during baseline show variability, ranging from an average of 6.7 days to 8.6 days, but overall, the trend is flat. The beginning of baseline also shows that as the number of background check requests increased, the average turn time increased as well; as the number of requests completed varied but generally decreased over the next few months, the average turn time varied.
Figure 1. Average turn time of background check requests and number of background checks completed.

Post-implementation, turn time ranges from 5.8 to 7.7 days. A downward trend is evident in the first four months. Over the last half of the implementation phase, the turn time stabilizes to a level below baseline, indicating improvement. The average turn time for the last six months of baseline is 7.4, while the average turn time for the last six months of intervention is 6.3. After November 2006, the average turn time has stayed below seven days, in comparison to only two months below seven days in baseline. Even with the higher numbers of background check requests completed evident in the spring and early summer of 2007, the background check processors were able to maintain the reduced average turn time for requests. It should be noted, however, that the number of processors did vary over the span.
Figure 2. Average turn time of background check requests, number of completed requests, and average number of processors.

Figure 2 shows the average turn time, number of requests completed, and the average number of workers over the same time span. In baseline, the average number of workers ranges from 7 to 17, while intervention numbers range from 7 to 15 employees. For the most part, the number of workers follows the same pattern that the number of requests completed follows. It is also interesting to note that even with the changes in personnel and the quantity of requests post-implementation, the average turn time stays relatively consistent.
Turn Time Saved and Requests Sent to Vendor

The Average Turn Time is the time between the recruiter request and the final status change date; the Average Days to Complete by the Human Resources Service Center (HRSC) is the time from submission to the vendor to the final status change date. The intervention automated the submission process, eliminating most of the application reviewing, manual faxing to the background check vendor, and creation of a record in the human capital management system; as a result, we should see a reduction in the difference between the Average Turn Time and the Average Days to Complete.

Figure 3. Average turn time of background check requests versus average days to complete requests.
If these metrics are plotted on the same graph (Figure 3), the gap between the two metrics is the time from the submission of the background check request by the recruiter to the time the request is actually sent to the vendor by the background check processor, hereafter referred to as handling time. During baseline, handling time may be time spent reviewing the application for completion and legibility. Once the process is automated, the handling time is a matter of the scheduled integrations between the talent acquisition system and the human capital management system, and the human capital management system and the background check vendor. The post-implementation data shows a narrowed gap between the two metrics, i.e., a reduction in handling time.

![Figure 4](image-url)  
*Figure 4. Handling time of background check requests as a percent of total turn time.*
Figure 4 shows the handling time as a percent of the total turn time. In baseline, the average time from receipt of the request to the submission to the vendor accounts for anywhere from 7.2% to 17.9% of the Average Turn Time. Variability is evident throughout baseline, but the end of baseline suggests an overall downward trend. Post-intervention, handling time for the first month as a percent of Average Turn Time remains near the lower levels of pre-baseline data; however, the second month shows a reduction in percent of turn time to a level below baseline. The subsequent months (January to September 2007) range from 1.6% to 3.5%, all of which exhibit a reduction in handling time of greater than 50% of the lowest baseline month. With the downward trend in baseline, however, it is difficult to identify how much of this reduction in handling time is due to the intervention rather than another confounding variable.

Background Checks Submitted within Two Days of Recruiter Request

Figure 5 shows the percent of background check requests submitted to the vendor within two days of recruiter request, a metric emphasized by management as an important gauge of the new process. There appears to be an upward trend toward the target level of 90% in baseline until the intervention. The percent of requests submitted within two days of recruiter request ranges from 52.9% in January of 2006 to 93.1%, reached in September 2006.

Post-implementation, 100% of background check requests should be submitted within two days after implementation unless there are integration errors. System downtime may impact this, but this would not likely happen regularly enough to result in a consistently lower level of background check requests submitted within two days. The data for this show that, except for one outlier, most months since the intervention have
lingered in the 60% range for submission of requests within two days of request (59.5%-65.3%, with one month at 78%), averaging 63.7%.

Figure 5. Percent of background check requests submitted within two days of receipt from recruiter.

Percent of Background Checks Open at Month End

Figure 6 shows the total number of background check requests plotted against the percent of background checks open at the end of a month. "Total Background Checks" takes into the account the number of background check requests open at the beginning of the month (not completed from the previous month) plus the number of new background check requests submitted for the month. "Percent Open" is calculated as the number of Total Background Checks minus the Number of Background Checks Cancelled, Rejected, or Approved for the month, divided by the number of Total Background Checks. It is undesirable for background check requests to be open, as the hiring process to fill a vacant position cannot continue with a request remaining open; therefore, fewer background checks open signals an improvement.
Figure 6. Percent of background check requests open at end of month (EOM).

In baseline, the total number of background checks ranges from 2320 in July to 4482 in March, with an initial increasing trend until the high point, and then an overall decreasing trend until the implementation in November. The percent of open background checks at the end of the month ranged from 21% to 30%. After an initial increase in the beginning of the year, the percent of open requests decreased each month from February to May, but began an upward trend until implementation.

Post-implementation, data shows that they were able to reduce the percent of background checks open at month end, even with higher volumes of background checks. The percent of open background checks at the end of the month during intervention thus far has ranged from 12% to 20%, even with a sharp increase in the
number of background check requests; for several months, there was an inverse relationship between the escalating number of background check requests and the declining percentage of background check requests open at the end of the month. In the later months, however, the total number of background check requests has declined, but the percent of open background check requests for the month has stayed below baseline figures.

This apparently significant change should be accompanied by several qualifications. First, as background check request volume was forecasted to increase, additional background check processors were brought in to help with the increased workload. With the new employees onboarding, the on-the-job training of the new hires results in varying rates of productivity for both the new hires and the senior member of the team who assist in the training process. Additionally, the Total Number of Background Checks includes requests that are cancelled. Requests may be either automatically cancelled by the system or manually cancelled by the processor.

Figure 7 shows the percent of background checks cancelled, plotted with the total number of background check requests and the number cancelled. The system automatically cancels background checks if they are not necessary as part of the integration in some cases; in other cases, the Background Check Processor has to manually cancel it in the system. This effect of the intervention may add to the tasks of background check processors; however, canceling background check requests takes only a few keystrokes and mouse clicks to update in the system. It may appear as though more background check requests were submitted that did not need to be submitted post-intervention; however, as one of the aims of the program was to
mandate that all applicants were entered into the applicant management database to consolidate applicant information, initiate background checks and extend offers, this result may have been expected. It shows that prior to the implementation, not all prospective candidates were being entered into the system, but post-implementation, proper processing is more likely.

Figure 7. Total number of background check requests and percentage of cancelled requests.

Quality Measures

Measures previously discussed have primarily focused on the quantity of productivity; various metrics for turn time and amount of processing were examined. However, if processing speed is augmented at the expense of the quality of work performed, a re-examination may be necessary to obtain the proper balance.
Figure 8 is an example of the quality of work done; the graph shows the number of background check requests audited and the percent of background check requests that were scored incorrectly. Auditors routinely selected a sample of background checks scored and review for scoring errors. In cases where variations are found, there may be legal implications if the scoring error effectively changes the outcome of the background check to the point where a hiring decision was made in error.

Figure 8. Number of background check requests audited with variance from initial scoring as percent of total audited.

Background checks are randomly selected from checks approved and rejected to be audited by an internal group from a human resources department separate from the background check team; beginning in January 2007, the standard for auditing was standardized to a sample of 100 background checks. The percent of requests with variance in scores during baseline begins at a high rate but within two months, the percent decreases to a level that hovers in a range nearly two-thirds below the first data
point, with some degree of variability. The post-intervention data shows, after some initial variability, a zero-error rate for the last six months of observation.

It is important to note that changing scoring guidelines may have affected scoring variance; for instance, in an eight-month span from March to October 2007, there were approximately ten recorded changes in scoring policy, meaning there were changes in the scoring guidelines that could positively or negatively affect the number of points that might be assigned to items that might appear on a background check. These changes might affect scoring outcomes, but there is little evidence of those changes making differences in the scoring outcomes of those requests sampled.

Also, it may be argued that the timings of the changes may affect the data; that is, the auditors adjust to the way the processors score. However, the opposite is the case; the background check processors or management may question the way a particular record on a report is scored. The Legal department reviews the issue, and then the processors receive notification of scoring changes from management after management receives word from the Legal department. At that point, background check processors score according to the decision made.

It should also be noted that some scoring guidelines are open to some degree of interpretation, because the records on the background checks do not always appear word-for-word as they do in the scoring guidelines. Some violations could feasibly be classified in more than one category in the guidelines, and therefore be assigned a different number of points; asking a colleague for a second opinion may also yield conflicting results. With different interpretations possibly yielding different point totals,
and those point totals being used to make hiring decisions, an error either way may mean hiring an undesirable applicant or not hiring a desirable applicant.

**Cases**

Also mentioned in a document supporting the implementation is the monitoring of cases created. Cases are created using a customer relationship management software program for most tasks that fall outside the realm of typical request processing, such as requesting an exception to be able to pursue a candidate whose background check was rejected, calls taken from applicants, recruiters, or personnel involved in hiring, possible violations that required additional research, and, post-implementation integration errors.

Figure 9 shows the number of cases closed within one day plotted against the total number of cases. This total number of cases includes all cases open at some point within that month; these cases may have been open and carried over from the previous month, or been created and closed within the month, or created within the month and remained open at the end of the month.

The data shows a general upward trend initially toward the goal of 85% of cases closed within one day, surpassing the goal in May 2006 and staying above the goal for five out of the six months prior to implementation, missing the goal in July by tenths of a percentage point. During baseline, performance levels ascended and lingered at or above the goal level when there were fewer cases presented. Through the first six months after implementation, the percent of cases closed within one day of creation hovers near 90%, which is impressive considering the dramatic increase in the number of cases. This shows a distinctly different pattern than baseline; with the caseload dramatically increasing, the processors still maintain performance near the goal level.
However, in the next five months, there appears to be a slight downward trend overall, with just one month exceeding the goal; despite the downward trend, the average percent of cases closed within one day for that time span is 83.8%.

![Figure 9](image)

**Figure 9.** Total number of cases and percent of cases closed within one day of opening.

**Calls Answered**

Another of the background check team’s primary duties is to answer incoming calls pertaining to background check-related issues, including status of background checks, review and exception status, and general inquiries. Figure 10 shows the percent of calls answered by the background check team and the number of calls received by the background check team per month.
During baseline, the percent of calls answered ranges from 98.85% to 99.35%, with an average of 99.05%; the number of calls received ranges from 893 to 1576, ending with a downward trend. Processors were able to handle the calls at a fairly consistent rate despite fluctuations in the number of calls received. Post-intervention, the percent of calls answered ranges from 96.20% to 99.18%, averaging 98.17%; however, after January 2007, percent of calls answered remains below 99%, and the intervention phase ends on a downward trend. The number of calls coming into the background check team ranges from 579 to 1536, showing an upward trend for the first eight months of intervention and ending with a downward trend over the last three months.

**Figure 10.** Total number of incoming calls and percent of calls answered.
System effects

The background check portion of the hiring process accounts for only one step in the hiring process; the time to fill a requisition for a position depends on more than just a background check. The process begins with the identification of a need and creation of a job requisition for the position and includes selection of potential candidates from the available applications, conducting a background check, interviewing the candidate, negotiating terms, and extending an offer. Any changes in one part of the overall hiring process, however, may cause a ripple effect that alters other portions of the process. Such effects are known as system effects.

Quality of Applicants. Though not directly affected by the background check team’s performance, one factor worth investigating is the quality of the applicants that recruiters select using the system; the quality of applicants can have an impact on the front-end of the background check processing by affecting the workload. If the new applicant management system facilitates the identification of top talent and high producers, it could reduce the number of background checks to process to fill each requisition. Conversely, the more candidates found with background checks that do not meet standards, or the more candidates that leave positions because they do not fit the position well, the more background checks need to be run to find suitable candidates for the position—thus increasing the amount of work for the background check processors for each requisition filled. Or if a substantial number of background checks are submitted to management to make a final decision, the processor must wait to receive the decision from management and update the system accordingly, thus affecting turn time for background checks.
An indirect way to measure the quality of applicants is based on the outcomes of the background check. Background checks do not directly measure productivity or the performance of applicants, but rather give the company information upon which to base a hiring decision. Background checks with substantial violations or questionable findings are either reviewed by management or rejected outright, while background checks with minimal violations are cleared to proceed in the hiring process. The more quickly appropriate applicants are identified and placed in their positions, the sooner they can begin to contribute to the productivity of the company. Figure 11 displays the percent of background checks reviewed by management and the percent of background checks rejected.

During baseline, management reviewed anywhere from 11.3% to 17.9% of background checks, with the lower percentages in that range coming during what are reported typically to be the busiest months. The average percent of background checks reviewed by management for baseline equals 15.0%. In the two months prior to the implementation, there is a rise in the percentage of requests reviewed to levels near the beginning of baseline. Upon implementation, management reviews decreased to a level equal to or less than the lowest rate in baseline for the first nine months of implementation, with an increase to above 12% at the end of implementation; however, the percent reviewed for those final two months are the only two months during intervention that fall within the range of baseline percentages, and are only higher than two months during baseline. Management reviewed anywhere from 8.7% to 12.6% of background checks during implementation, reviewing an average of 10.4% of background checks requested in the month. The phase also shows a cyclic pattern
similar to that of baseline, although the percentage reviewed during the intervention phase is contained within a smaller range and at a lower level than that of baseline. The cycle may reflect seasonal hiring patterns with fewer applicants in the summer months.

![Graph showing percent reviewed and rejected over time.]

**Figure 11.** Percent of background check requests reviewed and percent of requests rejected.

Examining the percent of candidates rejected reveals baseline data ranging from 8.1% to 14.2% of background checks rejected due to findings, with an average of 10.7% of requests rejected per month. The first three months of baseline hover at or above the 12% level, with the last six months prior to intervention at or below 10.3%; however, an upward trend is evident at the end of baseline. Data during intervention ranges from 5.9% to 11.9% of background checks rejected, with an average of 7.8% of requests per month declined; other than the one month in which 11.9% of background checks were
rejected, the highest percentage of rejections was 8.7%. Overall, the level of candidates rejected based on background check findings appears to have decreased since the intervention.

With the percentage of requests sent for review and candidates rejected declining, it would appear logical that fewer background check requests would need to be processed to fill a requisition. However, data indicate otherwise. Figure 12 shows the number of background check requests closed (either approved, rejected, or cancelled), the number of requisitions filled, and the ratio of requests closed per requisition.

Data for baseline show that in some months, the number of requisitions filled outnumbered the number of background check requests closed; stated differently, requisitions may have been filled without a background check being closed for the candidate hired for the requisition. During baseline, an average of 0.8 to 1.3 background check requests were closed for each requisition filled. While baseline averaged 1.0 requests closed per requisition, only three months show that, on average, one full background check request was closed for requisitions filled during that month. In the intervention phase, the number of background check requests closed is consistently greater than the number of requisitions filled during the intervention phase, indicating that at least one background check was closed for each requisition filled. Post-intervention data shows that anywhere from 1.3 to 1.8 background check requests were closed for each requisition filled. The fact that more than one request was completed per requisition filled suggests that the problem in baseline, where recruiters
sometimes bypassed the system foregoing background check requests, was no longer an issue.

![Graph](image)

**Figure 12.** Number of background check requests closed, number of requisitions filled, and number of requests closed for each requisition filled.

**Voluntary Turnover.** Ninety-day voluntary turnover is another measure of the quality of new hires. If a candidate goes through the hiring process but leaves soon after finding that he or she is not a good fit, then another candidate must fill the vacated position. This translates to repeating the hiring process and creating more work for all involved with filling the position, including conducting and scoring another background check for a candidate.
Figure 13. Percent of new hires who voluntarily leave positions within the first ninety days.

Figure 13 displays the 90-day voluntary turnover for the company. During baseline, voluntary turnover ranges from 6.8% to 11.0%, with an average of 8.6%; the first three months show a downward trend, but the remainder of baseline shows a general upward trend, with increased variability toward the end of baseline. The intervention phase shows 90-day voluntary turnover ranging anywhere from 6.2% to 10.2%, averaging 7.6%. The higher end of that range comes within the first two months after the intervention; after the first two months, the new hire 90-day turnover does not exceed 8%. The first six months display a downward trend, but the intervention phase ends with an upward trend. The increasing trend suggests that more analysis would be needed to determine the longevity of such effects, but the general level of 90-day turnover shows some improvement from baseline.
Time to Fill. A key metric for the overall hiring process is time to fill a requisition (in days), which measures the time between the creation of a requisition and the employee attending his or her first day of work; included in this measure is the time to turn a background check. A systems approach suggests that when one component of the process changes, average time to fill changes as well. Figure 14 displays the average time to fill, filled requisitions, and average turn time.

Baseline measures for average time to fill range from 40 days to 56 days, with an average of 44.6 days. Requisitions filled during baseline range from 1668 to 2709 requisitions, and the average turn time for this span ranges from 6.7 to 8.6 days. Average turn times averaged 7.7 days in baseline and were variable following an initial upward trend. The first three months of baseline show the highest time to fill measures; for the last seven months, average time to fill stabilizes within a range of 40 to 45 days. Both average time to fill and number of requisitions filled end with a downward trend.

The first five months of the intervention phase show an inverse relationship between the average time to fill and the number of requisitions filled; as the number of requisitions filled decrease from one month to the next, average time to fill increases, and vice versa. Average time to fill ranges from 36 to 51 days and averages 43.1 days. The higher measures in that range occur in the first two months; following the initial increase during intervention, time to fill does not increase above 47 days. Requisitions filled during intervention months ranged from 1257 to 2942. The downward trend at the end of baseline for the number of requisitions filled continues for the first two months of intervention and then increases over the next four months to the highest levels in the range, ending with a downward trend over the final months of observation.
intervention, average turn time varies from 5.8 to 7.7 days, with an average of 6.3 days over the last six months and stabilizes over the second half of the phase.

![Graph showing average turn time of background check requests, average time to fill requisitions, and total number of requisitions filled.](image)

**Figure 14.** Average turn time of background check requests, average time to fill requisitions, and total number of requisitions filled.

**Discussion**

Desirable results were achieved with a decrease in the average turn time for background check requests and quicker turnaround to send requests to the vendor, with no drastic change in the number of errors made. Additionally, case management appears to have maintained a performance level near goal, even though a downward trend is suggested toward the end of the observation period. System-wide, the quality of applicants appears to have some degree of improvement, voluntary turnover appears to have decreased, and average time to fill requisitions has dropped. Undesirable
results were observed in terms of the percent of requests submitted to the vendor within two days of request and call handling. Other metrics, such as requests open at month-end, showed inconclusive results. Before we can attribute any of these effects to the intervention, further discussion is warranted.

Overall, turn time for background check requests decreased from baseline to intervention; the difference between the average turn time for baseline and intervention was 1.1 days. This difference may simply be due to the changing number of personnel, or the intervention and process changes, or some combination of the two factors. A one-day reduction may not appear to be much in one individual instance; however, in the larger picture of a financial organization such as the current company, a one-day reduction translates into potentially filling an open spot and producing revenue one day faster, or in the event that a background check is rejected, a one-day head start on searching for a new candidate to fill the unproductive open position.

As mentioned previously, personnel changes can potentially have differing short-term versus long-term effects on the turn time. Short term, an addition of employees has the potential to increase turn time due to the nature of training. Because training of new hires involves side-by-side guidance and then double-checking the scoring for a length of time that is not predetermined, this course of action pulls the senior member away from the primary duties of scoring background checks, likely reducing the number completed. This period of observation typically takes several days, and with the new hire’s learning curve, it may take days or weeks to score requests at a rate comparable to the senior members. This system of checks is designed to ensure quality of work and that errors are minimized, but possibly at the initial cost of slowing turn time. As the
new hire moves along the learning curve and processing ability plateaus, overall
average turn time would be expected to decrease over the long-term.

The average number of requests completed per employee would have been
interesting to examine; in such an examination, it would seem that a higher number of
requests completed per month would signal an improvement in efficiency. Seeing such
a marked improvement would signal a very strong impact, but small changes may or
may not be due to the intervention. Looking at the changes in the number of
background checks and number of employees in relation to turn time may help to reveal
some patterns in the associations; for example, if there is no change in the number of
employees, and an increase in background check requests, decreased turn time would
suggest improved efficiency. However, with the number of personnel and requests
changing, such an analysis did not yield any conclusive results; the number of
employees and number of background check requests seems to have varying and
unpredictable effects, with the possibility (or perhaps likelihood) of other variables
interfering.

Turn time is only partially under the control of the employees; the workers
determine the speed at which they process requests, but that rate is also affected by the
number of requests presented to the group. With an exception in August 2006, Figure 2
shows the correlation between the volume of requests and the number of background
check processors. In August, there is a jump in the number of requests; August is
typically one of the busiest months for background check requests. Additionally, it was
reported that recruiters knew that a new system was being implemented, and they
wanted to get all their information in before the implementation. Because the recruiters
initiate the background check requests, this increase in activity may result in changes in behavior on their part, thus creating more work to be done by the background check processors. However, the upcoming implementation likely discouraged the addition of new employees, as they would need to receive training on both the existing and future processes. This may account for the increase in requests with no increase in personnel immediately before the intervention.

Part of the process in the background check department also requires senior members to review background checks for accuracy before they are sent for management review or declined. Depending on the quantity requiring review and other job responsibilities, anywhere from two to four processors review those background checks for accuracy. A greater quantity to be reviewed may affect the speed at which they are reviewed, delaying a decision and increasing turn time.

Once the background checks to be sent for management reviewed are checked by the senior member, the request is sent for review. Upon making a decision, management notifies the processors of the decision, at which point the processors update the decision in the system. However, once the request has been sent, the processors must wait for the decision, whether the decision comes in minutes or weeks; the processors can contact management to remind them of the pending request, but are ultimately at their mercy to proceed. The longer it takes to make a decision, the greater the turn time.

A majority of the decrease in turn time attributed to a change in the process would likely be accounted for by the elimination of the necessity to review the application faxed to the background check department and send that information to the
vendor. However, the handling time shows a decreasing trend at the end of baseline, beginning in June 2006. This trend weakens any argument about effects of the process on background check turn time; starting in January 2007, the handling time declines and remains at or below 0.2 days for the remainder of intervention. It is unclear if this reduction and stability during the intervention phase is simply a continuation of some change during baseline, or if the intervention itself had any role in the continued decrease.

Other unforeseen factors have potentially affected turn time; for example, management has changed policy regarding scoring and processing that may change the time it takes to complete a background check. These changes are typically initiated by one of the processors, the team supervisor or vice-president overseeing the team, and result from a question in the way a particular record is scored. In one instance, a policy change for the background check department required all applicants to have an electronic copy of the scoring record; previously, those with clean background checks were not required to have an electronic file created. The step of creating an electronic file and completing it may require minimal time, but it nonetheless requires more time to process than previous process requirements.

Some management policy changes resulted in the scoring of records that previously had not been scored due to time limits, legal or technical considerations, or attention to details; other policy changes involved disregarding records that had previously been scored; in some instances, processors were instructed to delay scoring of background checks that displayed these records while waiting for the Legal department or management to rule on how to score the particular finding. Another
change involved entering the completion date according to the vendor report and instead of the date processed by the background check processor, clarifying differences among team members of the date to use; in a case where a processor may not be able to complete scoring of all background checks on the report for that day and must complete them on the next business day or later, a difference in dates may have critical impact on the turn time.

These management changes to policy involving whether or not to score particular records affected scoring totals for background checks, which in turn possibly affected the number of candidates sent for review or rejected. For example, over a period of seven months during the intervention, ten scoring policy changes were documented. These changes affected background check scores in both directions, potentially reducing or increasing the number of requests sent for review and/or rejected.

Management decisions have guided the background check team in other ways as well, giving the team goals to achieve in terms of performance levels. One example of this is a written agreement between Human Resources and recruiting operations that outlines several responsibilities of both parties and establishes metrics as key performance indicators; the document also sets targets for those metrics. By doing so, management outlines the primary results on which to focus efforts.

The agreement identifies “percent of background check requests submitted to the vendor within two days of recruiter request” as an important metric. Data show an upward trend toward the goal of 90% at the end of baseline, but levels immediately decline and stabilize just above 60% during intervention. When inquiring about possible causes for this, it was reported that the reasons for this discrepancy are unknown, and
that it may be noise in the data, system or coding errors, or even data entry errors. It was also reported that the source of this incongruence was not readily determined at the time.

However, the sharp decrease in percent submitted within two days coincides with an increase in cancelled background checks. A background check request is not needed for former employees not eligible for rehire or for applicants with previous employment with the company, an existing open request, or a valid completed background check already existing in the candidate’s file; however, recruiters are required (post-intervention) to request a background check through the system to ensure all applicants can be tracked in the hiring process, regardless of necessity of a background inquiry. When recruiters submit unnecessary requests, the integration from the talent acquisition system to the human capital management (HCM) system automatically cancels a majority of these requests in the HCM system before they are technically submitted to the vendor. In addition, processors can cancel duplicate requests if an existing request remains in progress. Requests can also be cancelled while the vendor’s search is in progress; at times, the recruiter or hiring manager may lose interest in a candidate after the background check has been requested.

If these cancelled requests are included in the base number of requests used to determine the percent sent to the vendor within two days, it may cause a misrepresentation of this metric, understating the percentage of requests submitted within two days that actually required submission. Refer to Table 3 for a different means of calculating this measure.
If the number of requests cancelled is removed from the base number of requests during the intervention phase, the level of requests submitted within two days surpasses 90% for the duration of intervention. Removing the number of cancelled requests from the total number of requests yields a number that is, at times, lower than the number of requests submitted within two days, as those requests cancelled after submission were still included in the number sent to vendor within two days, but not included in the total number with cancellations removed. This translates into some percentages during intervention higher than 100%. Further research would be needed to determine the timing of cancellations and to give a truly accurate picture, if in fact the cancelled requests are included in the current calculation of the metric. If that is the case, then the intervention might not have had the negative impact that the metric indicates; while the true measure may or may not be above 90%, depending on the reasons for cancellation, including the cancelled requests in the calculation would severely underestimate the percent of requests submitted to the vendor within two days.

Along similar lines, if cancelled background checks are teased out of the total background check requests used to determine percent of open requests at month end, the numbers show less of a difference post-implementation. If the number of total requests includes cancelled requests, percent open at the end of the month ranges from 20.8% to 30.0% during baseline and 12.5% to 20.3% over intervention. If cancelled requests are not included, the baseline range shifts to 22.4% to 32.7% open, while the range for intervention shifts to 17.0% to 28.5%. Removing the cancellations shows much more overlap for the ranges, reducing the apparent size of a change, if any.
Table 3

**Cancelled Background Checks and Submission Within Two Days**

<table>
<thead>
<tr>
<th></th>
<th>Background Checks (BGC) Initiated</th>
<th>BGC submitted to vendor within 2 days</th>
<th>% of BGC submitted within 2 days</th>
<th>BGC Canceled</th>
<th>Total BGC with cancellations removed</th>
<th>Adjusted % of BGC submitted within 2 days</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan-06</td>
<td>2339</td>
<td>1232</td>
<td>52.7%</td>
<td>232</td>
<td>2107</td>
<td>58.5%</td>
</tr>
<tr>
<td>Feb-06</td>
<td>2535</td>
<td>1592</td>
<td>62.8%</td>
<td>310</td>
<td>2225</td>
<td>71.6%</td>
</tr>
<tr>
<td>Mar-06</td>
<td>3203</td>
<td>2175</td>
<td>67.9%</td>
<td>285</td>
<td>2918</td>
<td>74.5%</td>
</tr>
<tr>
<td>Apr-06</td>
<td>2240</td>
<td>1811</td>
<td>80.8%</td>
<td>190</td>
<td>2050</td>
<td>88.3%</td>
</tr>
<tr>
<td>May-06</td>
<td>2108</td>
<td>1549</td>
<td>73.5%</td>
<td>208</td>
<td>1900</td>
<td>81.5%</td>
</tr>
<tr>
<td>Jun-06</td>
<td>1947</td>
<td>1399</td>
<td>71.9%</td>
<td>185</td>
<td>1762</td>
<td>79.4%</td>
</tr>
<tr>
<td>Jul-06</td>
<td>1694</td>
<td>1254</td>
<td>74.0%</td>
<td>124</td>
<td>1570</td>
<td>79.9%</td>
</tr>
<tr>
<td>Aug-06</td>
<td>2486</td>
<td>1930</td>
<td>77.6%</td>
<td>228</td>
<td>2258</td>
<td>85.5%</td>
</tr>
<tr>
<td>Sep-06</td>
<td>1698</td>
<td>1580</td>
<td>93.1%</td>
<td>176</td>
<td>1522</td>
<td>103.8%</td>
</tr>
<tr>
<td>Oct-06</td>
<td>1806</td>
<td>1499</td>
<td>83.0%</td>
<td>168</td>
<td>1638</td>
<td>91.5%</td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov-06</td>
<td>2111</td>
<td>1379</td>
<td>65.3%</td>
<td>1061</td>
<td>1050</td>
<td>131.3%</td>
</tr>
<tr>
<td>Dec-06</td>
<td>2192</td>
<td>1356</td>
<td>61.9%</td>
<td>890</td>
<td>1302</td>
<td>104.1%</td>
</tr>
<tr>
<td>Jan-07</td>
<td>2583</td>
<td>1628</td>
<td>63.0%</td>
<td>881</td>
<td>1702</td>
<td>95.7%</td>
</tr>
<tr>
<td>Feb-07</td>
<td>2738</td>
<td>1629</td>
<td>59.5%</td>
<td>929</td>
<td>1809</td>
<td>90.0%</td>
</tr>
<tr>
<td>Mar-07</td>
<td>3478</td>
<td>2091</td>
<td>60.1%</td>
<td>1188</td>
<td>2290</td>
<td>91.3%</td>
</tr>
<tr>
<td>Apr-07</td>
<td>4137</td>
<td>2553</td>
<td>61.7%</td>
<td>1406</td>
<td>2731</td>
<td>93.5%</td>
</tr>
<tr>
<td>May-07</td>
<td>4810</td>
<td>2941</td>
<td>61.1%</td>
<td>1769</td>
<td>3041</td>
<td>96.7%</td>
</tr>
<tr>
<td>Jun-07</td>
<td>4144</td>
<td>2703</td>
<td>65.2%</td>
<td>1588</td>
<td>2556</td>
<td>105.8%</td>
</tr>
<tr>
<td>Jul-07</td>
<td>4059</td>
<td>2639</td>
<td>65.0%</td>
<td>1416</td>
<td>2643</td>
<td>99.8%</td>
</tr>
<tr>
<td>Aug-07</td>
<td>2741</td>
<td>2138</td>
<td>78.0%</td>
<td>1059</td>
<td>1682</td>
<td>127.1%</td>
</tr>
<tr>
<td>Sep-07</td>
<td>1894</td>
<td>1134</td>
<td>59.9%</td>
<td>844</td>
<td>1050</td>
<td>108.0%</td>
</tr>
</tbody>
</table>
Variance in audit scores is also designated as a key performance indicator in the agreement that outlined management expectations for the new process. It is impressive to note the quality of the processors’ work amid changing scoring guidelines that may affect scoring variance. For instance, in the previously mentioned span of ten recorded changes in scoring policy, there is little evidence of those changes making differences in the scoring outcomes of those requests sampled. Also, it may be argued that the timings of the changes may affect the data; that is, the auditors adjust to the way the processors score. However, the opposite is the case; the background check processors receive notification of scoring changes from management after management receives word from the Legal department. It is at that point that the processors change the scoring.

Baseline data for audit variance (Figure 8) does show a downward trend toward the end, suggesting that a change during baseline may have carried over into intervention. It is unclear whether the intervention itself directly affected quality; however, it can be observed that it did not cause a decline in quality. If the speed of processing can be increased without any difference in quality of work, an argument that an improvement has been made seems valid.

The percent of cases closed within one day is also included in the written agreement, with a target level of 85%. The nature of the case may play a part in the ability to resolve and close it within one day. Many cases for calls taken can be created and closed on the same day. However, some cases may require more research. Also, some cases depend on the action of other people, such as background checks sent to
management for review, so degree of control is an issue for such cases. However, such cases represent a minority of cases created.

Also, background check requests sent for review prior to final decision, as well as requests for exceptions on rejected background checks, were initially submitted via cases created. In March 2006, a new system to send requests for review prior to final decision was created, but the exceptions were still submitted via created cases. A higher percentage of background checks is sent for review than requesting an exception; hence, if the total number of cases is reduced by the number of cases sent for review, it may have an effect on the percentage of cases closed within one day (likely increasing the percentage, assuming all else is held nearly constant). Thus, we see a sharp reduction in the number of cases starting in March; in the month prior, over 500 cases were due to background checks sent for review; in March, 800 reviews were no longer included in the number of cases. This can account for a portion of the sharp decline in total cases in March 2006.

Post-intervention, there is a sharp increase in the number of cases that endures through most of the phase (see Figure 9). Examinations of case data suggest multiple factors contribute to this upward trend. The number of cases increased the most in regards to inquiries on status of applicants; these cases originate when recruiters or hiring managers call human resources or inquire through the system about the progress of an applicant through the background check process. The number of cases that fall into this category increased over 400% from baseline to intervention. The implementation of the new system also created technical and procedural issues with which employees did not previously deal, necessitating the creation of new categories
of cases. Finally, management created new processes for certain situations that required additional research; these issues, though they existed before, had not previously involved case creation.

The handling of phone calls by background check processors, while not directly affected by the intervention itself, appears to have been impacted by the intervention. The total number of calls answered, and consequently the average number of calls per employee, is capped by the number of incoming calls; if fewer calls are placed for one reason or another (i.e., a downturn in the cycle means fewer positions are open, and recruiters have fewer candidates for updates on background check status), this cannot be considered the fault of the processor. The drop in percentage of calls answered, to a large degree, is inversely correlated with the increased number of requests, suggesting that processing of requests may have taken priority over calls. However, having established performance expectations only for calls might suggest the contrary to processors—that the call handling, which is more closely monitored with individual feedback sessions, should take priority. With the increasing number of calls, the percent of calls answered appears to take a downturn, perhaps due in part to newer members of the team taking calls without sufficient training or clear guidelines for ideal performance. Expectations and performance standards should be clearly laid out to help guide employee efforts toward key strategic efforts, and information on performance in relation to those goals would provide further direction.

This intervention had effects on several processes within the background check department, but the entire system felt the impact of the changes. Upstream process changes contributed to the background check process by affecting the quantity of work
processed. One result highlighted the fact that some applicants did not appear to have a valid background check in their file; baseline data indicate that in some cases, background checks were not requested and processed prior to hiring a candidate.

Among the reasons for not requesting a background check include attempted expediting of the process for high-profile candidates and previous employees who were released but had a valid background check on file. An anecdotal report confirmed that the previous applicant management system was not always utilized, and there was not a way to track applicants through the hiring process in the previous system. With the implementation, this issue seems to have been resolved. By requiring all applicants to go through the hiring process using the applicant management system, the workload may have increased for many involved, including the background check processors; however, the fact that all applicants were apparently entered into the system and could be tracked through the hiring process signals an improvement on some level within the system, or at least a desired outcome.

The quality of the applicants selected influences not only the workload for all involved in the hiring process, but also the overall productivity and profitability of the company; the hiring process is intended to select applicants that will make valuable contributions. If an applicant who goes through the hiring process is offered a position, the ideal measure of that new hire's contributions, or the quality of the worker, would be loan production, assuming a revenue-generating position; however, access to financial data was limited and difficult to obtain with a large number of employees, due to logistical and legal issues. Difficulty obtaining post-hire data leaves pre-hire
information, such as applications and background checks, as measures of applicant quality that might be used to project potential fit into the organization.

Besides helping to further identify potentially valuable applicants in the hiring process, changes in the background check process also influence one of the key metrics for the recruitment division. The time it takes to complete a background check is one element of the time to fill requisitions; with a reduction in turn time, one would expect a change in the overall time to fill. Overall, from baseline to intervention, there is an average of a 1.2-day reduction in turn time and a 1.5-day reduction in time to fill. A slight gap in the difference between the two suggests that either there were other changes during the implementation that altered other portions of the hiring process to reduce the time to fill, or improvements in the background check process also reduced the time to complete other steps in the overall hiring process.

Further research comparing the patterns of the two metrics shows that an inverse relationship between turn time and time to fill for the first half of the intervention phase; as turn time decreases, time to fill increases. Logically, this does not equate; the two would seem to be linearly related. Six months into intervention, turn time begins to stabilize despite an increase in time to fill. The final month of intervention shows a decrease in time to fill even though turn time does not change. Together, all of these results strongly suggest that some unknown factors are causing changes in other portions of the hiring process.

This intervention was implemented with several expectations of impact. As previously detailed, the goal of 100% applicant entry into the system appears to have been accomplished; because background checks could only be requested through the
system, and the post-intervention ratio of background checks completed to requisitions filled is consistently greater than one, it may be inferred that each candidate was entered into the system.

Another of the general goals of the intervention involved efforts to go paperless and save on costs of paper and storage. Neither costs for paper nor for off-site storage were able to be obtained. However, an anecdotal report indicated that costs for off-site storage have now been eliminated post-intervention. As paper applications are stored off-site for three years, it is unclear whether that report means that there were no costs at all for off-site storage or simply no additional new costs for off-site storage for more materials being stored.

Limitations

Various factors limit the argument for the strength of any changes that appear to be due to the intervention. Several have been previously identified and discussed, such as the changing workforce, management decisions, and upstream and downstream influences. Within the setting of the business world, other variables may have interfered in determining the true impact of the implementation, making it difficult to isolate the effects that directly resulted from it. These variables were beyond direct control of the company, including market conditions and competitor actions.

The industry in which the financial institution operates has shown a cyclic pattern of production. On the upswing, more employees are needed in the organization to process a larger volume of work; on the downhill side, the workload is reduced, and with it, the necessity to hire people to handle that work. Additionally, during lower points in the cycle, smaller businesses that are not equipped with the resources to deal with the
downturns may be forced to close their doors; doing so releases experienced candidates into the labor pool. Thus, the cycles result in fluctuating volumes of requests to be processed by the team, and can affect the quality of applicants.

As there was only pre- and post-implementation data, a reversal of conditions was not conducted. In a business setting, a reversal is neither logical nor practical in most cases. In this case, the intervention involved a new talent acquisition software system, training, job aids, and a reorganization of processes in efforts to go paperless. In a large organization such as the present company, implementing changes involves informing the employees about the upcoming changes and often is accompanied by training to utilize the changes. If the employees have been performing tasks a certain way, changes to the processes may go head-to-head with the culture of the organization, meeting resistance or apathy without providing mechanisms to support the change. Many resources are expended in bringing about the change, including time and money. To attempt to reverse the effects of this would prove to be a costly effort, and would send conflicting messages to employees. In an organization that seeks to improve on performance, the emphasis in these cases is often on the results rather than the means.

Even if any changes could be attributed solely to the intervention, it is difficult to determine if any single component of the intervention was responsible for those changes, or if the impact is attributable to the intervention as a whole. As such, it is difficult to pinpoint any individual effective, superfluous, or even detrimental piece of the intervention; it may be possible that changes resulting from one part of the intervention
are offset by another part of the intervention. Any efforts to modify the intervention may inadvertently affect an important element of the implementation.

Despite the inability to attribute an impact to a particular component, the level of training may play a part in any effects, or lack thereof, that resulted. A difference in training packages, from trainer to setting to content, could also factor into any impact. New hires brought on after the intervention may not have received the same amount or type of training as the original trained processors. New hires received on-the-job training, with a process that was completely new, whereas the incumbent employees received training on the new software system during separate sessions where they were removed from the daily operations. The employees present during the transition to the new system were also learning about changes to the existing process, even though some parts of the process did not change. In those training sessions that were held in a separate room, there were different trainers talking about the different changes in the process. Once the processors were trained, they essentially became the trainers for any new hires brought onto the team. Any changes that might be observed may be attributed to different levels of training by the different trainers, which is especially important to note in cases where team members training new hires sometimes had differing opinions on how to score particular records.

In conducting the research to study effects of this intervention, a challenge was encountered in data collection. Most metrics examined in the study are presently tracked by the company; however, as there was a dependence on other persons to provide the data, delays were sometimes encountered. Indirect access to the data is a difficult challenge to overcome, particularly when people with direct access to the data
have other tasks to complete that take priority. In some cases, various sources had to be consulted to obtain necessary data, while in other cases, attempts to obtain data were unsuccessful altogether. The data were spread out among different sources, which may often be common with companies with broad operations overseeing Human Resources for thousands of employees. Also, when contacting different employees to obtain certain key metrics for the background check team’s operations, those sources indicated that some measures may include data that are not included in other calculations. For example, one division of operations conducts their own background checks, separate from the rest of the company. Efforts were made to utilize data that does not include data from that division, but for some measures, teasing out those values proved to be complex. Calculating metrics that incorporate those numbers can distort the real impact on the company’s primary request processing efforts.

The lack of information provided regarding contingencies surrounding performance, including expectations, feedback, and consequences for behaviors, both on the individual and group level, hinders the analysis of the intervention. If so much attention is focused on the process change, other factors that influence performance at the level of the individual employee may be overlooked. Performance management authorities such as Gilbert (1978/1996), Rummler and Brache (1995) and Daniels and Daniels (2004) recommend that challenging yet attainable goals should be made clear to all performers, and the necessary resources made available to reach those objectives. Consistent feedback on progress toward those goals also aids in directing performance, and individual and group achievement of goals should be recognized and celebrated. There may be other effects, direct or indirect, that may serve to reduce
motivation. The possibility of a greater workload or additional responsibility may be consequences that outweigh any other designed direct consequences for improved performance. In addition, contingencies that are part of the broader organizational culture may also have interacted with any contingencies specifically associated with the intervention to affect performance.

Conclusions and Further Research

It may be said that the intervention did have an impact on the processing of background check requests; however, the degree to which changes seen in the intervention phase can be attributed solely to the implementation, and not other variables alone or in conjunction with the intervention, remains questionable. Data after the intervention shows some metrics improved while other metrics showed inconclusive results or even hindered performance.

Certain metrics showed inconclusive data or reversion to lower levels of performance (i.e., requests submitted to vendor within two days), so further research may show whether noise in the data or errors account for the change, or whether it is truly an issue that needs to be addressed. Also, future investigation into the confounding variables that complicated analysis might provide insight into the true impact of the intervention. Such a study may prove difficult given governing factors such as the economy as a whole, the industry, and government- and company-imposed regulations. This is especially true toward the end of baseline, when several metrics, such as handling time, audit variance, and the number of requests completed, appear to have been affected by another variable active in the environment that has not been clearly identified. Identification of these confounding variables would be useful in
explaining the unusual relationship between average turn time and average time to fill, with signs of inverse relations as well as unchanging results in one metric while the other metric fluctuates. Further research may be warranted for measures showing a trend at the end of intervention to determine the long-term durability of the effects.

The current study examines the results of the intervention on group behavior. Improved performance by one processor may compensate for an employee performing at a lower level when results are measured at the group level; thus, overall group results may show little change while individual changes may vary greatly. From the present data, there is not a way to determine to what degree that may be the case. Studying the variations on individual performance would also be beneficial, especially since different team members had differing responsibilities at times. Looking at the contingencies surrounding performance, both for individuals and the group, would provide additional useful information for future modifications of the intervention, or any changes in process in general. If the organization wishes to change the performance of its employees, such changes need to be supported with the proper prerequisites to enable desired behavior and consequences to reinforce behavior change. The present intervention changed the way processors work; future interventions may study a more complete picture of creating an environment to support the process changes, implementing the changes, and offering incentives for good performance.

As this study focuses on only one area of impact on the system, other areas of impact warrant study to determine system-wide effects. For example, recruiters and hiring managers were impacted by the implementation as well; they are now able to browse resumes, request background checks, correspond with applicants, and monitor
applicant progress through the hiring process. Additionally, a closer examination of financial metrics, which were not available for this research, would help to measure the ultimate impact of the intervention, evaluating the productivity of new hires, or if indeterminable, division or workgroup productivity. System-wide impacts may examine changes in cost per new hire or cost per background check. Such measures would put into perspective the effects of the intervention in the grand scheme of business profitability and success.
REFERENCES


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